PB91-155622

The John A. Blume Earthquake Engineering Center

Department of Civil Engineering
Stanford University

SEISMIC ZONING AND GROUND MOTION PARAMETERS FOR EL SALVADOR

by

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and
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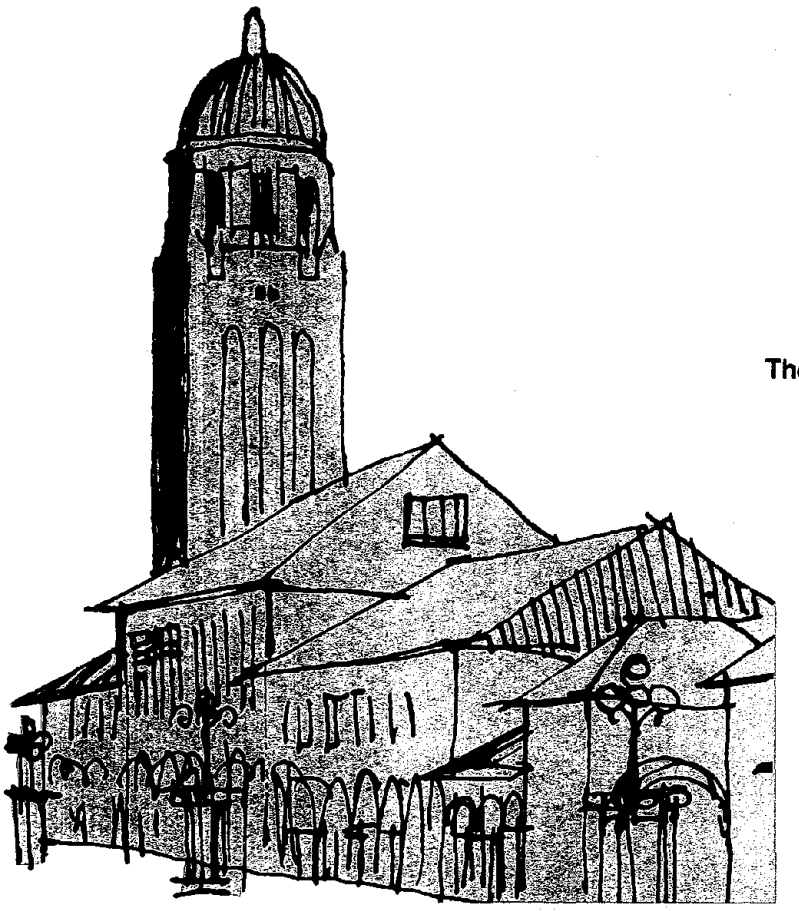

This research was partially supported by

The Agency for International Development (American Embassy in El Salvador)

The Organization of American States

The National Science Foundation
NSF Grant CES-8721370
and
The John A. Blume Earthquake Engineering Center

Report No. 93

December 1990

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THIS RESEARCH WAS PARTIALLY SUPPORTED BY

THE AGENCY FOR INTERNATIONAL DEVELOPMENT
(AMERICAN EMBASSY IN EL SALVADOR)

THE ORGANIZATION OF AMERICAN STATES

THE NATIONAL SCIENCE FOUNDATION
NSF GRANT CES-8721370

AND

THE JOHN A. BLUME EARTHQUAKE
ENGINEERING CENTER

ACKNOWLEDGMENTS

The authors of this report would like to thanks Ing. Fabio W. Alfaro, director of the computer center of the Direccion de Planificacion of the Ministerio de Obras Publicas in El Salvador for his cooperation on the gathering of data. The cooperation of the Senator William V. Roth, senator for Delaware and Scott G. Stevens, director of the English Language Institute at the University of Delaware is very much appreciated. We also like to thanks to the research team of the seismology department of the U.S. Geological Survey specially to David Harlow and Gerald Brady for many useful and stimulating discussions.

The partial support provided by the Agency for International Development (American Embassy in El Salvador), the Organization of American States (OAS), the National Science Foundation (NSF Grant CES-8721370), and the John A. Blume Earthquake Engineering Center are gratefully acknowledge.

TABLE OF CONTENTS

CHAPTER 1

INTRODUCTION

On October 10, 1986, the capital of El Salvador, San Salvador, experienced a moderate magnitude earthquake. The surface wave magnitude of this event was 5.8. The hypocentral location was 13.67°N and 89.19°W with average depth of 10.00 kilometers. Despite the moderate magnitude of this earthquake, the city was severely damaged. Ground motion records with epicentral distances ranging from 1 to 8 kilometers showed peak ground accelerations from 0.31g to 0.72g.

The high values of ground motion and the resulting building damage cough the attention of engineers and seismologists from all over the world. A previous study done by White and Harlow (1988) shows that San Salvador is hit by earthquakes like the one described above, approximately every 30 years. Considering the high seismic activity rate of this zone and the potential danger for life and property loss, the study "Seismic Zoning and Strong Ground Motion Parameters for El Salvador" was initiated at Stanford University. The area covered by this study is bounded by the latitudes 11.00°N and 16.00°N and the longitudes 82.00°W and 91.00°W. It includes all of El Salvador and part of Guatemala, Honduras, and Nicaragua (see Figure 2.1).

For this region, similar studies have been conducted by Kiremidjian et al. (1979), Kiremidjian et al. (1977), and Shah et al. (1975). In another study, an Italian group of engineers has brought to completion a detailed study of the dynamic properties of the soils within the city of San Salvador, in an attempt to perform a seismic microzonation of the city (Consorzio Salvador e.,1988). However, the study is specialized only in the eastern part of San Salvador and the attenuation models used in this study are the ones developed for the western United States.

The evaluation of the seismic hazard in a region requires a seismicity model, an attenuation model, and an exposure evaluation model. This study will include a comprehensive evaluation of the seismic environment of El Salvador and surrounding regions, a study of the available hazard analysis models applicable to this seismic environment, and the development of peak ground acceleration attenuation functions needed for the application of the hazard models.

Briefly, the major topics to be studied are outlined as follows:

- Tectonic Setting and Seismic Provinces.
- Seismic Data Base.
- Geometrical Modeling.
- Probabilistic Hazard Analysis Modeling.
- Strong Ground Motion Parameter Estimation.
- Application of the Models.

In order to evaluate the seismic hazard of a region, it is first necessary to study and model its seismicity. In Chapter 2, the seismo-tectonic environment of El Salvador is studied as a part of a more extensive system. In this region, three different tectonic regimes are found: the Caribbean Plate Boundary which is composed of the Chixoy-Polochic, Motagua, and Jocotan-Chamelecon faults; the Volcanic Chain which is composed of a line of volcanoes that goes from Guatemala to Costa Rica; and the Central American Trench which is formed by the subduction of the Cocos Plate beneath the Caribbean Plate (see Figure 2.1).

In chapter 3, the existing data for the study region is analyzed. Two kinds of data are found: non-instrumental and instrumental. For both types of data, a methodology of how to calculate earthquake parameters is described and their relation to the seismic provinces is evaluated.

Faults and areas of earthquake activity are represented by lines and polygonal dipping planes defining the geometrical source modeling for the region. The seismicity of the region is gathered and sorted according to this geometrical source model. Seismic parameters such as earthquake recurrence relationships, maximum credible earthquake, slip rates, and energy release are calculated for each seismic province. The results from this evaluation are presented in Chapter 4.

In order to obtain hazard estimates, the Bayesian model (Mortgat and Shah, 1979) and the slip-predictable model (Kiremidjian and Suzuki, 1987) are used in this study. The Markov renewal model is applied to a segment of the Benioff Zone. The remaining sources are modeled using the Bayesian model; the results from the two models are combined to obtain hazard estimates throughout El Salvador. For comparison purposes, hazard

estimates are computed for all sources using the Bayesian model as well. A review of both hazard models and calculation of parameters are presented in Chapter 5.

In Chapter 6, strong ground motion attenuation functions are discussed extensively. Since several tectonic regimes are found in the region of study and travel paths and stress conditions from near source and far sources are likely to vary (Campbell, 1981), the attenuation functions depend on the seismic source and source-to-site conditions.

The seismicity model, the stochastic hazard models, and the attenuation functions indicated above are used to develop iso-acceleration maps for El Salvador. In addition, site specific seismic loading (peak ground acceleration) are computed at eleven important cities and places in El Salvador. The results from this analysis are presented in Chapter 7.

In summary, the final results of this study represent a set of seismic hazard maps and a set of site specific loading estimates for El Salvador. Further implementation of the result of this study in seismic code regulations for a seismic code for lateral loads, will narrow the gap of the actual engineering practices in El Salvador with the ones performed in countries with modern seismic codes.

CHAPTER 2

TECTONIC SETTING AND SEISMIC PROVINCES

2.1 Introduction.

In this chapter, a study of the tectonic and seismological setting of El Salvador and surrounding regions is undertaken. The area covered by the study is bounded by the latitudes 11.00°N and 16.00°N and the longitudes 82.00°W and 91.00°W. It includes all of El Salvador and part of Nicaragua, Honduras, and Guatemala. This area is divided in several regions and their tectonic and seismological characteristics are described.

2.2 Tectonic Setting

El Salvador is located in the western part of the Caribbean Plate which contains several tectonic regions (see Figure 2.1). Along the Pacific coast of Central America lies a very narrow chain of active volcanoes (Carr et al., 1982). Southwest of El Salvador, the Cocos Plate subducts under the Caribbean Plate forming the Middle America Trench (White and Cifuentes, 1988). To the northwest is the North American-Caribbean Plate boundary which crosses Guatemala and is principally expressed by the Chixoy-Polochic and Motagua faults. To the northeast, El Salvador is bounded by a series of en-echelon grabens which form the Honduras Depression (Kiremidjian et al., 1979).

2.2.1 Volcanic Chain

A chain of active volcanoes with evidence of holocene activity (White and Harlow, 1988) lies parallel to the Middle America Trench from Guatemala to Costa Rica. The chain lies 160 to 180 km from the trench (Carr et al., 1982), and it is formed by about 75 volcanoes which are higher at the ends of the chain. In Guatemala and Costa Rica, the volcanoes have elevations from 2700 to over 4200 meters and are spaced from 18 to 30 km. At the middle of the chain, the volcanoes are lower with elevations from 512 to 2182 meters and are spaced from 12 to 18 km apart (White and Harlow, 1988).

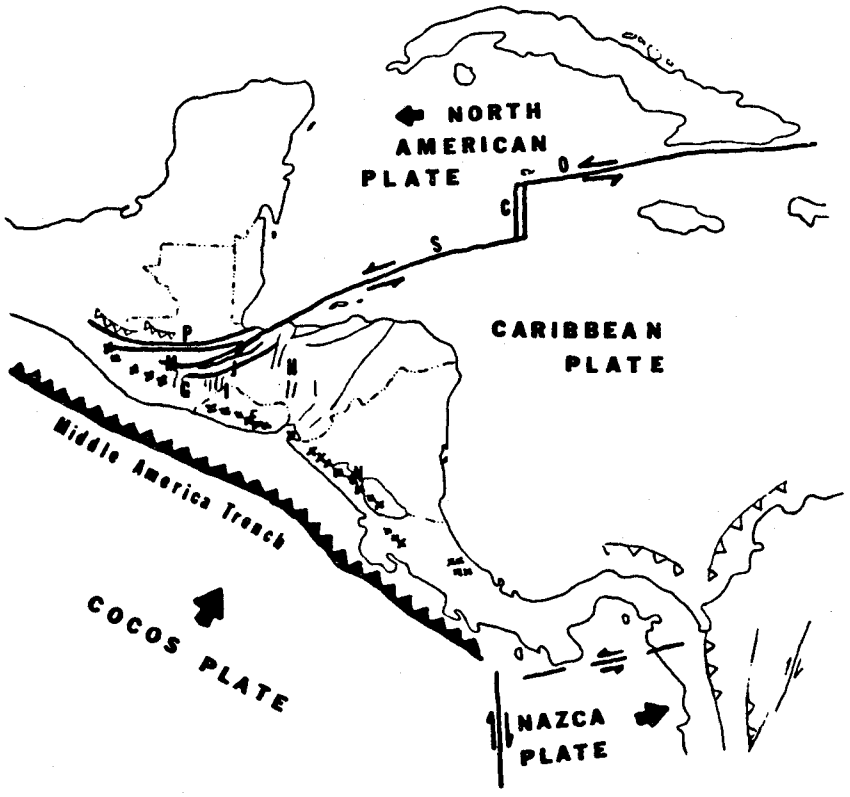

Figure 2.1. Major structures and boundaries of the western Caribbean Plate. P - Chixoy-Polochic Fault Zone, M - Motagua Fault Zone, J - Jocotan-Chamelecon Fault Zone, G - Guatemala City Graben, I - Ipala Graben, H - Honduras Depression, E - Fosa Central de El Salvador, N - Nicaraguan Depression, S - Swan Fracture Zone, C - Mid-Cayman Rise, O - Oriente Fracture Zone, x - Active Quaternary Volcanoes. (Modified from Jordan, 1975.)

Faults between the volcanoes that trend normal and parallel to the axis of the chain are associated with left-lateral and right-lateral displacements respectively. Fault displacements for both the 1986 San Salvador and 1972 Managua earthquakes were left-lateral on faults perpendicular to the trend of the chain. The intensity contours and the foreshock distribution of the 1965 San Salvador earthquake indicate a right-lateral fault motion along a fault parallel to the chain (Harlow et al., 1988).

2.2.2 Middle America Trench

At the Middle America trench, the Cocos Plate, which is composed of a gently sloping seafloor (20 to 40 m.y.) of smooth topography (White and Cifuentes, 1988), subducts under the Caribbean Plate at moderate angles and defines the Benioff Zone. The Benioff Zone appears to be formed by two parts. The shallower part is inclined at about 15° to 25° and the deeper part is inclined at approximately 40° to 55°. This interpretation of the subduction zone is suggested from the hypocentral cross sections (see Figure 2.2) of the Middle America Trench given in Burbach et al.(1984).

The convergence rate and average coseismic slip rate for the Cocos and Caribbean Plate boundary have been estimated to be about 6.5 cm/yr and 5.0± 1.6 cm/yr respectively in a region off western El Salvador (White and Cifuentes, 1988).

2.2.3 The Chixoy-Polochic and Motagua Faults

The North American and Caribbean Plate boundary through Guatemala is comprised principally by two parallel, left-lateral, strike-slip faults; the Chixoy-Polochic and Motagua faults (see Figure 2.3). However, for the purposes of this study, another subparallel fault will be considered as part of this boundary, the Jocotan-Chamelecon fault. The Chixoy-Polochic fault can be mapped for about 340 km across Guatemala and southern Mexico (Schwartz et al.,1979). The Motagua fault is traceable for over 300 km from the Atlantic coast to central Guatemala, where it is concealed by quaternary volcanic deposits (Anderson et al., 1973; Dengo and Bohnenberger, 1969; Schwartz et al., 1979).

The nature and amount of displacement along this boundary has been a subject of controversy (Kiremidjian et al., 1979). However, focal plane solutions for events occurring at this boundary and an average offset of 1.1 meters observed in the 1976 Motagua earthquake, show undoubtedly a left-lateral sense of movement (Molnar and Sykes,1969; Bucknam et al., 1978).

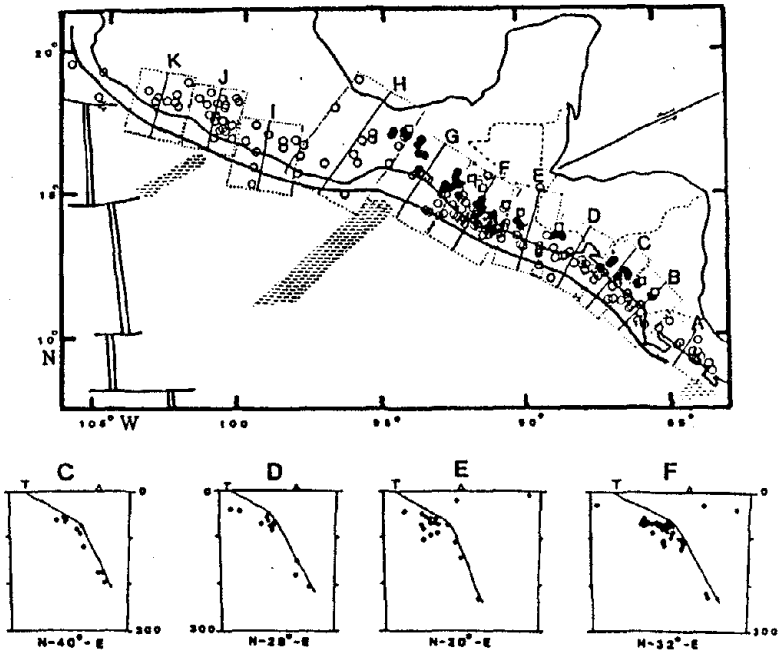

Figure 2.2. Cross sections of the Subduction Zone at some points in the Middle America Trench (After Burbach et al., 1984.)

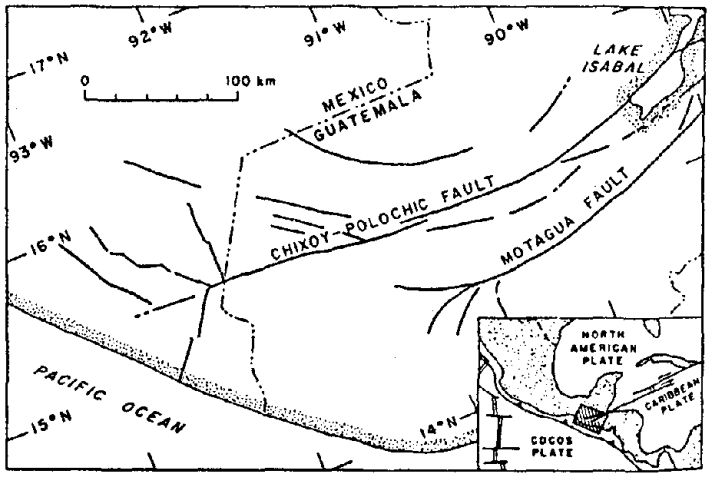

Figure 2.3. Location map of majors faults in central Guatemala and southern Chiapas (modified from Muehlberger and Ritchie, 1975). Inset shows the location of this map and the plate tectonic setting of the region (After R. White, 1984.)

2.2.4 Honduras Depression

Some faults in Central America are oriented north-south and they either compose transverse boundaries between longitudinal faults or compose graben structures in the Caribbean plate. The largest graben is the Honduras Depression which is a group of disconnected grabens or basins that extend from the Caribbean to the Pacific (see Figure 2.4).

The focal plane solution of an earthquake in this region indicates oblique slip with a component of thrust faulting (Dean and Drake, 1978). However, uncertainty about the nature of the displacements of this faults is still present.

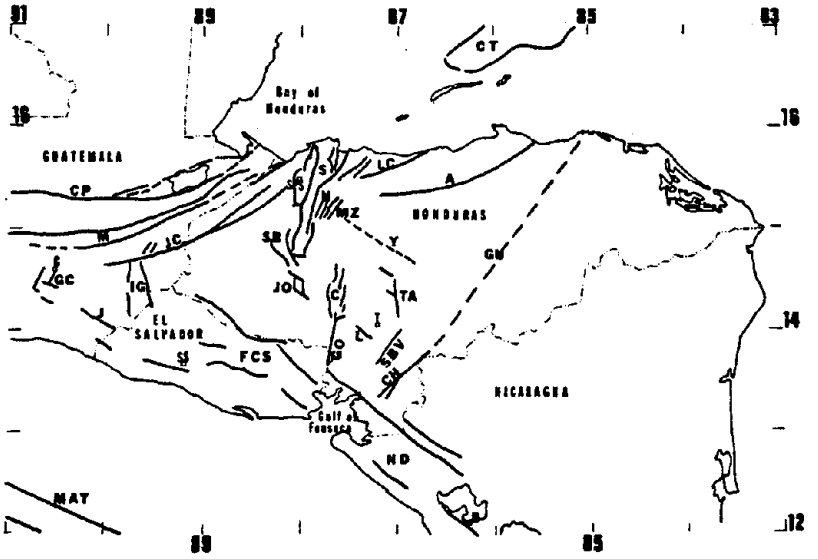

Figure 2.4. Major faults of the Honduras Region. (Honduras Depression faults from Muehlberger, 1976; figure modified from Motor Columbus, 1978.)
CT - Cayman Trough, CP - Chixoy-Polochic fault zone, M - Motagua fault zone, JC - Jocotan-Chamelecon fault zone, GC - Guatemala City graben, IG - Ipala Graben, J- Jalpataga fault, FCS - Fosa central de El Salvador, ND - Nicaraguan Depression, S- Sula graben, N - El Negrito graben, MZ - Morazan graben, SB - Santa Barbara graben, Y - Yoro graben, JO - Jesus de Otoro graben, C - Comayagua graben, GO - Goascoran fault, TA - Talanga fault, SBV - San Buenaventura fault, CH - Choluteca fault, GU - Guayape fault, LC - La Ceiba Fault, A - Aguan fault, L - Laparetique fault, G - Guatemala City, SS - San Salvador, T - Tegucigalpa, M - Managua, SPS - San Pedro Sula.
(After Kiremidjian et al., 1979.)

2.3 Seismic Provinces

In order to model the seismicity of El Salvador and surrounding areas, the region is divided into seismic provinces. The division is done based on the geologic and seismic features of the provinces themselves. Consequently, a seismic province in this study is defined as a very well identified fault or zone which spatially comprise earthquakes with similar seismic parameters such as focal plane solution, magnitude, epicenter, and focal depth.

Therefore, following the definition presented above and similar to the classification given by others (Carr and Stoiber, 1976; Kiremidjian et al., 1979) the following seismic provinces were identified (see Figure 2.5):

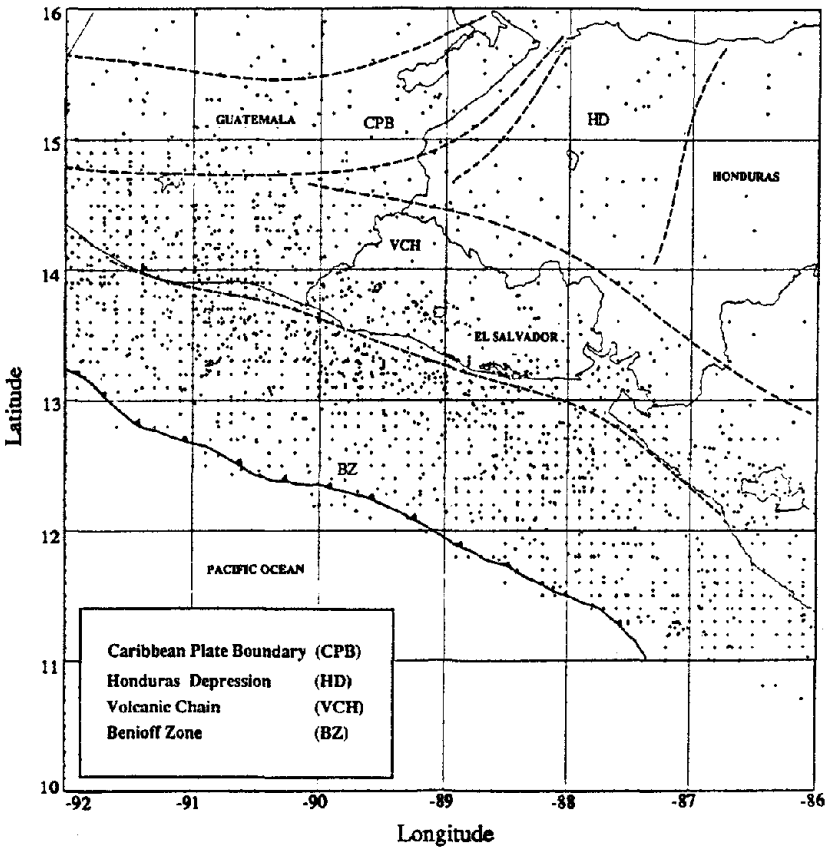

Figure 2.5. Tectonic provinces and epicenter locations of the Central American region.

1) Volcanic Chain Zone (VCH)
2) Benioff Zone (BZ)
   - Shallow Benioff Zone (SHBZ)
   - Intermediate Benioff Zone (IBZ)
   - Deep Benioff Zone (DBZ)
3) Caribbean Plate Boundary (CPB)
4) Honduras Depression (HD)

2.3.1 Volcanic Chain Zone

The Volcanic Chain Zone is identified as a narrow band along the pacific coast of Central America which groups regions of similar tectonic and seismic patterns. Focal mechanisms of events within this band show strike slip displacements with one plane parallel to the volcano axis (White and Harlow, 1988). Fault motions of left-lateral sense have occured in faults perpendicular to the trend of the chain and right-lateral slip has probably occurred along faults parallel to the chain.

In addition, events in this band exhibit very similar seismic parameters. For instance, epicentral locations fall within a very narrow band, focal depths of very well constrained events are within 5 and 15 km (White and Harlow, 1988), and maximum magnitudes of earthquakes range from M_S of 5.4 to 6.8. Consequently, the Volcanic Chain Zone is defined in this study as a narrow band along the pacific coast of Central America. The depth of the crust of the earth is believed to be 20 km; however, in the estimation of the earthquake magnitude and epicentral location the value of 35 km is often used. Thus it was decided to define the maximum depth of this source at 35 km for consistency with the data.

2.3.2 Benioff Zone

The Benioff Zone, described before as the subducting part of the Cocos plate under the Guatemalan, El Salvadoran, and Nicaraguan coasts is characterized by several geologic and seismic features. As suggested in Burbach et al. (1984), the underthrusting plate is formed by two parts separated at an average depth of 60 km. The magnitude of earthquakes in the shallower plate increases as we go deeper on the plate; from a catalog by White and Cifuentes (1988), the maximum magnitude, M_S, is found to be 7.1 at a range of hypocentral depths from 0 to 35 km. The magnitudes range up to M_S of 8.1 for a range of hypocentral depths from 40 to 60 km.

Taking into account these features of the zone, three segments are identified: a Shallow Benioff Zone (0-35 km), an Intermediate Benioff Zone (36-60 km), and a Deep Benioff Zone (61-260 km).

2.3.3 Caribbean Plate Boundary

The Caribbean Plate Boundary is formed by the Chixoy-Polochic, Motagua, and Jocotan-Chamelecon faults. The zone is characterized by left-lateral, strike-slip faults which are clearly mapped. The seismic activity is shallow (<35 km for this study) and the two main faults have already ruptured at least once. In 1785 an earthquake M_W of 7.3 to 7.5 ruptured the eastern portion of the Chixoy-Polochic fault and in 1816 another earthquake M_W of 7.5 to 7.7 ruptured its western portion. In 1976 an earthquake of M_W 7.5 ruptured the Motagua fault (White, 1988). The depth of this source zone will be considered to be between 5 to 15 km.

2.3.4 Honduras Depression Zone

The Honduras Depression zone is located at the central part of Honduras and has the following characteristics. The zone groups all the faults of central Honduras which form part of a sequence of en-echelon grabens. Its seismicity is very low with magnitudes ranging from M_S of 3.0 to 6.3, and is shallow in origin.

In conclusion, El Salvador is surrounded by the following tectonic regions: the Volcanic Chain, Benioff Zone, Caribbean Plate Boundary, and Honduras Depression. The Volcanic Chain is defined according to the kind of faulting around the axis of the chain and some features of earthquake parameters such as magnitude, focal depth and epicentral location. The Benioff Zone is defined according to the magnitude of events and hypocentral depth in the 3 sub-zones described before. The Caribbean Plate Boundary is defined on the delineation and seismic activity of each fault between the zone. And finally, the Honduras Depression Zone is defined by the location of the group of faults in the grabens.

CHAPTER 3

SEISMIC DATA BASE

3.1 Introduction.

Instrumental records for earthquakes in Central America became available in 1900 (Harlow et al., 1988). Catalogs with instrumental records, however, almost never include more than one cycle of large earthquakes for specific seismic sources. Since the instrumental data are insufficient to estimate the recurrence of large earthquakes, it is important to consider non-instrumental data as well.

Before 1900, intensity scales which describe physical damage at sites were the only records available to measure the severity of an earthquake (e.g. Rossi-Forel and Milne scales). Thus, this study distinguishes between historical seismicity which defines descriptive seismicity before 1900; and post-1900 seismicity, which includes both instrumental and descriptive data obtained after 1900.

3.2 Historical Seismicity.

General studies have been conducted on historical seismicity for the Central American region. White (1984), White and Cifuentes (1988), White (1988), White and Harlow (1988), and Harlow et al. (1988) have searched for primary sources on historical seismicity. They found information on Subduction, Shallow Focus and Plate Boundary earthquakes from more than 1000 historical documents. This information made it possible to construct intensity maps for at least the two highest intensity contours. Thus, approximated magnitudes and moment centroid locations became available.

For this period a total of 111 earthquakes were found. Only a brief description of the damage was available for the oldest forty events (see Appendix A). Since the remaining events were better documented, approximated magnitudes, moment centroid locations, and rupture lengths were determined (see Appendix B.) The methodology followed in these calculations is explained below.

For earthquakes for which at least two of the highest contours of the Modified Mercalli Intensity could be constructed, all of the seismic parameters mentioned before were determined. Following Aki (1966) and Kelleher et al. (1973), it is assumed that the rupture area corresponds to the aftershock area of an earthquake. Based on White and

Harlow (1988), the aftershock area and the area of damage covered by the intensity contour of MMI VII gives for the subduction zone the following relationship:

$$L_{VII} = 200\ (M - 6.77) \tag{3.1}$$

where L_{VII} is the diameter of the MMI VII isoseismal line which is assumed to be the diameter of the rupture area, and M is the magnitude. Similarly, for upper crustal earthquakes the following equation was developed,

$$L_{VII} = 200\ (M - 6.37) \tag{3.2}$$

which gives the minimum diameter of the damage area of MM intensity VII for a given earthquake.

Discrimination of damaging events that have occurred on the Benioff zone from those that have occurred in a upper-crustal seismic province is difficult since the MMI contour lines of an earthquake from either seismic province can lie along the Volcanic Chain. White and Cifuentes (1988) characterize a damaging Benioff Zone earthquake by A_{VII} (Area of MMI VII) > 10,000 km^2, and slow attenuation of intensity with distance. On the other hand, a damaging upper-crustal earthquake has $A_{VII} < 600\ km^2$ and fast attenuation of intensity with distance.

Following this criteria, White and Harlow (1988) determined epicentral and hypocentral locations. For upper-crustal events (see Figure 3.1), the epicenters were set at the location of the center of the highest intensity contour and the hypocenter was constrained to the crust (see Chapter 2). For Benioff Zone earthquakes, this scheme was not applicable. The hypocenters were set according to the location of the sliding interface between the Cocos and Caribbean Plates then the hypocenters were constrained between 40 to 60 km of depth. The epicenters were located moving normally to the trench the location of the moment centroid showed along the Volcanic Chain (see Figure 3.2) to the point were the hypocenters were between 40 to 60 km. Deeper or shallower regions were not considered since earthquakes occurring at these locations will not produce MMI VII areas as shown in Figure 3.2.

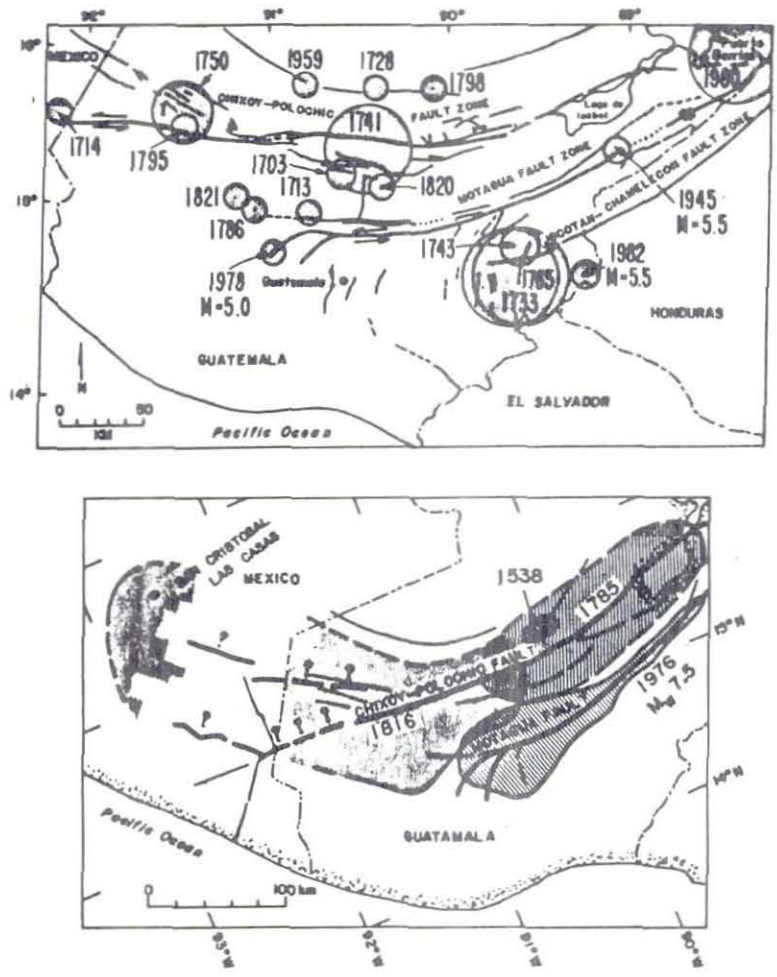

Figure 3.1. MMI contour lines for main earthquakes that occurred in the Caribbean Plate Boundary Zone (After White, 1988.)

Following this procedure, a segment belonging to the Intermediate Benioff Zone was defined (see Figure 3.3). Further analysis of energy release, rupture length, and recurrence time for this segment is presented in Chapter 4.

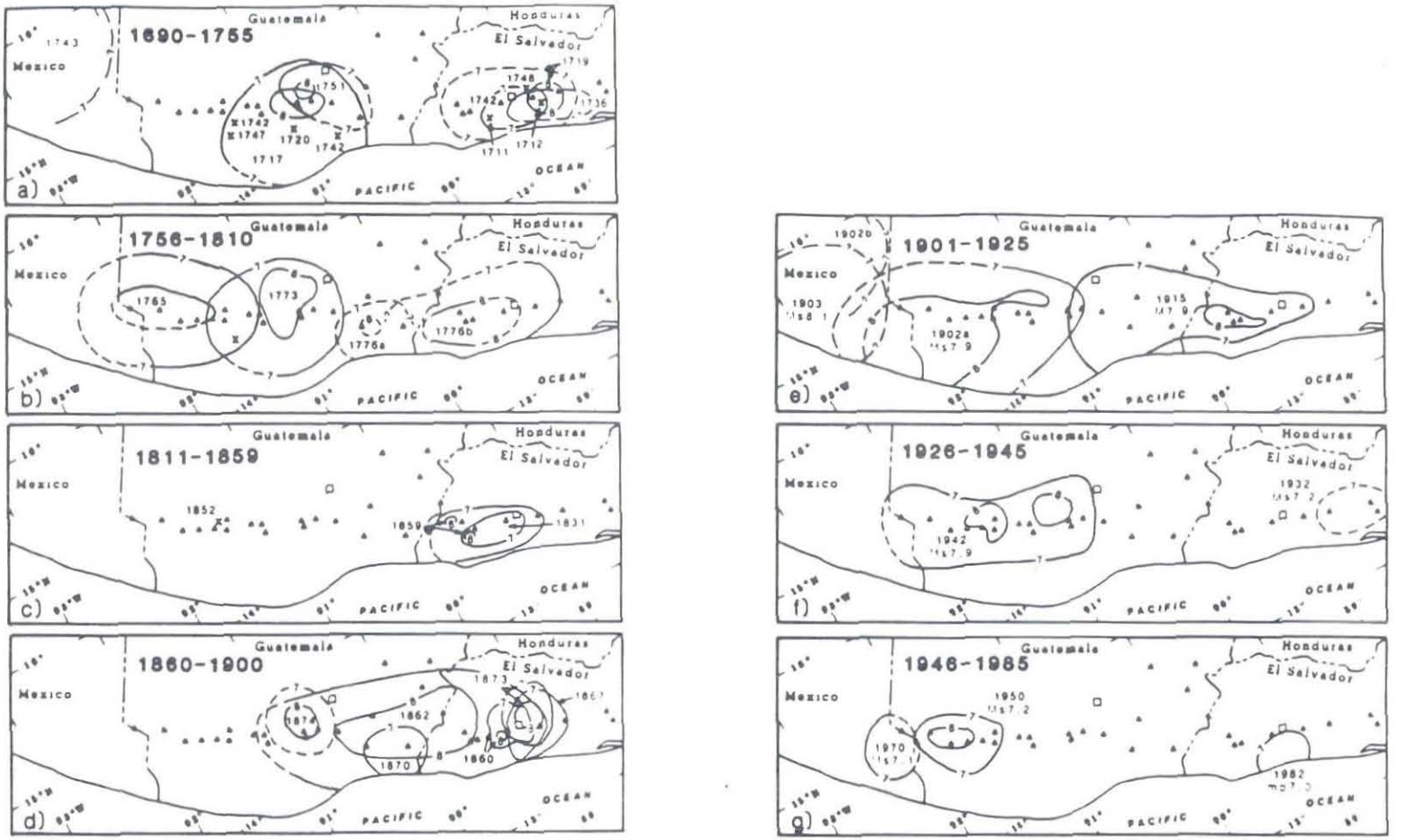

Figure 3.2. MMI contour lines for earthquakes that occurred in the Subduction Zone since 1690 (After White and Cifuentes, 1988.)

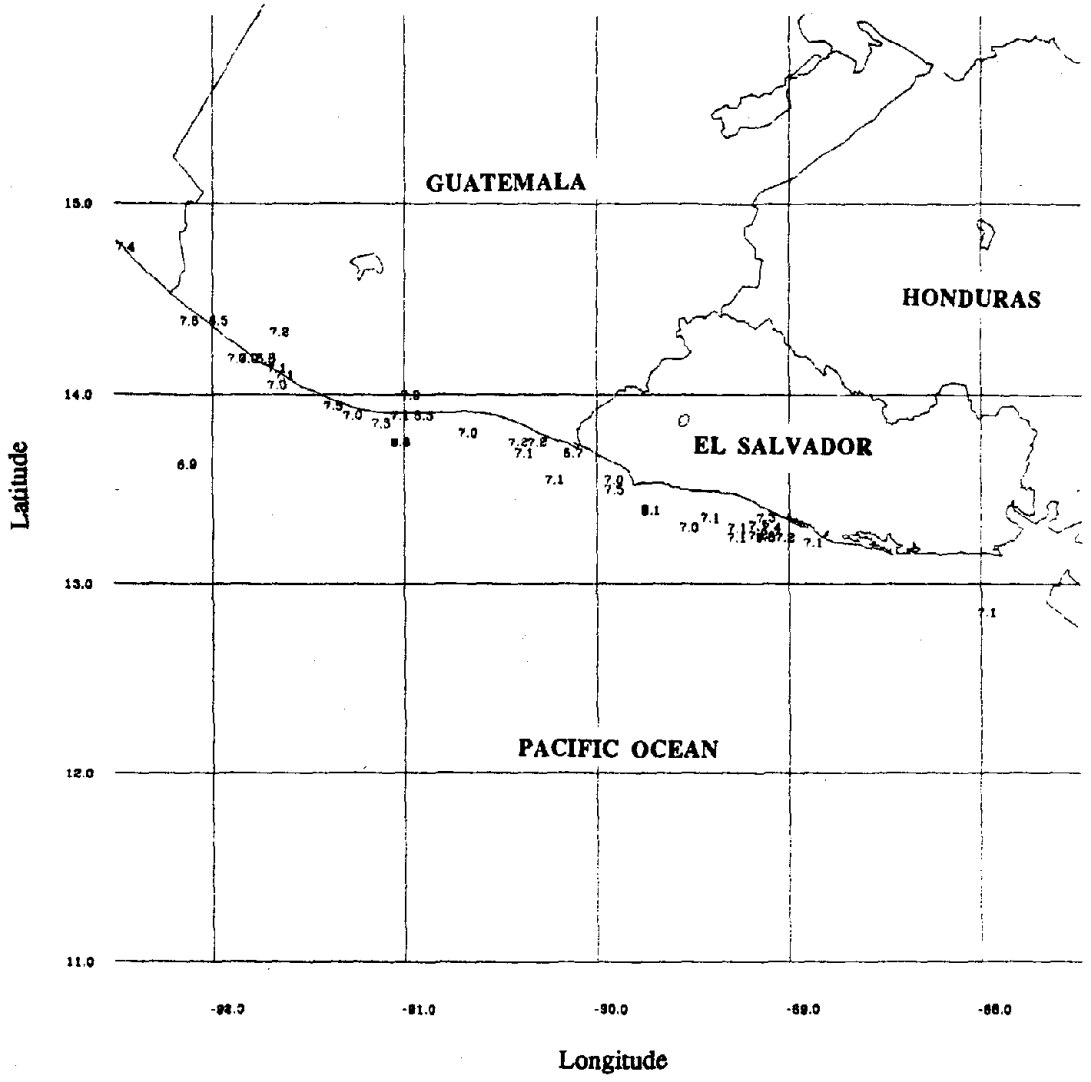

Figure 3.3. Seismic events that occurred in the Intermediate Benioff Zone (between 40 and 60 km depth) for $M_S \geq 7.0$.

3.3 Post - 1900 Seismicity

For the post - 1900 period, a search in several catalogs was conducted to collect both descriptive and instrumentally recorded seismicity. The descriptive seismicity catalogs provided a total of 42 events (see Figures 3.2 and 3.4) from a total of 3501 events for this period. The remaining recorded events were obtained from the International Seismological Center (ISC), the Coast and Geodetic Survey (CGS), Preliminary Determination of Earthquakes (PDE), the catalog of R. Geller (GELL), the catalog of L. Sykes (SYKES), and the Bulletin of the Seismological Society of America (BSSA).

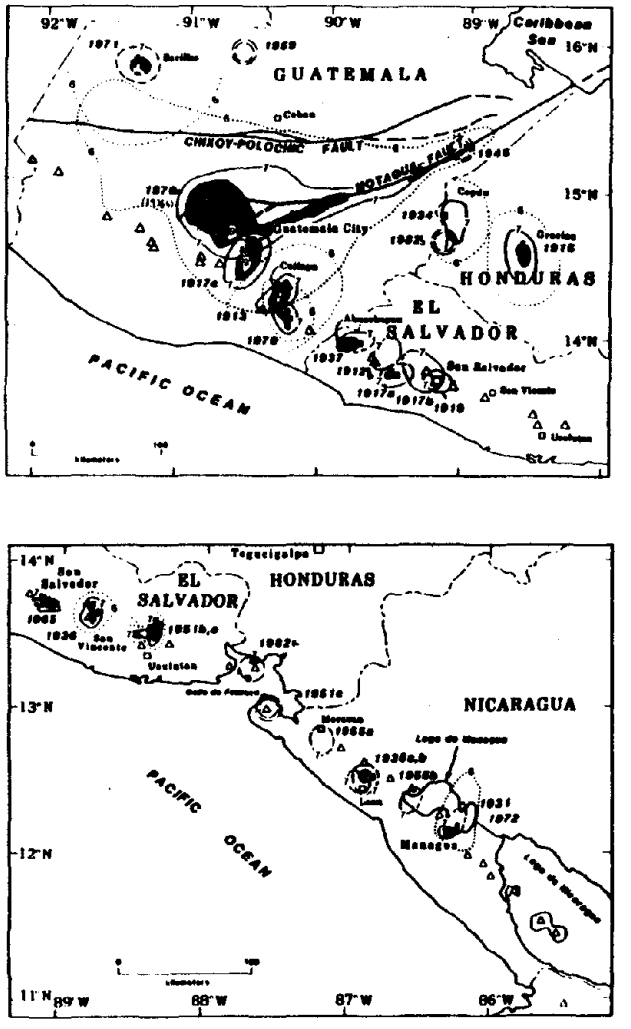

Figure 3.4. MMI contour lines for upper-crustal earthquakes of $M_S \geq 5.5$ since 1900 (After White and Harlow, 1988.)

The catalog for this period of time contains in most cases the following information: reference, date, time (Greenwich Meridian Time), epicenter location (in degrees, longitude and latitude), hypocentral depth (in km), body wave magnitude, and local magnitude.

The estimation of seismic parameters was done depending on the seismicity analyzed. Descriptive seismicity was treated according to the procedures described in Section 3.1. For instrumental seismicity, depths were assigned based on schemes for each seismic province presented in Chapter 2.

For many events, only the body wave magnitude was given. To convert this magnitude to local magnitude the following linear relationships was used:

$$M = a + mb \tag{3.3}$$

where a and b are regressive constants with the value of -3.47 and 1.61 respectively (Shah et al., 1975).

Appendix B contains a listing of all the data described in this section.

3.4 Sorting of data.

For hazard analyses purposes, the gathered seismicity needs to be sorted in seismic provinces. In this study, earthquakes were assigned following the definitions of the seismic provinces as described in chapter 2. The sorted seismicity for each seismic province is shown in table 3.1 and their epicenters and corresponding magnitudes are plotted in Figures C.1 to C.9 (see Appendix C.)

Epicenters in the Volcanic Chain province comprise a band of variable width (see Figure C.2). Some of the earthquakes farthest inland may not qualify as volcanic origin events because of their inland location. However, they are of low magnitude, thus their inclusion will not affect subsequent analyses. It is important to note that the largest magnitudes in this source have occurred in places where the distance between volcanoes is the longest. White and Harlow (1988) developed an equation to estimate maximum possible magnitude M_S using the distance between adjacent volcanoes,

$$M_S < 0.82 \log (D) + 5.1 \tag{3.4}$$

where D is the distance between adjacent volcanoes in kilometers.

Earthquake epicenters for the Shallow, Intermediate and Deep Benioff Zones are shown in Figures C.3 to C.5. Shallow and Intermediate events are spread mostly offshore

Central America. At deeper focal depths (>60 km) the earthquake epicenter band moves to the northeast as is expected. The major events of this seismic province ($M_S \geq 7.0$) are located in the Intermediate Zone in a section of about 280 km long which extends from Central Guatemala to Central El Salvador.

The Caribbean Plate Boundary is formed by the Chixoy-Polochic, Motagua and Jocatan-Chamelcon faults. Earthquake epicenters corresponding to these faults are plotted in Figures C.6 to C.8. One of the largest events of this seismic province is the M_W=7.5 on the Motagua fault. A similar magnitude event, M_W=7.6, occured on the Chixoy-Polochic fault in 1816.

The Honduras Depression Zone has the lowest rate of seismicity of all seismic sources in the study area. Its catalog is formed by 32 earthquakes with magnitudes between 3.0 to 6.3.

Seismic Province		Number of events of M≥3.0
Volcanic Chain		416
Benioff Zone	Shallow	1163
	Intermediate	448
	Deep	1418
Caribbean Plate Boundary		95
Honduras Depression		32

Table 3.1. Number of earthquakes assigned to each seismic province.

Earthquake epicenters of this province are plotted in Figure C.9. As it can be seen, most of the earthquakes have occurred in the eastern boundary of the province. The most active fault seems to be located to the northeast of the Aguan Fault. To the southeast, the

Santa Barbara, Jesus de Otoro, and Comayagua appear to be the most active grabens of the zone. It is interesting to note that the biggest magnitude earthquake (M_S=6.3) occurred in a place where no faults have been mapped.

3.5 Quality of Data

The data in the catalog of appendix B are extremely variable in quality. Inhomogeneities, as well as uncertainties associated with epicentral locations and magnitudes, are inherent to the data. Missing lower magnitude data is one of the most frequent problems with data catalogs. With increased instrumentation, considerably more events with M<5.0 have been recorded. The coverage of small magnitude earthquakes increased dramatically since 1962 when the World Standardized Seismographic Network (WWSN) was installed (Molnar and Sykes, 1969). This increase in earthquake recording in recent years has resulted in an apparent increase of earthquake occurrence with time. This problem is not seen for the highest magnitudes since large events are felt over greater areas and are thus more likely of being recorded. The catalog shown in appendix B is probably complete for M≥7.0 since 1711, M≥7.0 since 1920, M≥6.0 since 1940, and M≥4.8 since 1962.

Uncertainties in the data are also associated with the assignment of magnitudes and epicentral locations. The data from catalogs of descriptive seismicity may have errors of ±1/4 of a magnitude; the moment centroids can have errors of location of 10 to 25 km. For the data for which instrumental records exist, the values of magnitudes also can have errors as much as ±1/4 units of magnitude. Errors in epicentral location depend on the seismic source where the earthquake originated. For subduction earthquakes, epicenters can have error in location of ±50 km for the period from 1900 to 1963 and error of ±25 to ±30 km for post-1963 records. For an upper-crustal seismic source, the error in epicentral location can be as much as ±25 km for any period.

In summary, the existing data was treated according to the seismicity in consideration. The data were sorted according to the seismicity patterns of each seismic source. These data are used in the following chapter to develop earthquake recurrence relationships for each source.

CHAPTER 4

SEISMIC SOURCE MODELING

4.1 Introduction.

For hazard analysis purposes, a geometrical source model for the study region is defined. Faults and areas of earthquake activity are represented by lines and polygonal dipping planes. In addition, seismic parameters such as earthquake recurrence relationships and maximum credible earthquake are calculated for each seismic source.

4.2 Geometrical Modeling.

The model proposed for seismic hazard analysis purposes consists of a combination of fault zones and line sources. For seismic sources where a well defined fault trace was identified, the line source model was adopted. Seismic provinces where earthquakes cannot be assigned to a specific fault but fall within an active region are modeled as generalized fault zones.

4.2.1 Volcanic Chain Zone.

The limits of this zone are those for the seismic province defined in Chapter 3. A band of about 30 km wide that follows the axis of the chain of volcanoes is defined for this zone. A sectioned model for this band is considered to represent best the seismicity of the region. Three segments are defined (see Figure 4.1): the Guatemalan Segment (GS), which extends from the Mexico-Guatemala border to the Guatemala-El Salvador boundary; the Central El Salvador Segment (CESS) that extends from the eastern boundary of the previous segment to central El Salvador; and the Eastern El Salvador-Nicaragua Segment (EESS), which is situated from central El Salvador to central Nicaragua.

For hazard analysis purposes independent computations were performed for each segment. The focal depths for each of these subzones were considered to be 10 km.

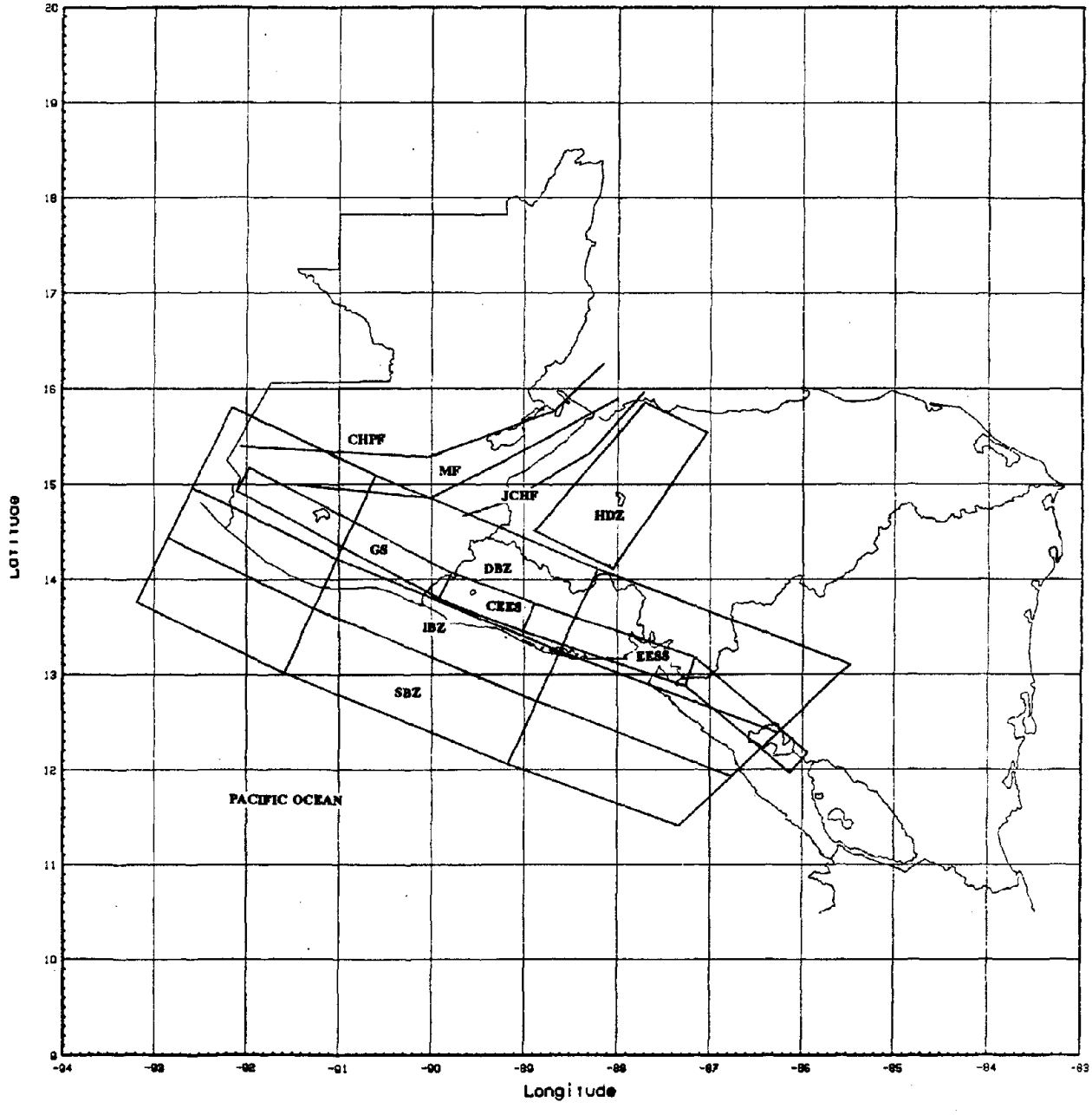

Figure 4.1. Seismic zone and fault line model.

4.2.2 Benioff Zone.

The boundaries of the Benioff Zone are the same defined for the seismic source in Chapter 3. Within this zone three subzones that vary with depth are identified: the Shallow (SBZ), Intermediate (IBZ), and Deep Benioff (DBZ) Zones. In addition each of these subzones is divided into three sections based on the segmentation of the Benioff Zone as discussed in Chapter 3. For the nine segments of this zone (see Figure 4.1), independent hazard calculations were computed. The focal depths are considered as follows: for Shallow Benioff Zone depths go from 0 to 35 km, for the Intermediate Benioff Zone depths go from 36 to 60 km, and for the Deep Benioff Zone depths go from 60 to 260 km.

4.2.3 Caribbean Plate Boundary.

Line source models were adopted for this seismic source and were located approximately along the geologic fault traces. The faults are the Chixoy-Polochic (CHPF), Motagua (MF), and Jocotan-Chamelecon (JCHF) faults and were sectioned in three segments, roughly according to historical ruptures of the faults themselves (see Figure 4.1). Independent computations were performed for each line model. Their focal depths were set at 7 km.

4.2.4 Honduras Depression Zone.

The boundaries of this zone (HDZ) correspond to the seismic province discussed in Chapter 3. The focal depth considered for this zone model is 8 km.

4.3 Frequency of Earthquake Occurrences.

For the purposes of hazard analysis, a statistical relationship between the frequency of earthquake occurrences and range of magnitudes is developed for each seismic province.

Some problems arise when searching for the statistical relationship that best represents earthquake occurrences in a region. The problem arises when more than one source of information is available. As discussed in Chapter 3, the information available for the study region is originated from two sources, historical and instrumental catalogs which also have different quality and completeness levels.

Several methods were considered in the development of earthquake recurrence relationships. These include the least squares method, the maximum likelihood method, and the maximum entropy method. After a detailed investigation it was determined that the

least squares method gives the best results and it was adopted for the recurrence calculations of all sources (for further discussion see Appendix D). Recurrence relationships are obtained by fitting a regression line through all earthquake data with $M \geq 3.0$ (M is defined as M_L for $M \leq 6.0$ and M_S otherwise). In general, the number of earthquakes, N(M), that occur above a given magnitude M is given by the following relationship:

$$\ln N(M) = \alpha + \beta M \tag{4.1}$$

where	N(M)	=	Number of events above magnitude M
	M	=	Magnitude
	α and β	=	Regression constants

α is a measure of the number of events above magnitude zero for a given source and β is the measure of the seismic severity for a given source.

For some of the sources, a single regression line fitted through the data resulted in a recurrence relation which overestimates the number of occurrences at large magnitudes. Due to the lack of completeness of earthquake occurrences in the low magnitude range over time, the regression line shifts down at the low magnitudes decreasing the slope of the line. Following Kiremidjian et al. (1979) and Shah et al. (1975), a bilinear recurrence relationship was used to fit the data where differences in slope were observed between small and large magnitude frequency of occurrence (see Figures D.1-D.16 in Appendix D). Earthquake recurrence parameters based on the maximum likelihood method were also obtained to take in account the missing data in various time and magnitude intervals (Weichert, 1980); however, the results were found inadequate primarily due to the large differences of observation time for the different magnitude intervals (see Appendix D). Consequently, this approach was abandoned.

Table 4.1 shows values of α and β, the break point magnitude (BPM), and the upper cutoff magnitude (CM). The parameters α and β are values obtained from the regression analysis. The break point magnitude is the magnitude where the slope of the recurrence lines change. The maximum cutoff magnitude is a value determined based on fault length, rupture area (equations 3.1 or 3.2), distance between adjacent volcanoes (equation 3.4) or maximum magnitude known for the seismic source.

Seismic Sources	Regression constants, break point magnitude (BPM), and upper cutoff magnitude (CM)					
	α_1	β_1	α_2	β_2	BPM	CM
• Volcanic Chain						
Guatemala Segment	7.765	-1.081	-	-	-	6.8
Central El Salvador Segment	4.544	-0.310	17.745	-2.633	5.68	6.5
Eastern El Salvador Segment	5.526	-0.296	14.435	-1.958	5.35	6.6
• Benioff Zone						
Shallow Benioff Zone						
Segment 1	9.343	-1.410	-	-	-	7.7
Segment 2	8.479	-1.079	-	-	-	8.1
Segment 3	9.406	-1.192	-	-	-	7.9
Intermediate Benioff Zone						
Segment 1	5.760	-0.525	16.134	-2.028	6.90	7.8
Segment 2	5.639	-0.363	23.369	-2.901	6.99	8.2
Segment 3	8.856	-1.306	-	-	-	7.8
Deep Benioff Zone						
Segment 1	10.226	-1.364	-	-	-	7.9
Segment 2	10.604	-1.312	-	-	-	8.2
Segment 3	7.108	-0.505	11.555	-1.499	4.47	8.2
• Caribbean Plate Boundary						
Chixoy-Polochic Fault	4.428	-0.384	11.193	-1.403	6.64	7.8
Motagua Fault	4.513	-0.342	6.929	-0.898	4.35	7.7
Jocotan-Chamelecon Fault	4.371	-0.575	-	-	-	7.4
• Honduras Depression Zone	3.367	-0.143	7.529	-1.225	3.85	6.2

Table 4.1. Regression constants for the seismic sources as defined by equation 4.1.

CHAPTER 5

PROBABILISTIC HAZARD ANALYSIS MODELING

5.1 Introduction.

This chapter reviews the two stochastic seismic hazard models used in the development of the seismic hazard maps for El Salvador. These include the Bayesian model (Mortgat and Shah, 1979) and the slip-predictable model (Kiremidjian and Anagnos, 1984) which are discussed briefly.

The purpose of seismic hazard analysis is to predict earthquake occurrences in a form of an expected number of events or probability of exceedence of a given earthquake magnitude for a period of time t (Anagnos and Kiremidjian, 1988). For engineering purposes, the hazard estimates are often expressed in terms of probabilities of exceeding various ground motion levels in future time t. In order to obtain these hazard estimates, the Bayesian model, which is based on homogeneous Poisson assumption with fault rupture model and Bayesian parameters, and the Markov renewal model are used in this study. The main difference between these models is the assumed underlying earthquake generating mechanism.

5.2 Bayesian Hazard Model.

A variety of stochastic occurrence models for earthquakes based on the Poisson process have been developed (see Anagnos and Kiremidjian, 1988). The Poisson process assumes independence of earthquake sequences in time and space. However, the model to be used for hazard mapping purposes, the Bayesian model, has the advantage over the simple homogeneous Poisson models in that it includes subjective information for earthquake occurrences.

It is well known that the use of incomplete historical data to determine the future seismic activity of a region can result in erroneous conclusions. In such cases, as is the case of the seismic data for El Salvador, consideration of geological and seismological information can improve considerably the reliability of the predictions of the seismicity of the region.

5.2.1 Model Formulation.

The Bayesian model considers the parameters of the distributions as random variables. This defines a compound distribution (Benjamin and Cornell, 1970) which is a distribution of a random variable with parameters that are also random variables. The marginal distribution of the random variable independent of the parameters can be written as,

$$f_X(x) = \int f_X(x|\tilde{\theta}) f''_{\Theta}(\tilde{\theta}) d\tilde{\theta} \tag{5.1}$$

where

$\tilde{\theta}$ = a vector of parameters defined on Θ.
$f_X(x)$ = the Bayesian distribution on X.
$f_X(x|\tilde{\theta})$ = the model distribution on X given the parameters $\tilde{\theta}$.
$f''_{\Theta}(\tilde{\theta})$ = the posterior distribution of $\tilde{\theta}$.

the posterior distribution on the parameters $\tilde{\theta}$ is given as follows:

$$f''_{\Theta}(\tilde{\theta}) = N_1 L(\tilde{\theta}) f'_{\Theta}(\tilde{\theta}) \tag{5.2}$$

where

$f'_{\Theta}(\tilde{\theta})$ = the prior distribution on $\tilde{\theta}$.
$L(\tilde{\theta})$ = the likelihood function on $\tilde{\theta}$.
N_1 = a normalizing constant.

Following this scheme and using the concept of conjugate distributions, Mortgat and Shah (1979) developed expressions for the marginal distribution on the number of occurrences (n) and a distribution on the number of earthquakes of fixed magnitude (M_i) given that n earthquakes have occured. In their model, earthquake occurrences are assumed to form a Poisson process with mean rate of occurrence λ. The parameter λ is treated as a random variable and Bayesian statistics are applied to include subjective knowledge on historical data. The subjective probability distribution on λ (prior distribution) is chosen to be gamma with parameters λ' and ν'. Using recorded data on earthquake occurrences,

the sample likelihood function on λ can be obtained. The posterior distribution on λ is determined by combining the prior distribution and the sample likelihood function on λ and applying Bayes' theorem given by Equation 5.2. Convolving the conditional Poisson process for the number of earthquake occurrences with the posterior distribution on λ, the marginal Bayesian distribution of the number of occurrences n is derived (for detailed information see Mortgat and Shah, 1979).

The generating process for the number r_{M_i} of events of any specific M_i given that a total of n events have occurred is assumed to be binomial, with probability of success P_{M_i}. The parameter P_{M_i} is treated as a random variable. The conjugate prior distribution on P_{M_i} is assumed to be beta with parameters η'_{M_i} and ε'_{M_i} which can be obtained from subjective information. For this study, the fitted lines for earthquake recurrences determined in Chapter 4 constitute this subjective input. For each source, the relationship that describes the recurrence of the various M_i magnitudes is given as follows:

$$\ln N(M)=\alpha+\beta M \qquad (4.1)$$

(repeated)

where

N(M)	=	number of events above magnitude M
M	=	magnitude
α and β	=	regression constants.

The parameter η'_{M_i} represents the subjective information about the number of events that occurred in a seismic source above a given lower bound, and ε'_{M_i} represents an equivalent number of events of magnitude M_i.

Using occurrence data, the sample likelihood function on P_{M_i} can be obtained from the generating binomial process. Thus, having determined the parameters of the prior distribution and the sample likelihood function, the posterior parameters η''_{M_i} and ε''_{M_i}, which completely defines the posterior probability distribution on P_{M_i} of magnitude M_i, can be determined using the concept of conjugate distribution. Finally, the conditional generating process of r_{M_i} and the posterior distribution on P_{M_i}, are convolved to obtain the marginal distribution on the number of success M_i's.

Marginal Distribution on the Number of Magnitudes. Combining the Bayesian distributions discussed above, a distribution that describes the seismicity of the source considered is obtained in terms of two parameters, the magnitude (M_i) and the number of occurrences (n). This distribution is written as follows, (Mortgat and Shah, 1979):

$$P_R(r_{M_i}) = \sum_{n=0}^{\infty} \left[C_n^{r_{M_i}} \frac{\Gamma(\eta''_{M_i})}{\Gamma(\varepsilon''_{M_i})\,\Gamma(\eta''_{M_i} - \varepsilon''_{M_i})} \cdot \frac{\Gamma(r_{M_i} + \varepsilon''_{M_i})\,\Gamma(n + \eta''_{M_i} - r_{M_i} - \varepsilon''_{M_i})}{\Gamma(n + \eta''_{M_i})} \right] \cdot \left[\frac{\Gamma(n + \nu'')\, t^n\, \lambda''^{\nu''}}{n!\,\Gamma(\nu'')\,(t + \lambda'')^{n+\nu''}} \right] \tag{5.3}$$

where

$P_R(r_{M_i})$ = probability that there are r_{M_i} events of magnitude M_i.

$\lambda'' = \lambda' + T$ = parameter of the posterior distribution on λ.

$\nu'' = \nu' + N$ = parameter of the posterior distribution on λ.

$\varepsilon''_{M_i} = \varepsilon'_{M_i} + R_{M_i}$ = parameter of the posterior distribution on P_{M_i}.

$\eta''_{M_i} = \eta'_{M_i} + N$ = parameter of the posterior distribution on P_{M_i}.

$C_n^{r_{M_i}} = \frac{n!}{r_{M_i}!\,(n - r_{M_i})}$ = the binomial coefficient.

r_{M_i} = integer describing the number of events with magnitude M_i ($0 \le r_{M_i} \le n$).

Using this equation, the computation of hazard estimates in terms of the ground motion parameter (peak ground acceleration, PGA) is provided. The distributions that describe the seismicity of all sources (equation 5.3) are combined with the distributions on the attenuation of peak ground acceleration (see Chapter 6). The contribution of all sources is superimposed to obtain the probability of exceeding of peak ground acceleration. This procedure is used to obtain risk consistent design parameters which when applied to the study region, seismic hazard maps can be obtained and further related to seismic zones for structural design code formulation (Kiremidjian et al.,1979).

5.3 Markov Renewal Hazard Model.

As it has been indicated in other studies (Kiremidjian and Anagnos, 1984; Kiremidjian and Suzuki, 1987; and Anagnos and Kiremidjian, 1988), the assumptions of temporal and spatial independence of the earthquake generating process is violated when characterizing large infrequent events or when modeling seismic hazard for regions with a regular earthquake occurrence patterns. In this study, the Markov renewal model (Kiremidjian and Suzuki, 1987) is applied to a segment of the Benioff Zone which is characterized by large infrequent earthquakes (see Figure 5.1). The remaining sources are modeled using the Bayesian model. The results from the two models are combined to obtain hazard estimates throughout El Salvador.

5.3.1 Model Formulation.

Kiremidjian and Anagnos (1984), postulated the hypothesis that the size of future events depends on the elapsed time since the last event. Interarrival times of events are assumed to be Weibull distributed random variables and the sequence of earthquakes then can be represented as a Markow renewal process.

Figure 5.2 shows schematically the assumptions of the slip-predictable model. Let E = [1,2,.....,N] be the state space for N discrete stress levels (see Figure 5.2c) and

Y_n = the size of the nth event
T_n = the time of the nth event

The set $\{Y_n : n \geq 0\}$ are random variables assuming values in E and the set $\{T_n : \geq 0\}$ is such that $0 < T_0 < T_1 < .....$ The stochastic process $\{Y_n, T_n : n \geq 0\}$ is a Markov renewal process provided that

$$P[Y_{n+1} = j, T_{n+1} - T_n \leq t \mid Y_0 \cdots Y_n : T_0 \cdots T_n]$$

$$= P[Y_{n+1} = j, T_{n+1} - T_n \leq t \mid Y_n = i] = Q(i,j,t)$$

for all $i,j \in E$; and $t \geq 0$. (5.4)

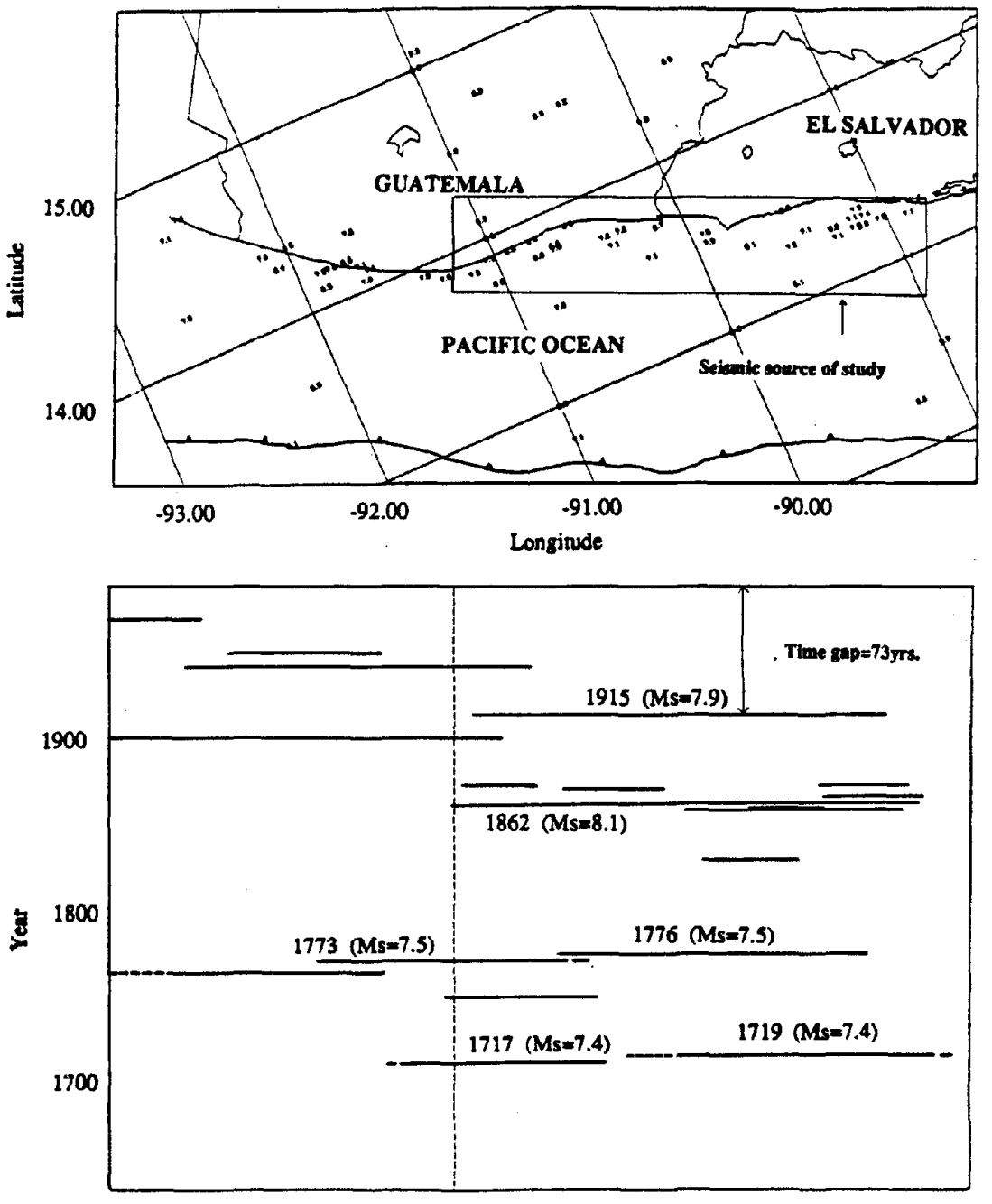

Figure 5.1. Benioff Zone earthquakes ($M_S \geq 7.0$) since 1711 along a section of the Middle America Trench near El Salvador.

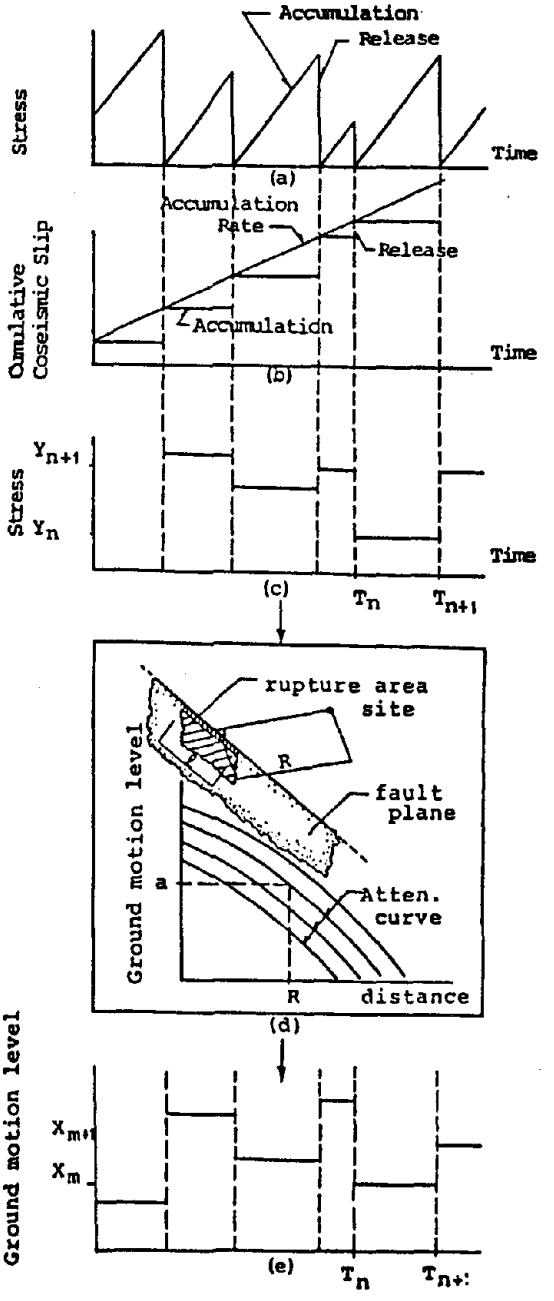

Figure 5.2. Schematic representation of: (a) slip-predictable model; (b) cumulative coseismic slip in time; (c) corresponding sample path for the Markov renewal process; (d) the source-to-site characterization; and (e) the resulting site-hazard sample path. (From Kiremidjian and Suzuki, 1987)

Thus, the joint probability of Y_{n+1} and $T_{n+1} - T_n$ depends only on the state visited at time T_n. In other words, the size of the next event depends only on the time of occurrence of the last event.

Furthermore, Kiremidjian and Suzuki (1987) redefine this state space E to information on site ground motion. This transformation is schematically shown in Figure 5.2d and the final state space is represented in Figure 5.2e.

Thus, in order to determine the probability of exceedence from all possible events of a specific level of ground motion, the following state space is defined:

$$U = [U_1, U_2, \cdots\cdots U_N, U_{N+1}\cdots\cdots, U_{2N}] \tag{5.5}$$

where

$$U_i = \{a < a_o \text{ and } Y_n = i\} \qquad \text{for } i = 1,2,\ldots, N,$$
$$U_i = \{a > a_o \text{ and } Y_n = i - N\} \qquad \text{for } i = N+1,\ldots, 2N.$$

The states U_i describe the joint event that a ground motion level, a_o, is not exceeded when the size of the nth event is i, for i = 1,2, ..., N, or that the ground motion level a_o is exceeded when the size of the nth event is i - N, for i = N + 1, ..., 2N. The set $\{X_n : n \geq 0\}$ are random variables assuming values in U and the set $\{T_n : n \geq 0\}$ is such that $0 < T_0 < T_1 < .....$ Thus, X_n's visit states U_i at times T_n. In order to define the process, the holding time distribution, $h_{ij}(t)$ and the transition probabilities need to be described.

The holding time distributions are defined on the basis of the Weibull interarrival times with cumulative probability distribution given as follows:

$$F_T(t) = 1\text{-}\exp\left(-\phi_1 t^{\phi_2}\right) \qquad \text{for } \phi_1,\phi_2 > 0,\ t \geq 0 \tag{5.6}$$

where ϕ_1 and ϕ_2 are the parameters of the distribution. This distribution has an increasing hazard rate for values of ϕ_2 greater than 1.

For the transition probabilities, let

$$q_{ij} = P\{\text{process enters state j next / it was last in state i}\}$$

$$= \int_R \int_\varepsilon f_{\varepsilon|Y,R}(\xi) f_{R|Y}(r)\, p_{ij}\, dr\, d\xi \tag{5.7}$$

where $f_{\varepsilon|Y,R}(\xi)$ is the distribution of the scatter on the ground motion acceleration, a, assumed to be lognormal with unit median and variance $\sigma^2_{\ln\xi}$; $f_{R|Y}(r)$ is the probability density of the nearest distance from the rupture to the site, and the p_{ij}'s are the transition probabilities of the process $\{Y_n : n \geq 0\}$.

Thus, the probability of exceeding a level of acceleration a_o at least once in time (0,t] given that state i is entered at time 0 is denoted by $G_i\ (X \geq j, k \geq 1|t)$. This probability is calculated by considering the complementary probability of zero events of size $X \geq j$ in (0,t]; in other words,

$$G_i\ (X \geq j, k \geq 1|t) = 1.0 - G_i\ (X \geq j, k= 0|t) \tag{5.8}$$

and

$$G_i(X\geq j, k=0|t) = \sum_{r=1}^{N} \int_0^t q_{ir}h_{ir}(\tau)G_r(X\geq j, k=0|t-\tau)d\tau + H_i(t) \tag{5.9}$$

where $H_i(t)$ is the complementary cumulative holding time distribution. Computations of probabilities of exceeding a ground motion level are provided by this equation.

The probability of at least one event of size $X\geq j$ in time $(t_1,t]$, given that there were no occurrences in time $(0,t_1]$, that is in a duration gap t_1, is computed for hazard analysis purposes. The probability of no events of any size in time $(0,t_1]$ is given by $G_i(0|t_1) = H_i(t_1)$. Thus, the joint probability of no events of size $X \geq j$ in time $(t_1, t]$ and no events of any size in time $(0, t_1]$ is given by

$$G_i(X\geq j, k=0,t_1|t) = \sum_{r=1}^{N} \int_{t_1}^t q_{ir}h_{ir}(\tau)G_r(X\geq j, k=0|t-\tau)d\tau + H_i(t) \tag{5.10}$$

Considering the complementary probability of equation (5.10), the probability of at least one event of size $X \geq j$ in time $(t_1,t]$ given that there were no events in time $(0, t_1]$ is given by

$$G_i\ (X \geq j, k \geq 1|t_1, t) = 1.0 - G_i\ (X \geq j, k = 0, t_1|t) / H_i\ (t_1) \tag{5.11}$$

Using these equations the computation of the site hazard in terms of the ground motion parameter a (peak ground acceleration, PGA, for this study), is provided. These

computations are functions of the forecast time t (the economic life of the structure) and the duration of the gap, t_l.

5.4 Parameter Estimation.

In this section, an evaluation of the parameters needed for the application of the hazard models is conducted. For the Bayesian model, a search for a fault rupture model, and the evaluation of the parameters of the posterior distribution on the mean rate of occurrence λ and the posterior distribution on the probability of success, P_{M_i}, of the number of events of any specific magnitude given that a total number of events have occured are conducted for all sources. For the Markow hazard model, a calculation of the fault rupture-site geometry model, and the evaluation of the parameters for the holding time distribution and the coseismic slip rate are conducted for the Intermediate Benioff Zone segment.

5.4.1 Bayesian Model Parameter Estimation.

In this model it is assumed that the maximum ground motion is caused by waves arriving from the nearest point on the rupture length on the fault zone. For the case of line sources, fault rupture is considered along the length of the fault. For area sources, the length of the rupture is given by a magnitude-rupture relationship and the width is calculated as half of the length of the rupture area. In addition, the rupture process near the ends of the fault are required to satisfy geometric as well as seismic constraints (Mortgat and Shah, 1979).

Among the magnitude-rupture relationships available are these developed by White and Cifuentes (1988), Schwartz et al.(1984), and Bonilla et al. (1984) (see Figure 5.3).
For Subduction Zone seismic sources, the relation from White and Cifuentes is chosen because it fits the model segmentation proposed in Chapter 4. For instance, for $M_S = 8.2$ the rupture length is about 280 km which corresponds roughly to the length of the middle segment of the Subduction Zone. For local faults the relationship from Schwartz et al. is selected. For these faults, the equation of White and Cifuentes was disregarded since it saturates for earthquakes in a range of $M_L < 6.37$. For the 1976 earthquake on the Motagua Fault, $M_W = 7.5$ (M_W is approximately equal to M_S at values of 7.5), the fault ruptured about 200 km. The relationship by Bonilla et. al. (1984), was considered inappropriate since for a magnitude $M_S = 7.5$ the rupture length is found to be 85 km. The relationship by Schwartz et al. (1984) gives a better approximation, for a magnitude of 7.5 the rupture length is 170 km.

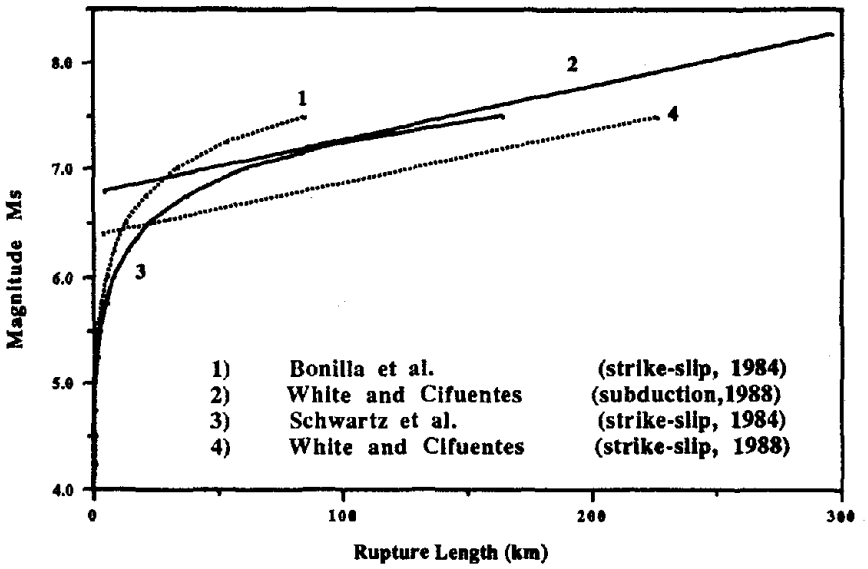

Figure 5.3. Fault rupture relationships.

Parameter estimation. The parameters needed to implement the model are of two kinds: the available data, presented in Chapter 3, and the subjective input introduced through Bayesian analysis.

The parameters T and N of the sample likelihood for the mean rate of occurence, λ, are determined from the data. T represents the time base for which data is available. For instance, T is 256 years for the Guatemalan Segment of the Volcanic Chain (see Table E.1 in Appendix E). N represents the total number of occurrences observed on the source considered during this period of time.

The parameters λ' and ν' of the prior Gamma distribution on λ are determined from the subjective input of the analyst. In this study, it is assumed that the numerical values of λ' and ν' are respectively equal to T and N for each corresponding source. In other words, the analyst has the same confidence in the data available and in his subjective input.

The values for λ'' and ν'', the parameters for the posterior distribution on λ, are based on the values of λ', ν', T and N. Then, probability function for λ for the source considered during a future time t is defined, in a posterior sense.

The parameters N and R_{M_i} of the sample likelihood function for P_{M_i} can be determined from the data available. N as before, represents the total number of events observed on the source under consideration and R_{M_i} represents the number of earthquakes of magnitude M_i recorded on the same source. R_{M_i} must be determined for each source and each M_i.

The parameters η'_{M_i} and ε'_{M_i} of the conjugate beta prior distribution on P_{M_i} are determined from the subjective input of the analyst. For this study, the subjective input is constituted by the analytical recurrence relationships fitted in Chapter 4 for each seismic source.

Finally, the values for η''_{M_i} and ε''_{M_i}, the parameter for the posterior distribution on P_{M_i}, can be determined based on the values for η'_{M_i}, ε'_{M_i}, N, and R_{M_i}. Thus, in a posterior sense, the probability distribution of P_{M_i} of magnitude M_i for a source is determined. The values for all the parameters defined before are summarized in Tables E.1 to E.16 in Appendix E.

5.4.2 Markov Hazard Model Parameter Estimation.

In Equation (5.7), $f_{R|Y}(r)$ is the probability density function of the nearest distance from the rupture zone to the site and depends on the fault-to-site geometry. For hazard analysis purposes, the region of study was discretized in partitions of 0.20° in both directions (N-S and E-W directions). Fault-to-site geometries were calculated for each nodal point (see Figure 5.4). All the possible geometries calculated are covered by the four geometric models developed by Kiremidjian and Suzuki (1987), for which the cumulative probability distribution for the nearest distance from the source to the site are also developed.

Parameter Estimation. In order to implement the hazard model, the slip rate, the interarrival times, and the holding times were determined for the Intermediate Benioff Zone segment. Thatcher and Hank's (1973), Davies and Brune's (1971), and Utsu and Seki's (1954) relationships were used for moment-magnitude, moment-average seismic slip, and magnitude-fault rupture area, respectively (see Table 5.1).

The seismic source to be applied to the model is shown in Figure 5.1. From this figure, it can be appreciated a periodic release of energy (foreshock, mainshock, and aftershocks); therefore, the applicability of a temporal dependent earthquake generating process was investigated. Figure 5.5 shows a plot of the cumulative moment release vs. time for this segment; clearly, a dependence of the amount of energy release with the time elapsed since the last major release of energy is obvious. In addition from Figure 5.5, the slip-predictable model with constant slip rate seems to fit adequately. The interarrival time of release of energy was estimated to be 65 years with a standard deviation of 18 years. The estimated slip rate was of 3.13 cm/yr.

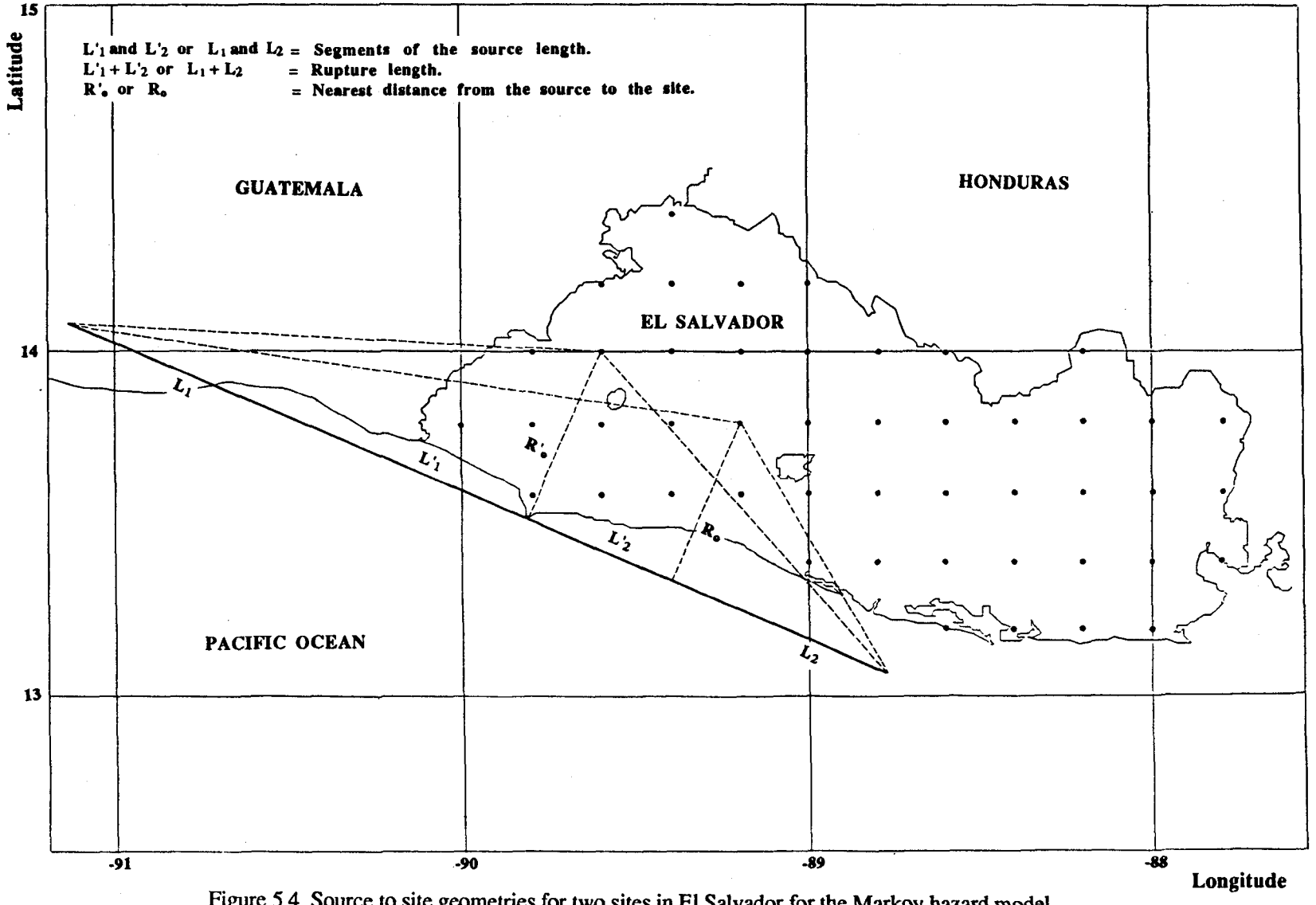

Figure 5.4 Source to site geometries for two sites in El Salvador for the Markov hazard model. The source-to-site geometry was developed for each nodal point shown on the map (dots). The source is at 50 km depth and the sites at the surface.

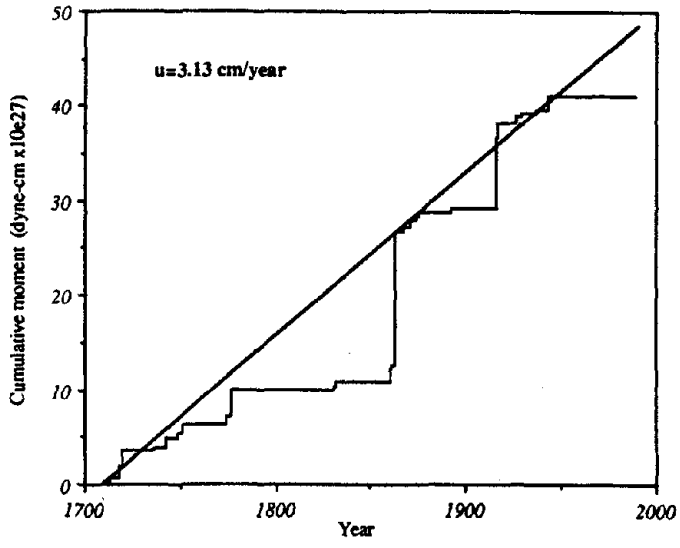

Figure 5.5 Cumulative moment release vs. time in the segment of study (see Figure 5.1), the slip rate is estimated from the best fit through the data.

Using this constant slip rate, the holding time threshold values were estimated (see Table 5.1). The interarrival times of major releases of energy are assumed to be Weibull distributed. Using the method of moments, the parameters ϕ_1 and ϕ_2 of equation (5.6) are determined from the average interarrival time. The values obtained are 0.28×10^{-7} and 4.06 respectively. It is important to note, that for all the site hazard computations of this seismic source a gap time of 75 years was included since the last large earthquake in the region was in 1915.

5.5 Contribution of a Single and Several Seismic Sources.

In order to determine the ground motion hazard at a site the contribution of all sources must be integrated. For this purpose Equations 5.3, 5.11 with parameters specific to each seismic source are combined with a seismic ground motion model (see Chapter 6) to determine the probability of exceeding various ground motion levels at the specified site.

State	Magnitude (Ms)	Moment M_O (x 10^{27} dyne-cm)	Rupture Area S(km^2)	Displacement $\dot{u}$ (cm)	Holding Time ($\dot{u}$=3.13 cm/yr)
1	7.50<M≤7.75	4.22	7852	162.9	52
2	7.75<M≤8.00	10.00	14125	214.5	68
3	8.00<M≤8.25	23.70	25410	282.6	90
4	8.25<M≤8.50	56.20	45709	372.6	119

Table 5.1. Parameters for the slip-predictable Model-Middle America Trench, El Salvador.

The contribution from all seismic sources to a single site is computed assuming spatial independence. The composite probability of exceedence of a given acceleration level is obtained as follows:

$$P_T = 1.0 - \prod_{i=1}^{N} (1.0 - P_i) \tag{5.12}$$

where P_T is the probability of exceedence of a given acceleration , a, in a future time t when events occur in all seismic sources. P_i is the probability of exceedence for a given level of acceleration, a, in time t for the ith source.

In summary, this chapter reviews the two seismic hazard models used in this study. Their application to the seismicity of El Salvador and discussion of results will be presented in Chapter 7.

CHAPTER 6

STRONG GROUND MOTION PARAMETER ESTIMATION

6.1 Introduction.

In this chapter, strong ground motion attenuation functions are developed specifically for El Salvador. As it was indicated in a previous chapter, several tectonic regimes are found in the study region. Since subduction earthquakes are different in travel paths and stress conditions from near-source events (Campbell, 1981), the analysis will dependent upon the origin of the events.

6.2 Data Base.

The data base consists mainly of accelerograms produced by earthquakes that occurred in Central America. Recordings were obtained from basements, first floors, and free field sites by SMA-1 and AR-240 strong ground motion instruments (Knudson et al., 1973; Shakal et al., 1987).

As indicated above, for analysis purposes the data base was classified according to the origin of the events. Tables 6.1 and 6.2 show the data base used for the near-source and far-source regression analysis. For the near-source data base, seven records come from the San Salvador earthquake in 1986, eight records are from the mainshock, foreshocks, and aftershocks of the Nicaragua earthquake in 1972, and the remaining five records come from the mainshock and aftershocks of the motagua earthquake in 1976. For the far-source data base, all records are from different events recorded at the Observatorio in San Salvador.

6.3 Variables.

As in many other studies (Hasegawa et.al., 1981; Sabetta and Pugliese, 1987; and Joyner and Boore, 1988), the peak ground acceleration (PGA) was chosen as the ground motion parameter. They were taken from digitized strong ground motions when available; otherwise they were scaled from the original accelerograms. From the three components of motion, the larger of the two horizontal acceleration components was selected for purposes of analysis.

Date	Time	Latitude (°N)	Longitude (°W)	M *	Depth (km)	R(Epi) (km)	amax (g)	Station	Site Geol.
01/04/68	10 03	12.11	86.25	4.6	5	2	0.13	3500Mana	1B
01/03/72	04 31	12.20	86.24	4.1	5	9	0.04	3500Mana	1B
01/03/72	04 31	12.20	86.24	4.1	5	11	0.15	3501Mana	1B
01/05/72	11 52	12.24	86.24	4.2	5	16	0.12	3502Mana	1B
01/05/72	11 52	12.24	86.24	4.2	5	14	0.22	3501Mana	1B
12/23/72	06 29	12.25	86.27	6.2	5	13	0.39	3501Mana	1B
12/23/72	07 17	12.14	86.33	5.0	5	1	0.19	3501Mana	1B
12/23/72	07 19	12.20	86.30	5.2	5	7	0.33	3501Mana	1B
02/04/76	09 01	14.87	90.51	7.5	10	23	0.60	3200Guate	2
03/07/76	02 54	14.67	90.99	5.1	7	33	0.20	254Chi	2
03/07/76	03 15	14.75	91.05	5.1	7	22	0.19	315Chi	2
03/09/76	07 42	14.70	91.05	5.2	7	27	0.12	742Chi	2
04/26/76	15 24	15.06	89.60	4.1	7	11	0.08	1524Zac	2
10/10/86	17 49	13.67	89.19	5.8	10	5	0.54	IGNSSalv	2
10/10/86	17 49	13.67	89.19	5.8	10	4	0.71	CIGSSalv	2
10/10/86	17 49	13.67	89.19	5.8	10	1	0.66	OBSSSalv	1A
10/10/86	17 49	13.67	89.19	5.8	10	6	0.72	IVUSSalv	--
10/10/86	17 49	13.67	89.19	5.8	10	5	0.47	HCRSSalv	1B
10/10/86	17 49	13.67	89.19	5.8	10	5	0.43	UCASSalv	1B
10/10/86	17 49	13.67	89.19	5.8	10	8	0.31	HSHSSalv	1B

*M as defined in section 6.3.

Table 6.1. Near-source strong ground motion data.

Date	Time	Latitude (°N)	Longitude (°W)	M *	Depth (km)	R(Epi) (km)	amax (g)	Station
05/26/65	04 58	13.40	90.70	5.2	39	168	0.005	3300SSalv
03/13/66	21 46	14.20	88.40	4.2	36	104	0.004	3300SSalv
11/18/67	12 17	13.40	89.20	5.1	70	33	0.014	3300SSalv
11/18/67	12 26	13.40	89.10	4.7	78	35	0.018	3300SSalv
09/10/78	23 24	12.27	91.50	5.6	94	298	0.017	3300SSalv
10/30/78	18 24	13.88	91.05	5.3	73	204	0.010	3300SSalv
12/06/78	11 53	13.14	89.64	5.9	50	78	0.016	3300SSalv
12/18/78	02 31	13.13	88.26	5.3	85	129	0.014	3300SSalv
10/27/79	14 36	14.20	90.88	7.0	58	193	0.048	3300SSalv
10/27/79	21 43	13.78	90.73	6.8	65	169	0.036	3300SSalv
11/04/80	16 21	13.86	90.93	5.4	83	191	0.007	3300SSalv
01/09/82	01 55	13.50	88.64	4.7	80	65	0.013	3300SSalv
03/06/82	21 24	12.90	88.45	4.9	65	121	0.013	3300SSalv
06/19/82	06 22	13.45	89.37	7.2	55	33	0.340	3300SSalv
06/20/82	14 23	13.45	89.33	5.4	55	31	0.026	3300SSalv
07/02/82	11 59	13.26	89.29	5.9	65	49	0.033	3300SSalv
10/27/82	07 41	13.46	89.42	5.1	70	33	0.060	3300SSalv
03/02/83	15 37	13.30	89.20	4.8	90	44	0.015	3300SSalv
04/29/83	01 02	13.42	89.18	4.9	82	31	0.034	3300SSalv
07/18/83	00 53	12.60	87.20	5.6	66	248	0.010	3300SSalv

*M as defined in section 6.3.

Site geology classification 1A.

Table 6.2. Far-source strong ground motion data.

A diversity of magnitude scales are used in characterizing the size of an earthquake (Heaton et al., 1982) and all except the moment magnitude tend to saturate as their size increase. In order to avoid this problem, the magnitude M is defined as the surface-wave magnitude M_S when both the local magnitude (M_L) and M_S are greater than 6.0 and is defined as M_L when the magnitudes are lower than this value.

Many distance measures used in attenuation equations have been proposed (Shakal and Bernreuter, 1981). Some have used a measure of the closest distance to the vertical projection of the fault rupture (Joyner and Boore, 1988) and argued that it is a more physically consistent source-to-station distance for large rupture zones. Because of the lack of information on the rupture zones, this study adopts the epicentral distance as the source-to-site measure. However, a careful analysis was made for the cases of large rupture zone (e.g. Motagua earthquake, 1976) since the epicentral distance in these cases can introduce misleading interpretations of ground acceleration attenuation.

Recording stations were classified being above stiff and soft soils by using the geological information available (Consorzio Salvador e., 1988; Michael Rymer, 1987; David Harlow, oral communications). The geology at stations in San Salvador have been classified as follows (Consorzio Salvador e., 1988):

Zone 1. This zone is characterized by a bedrock thickness of at least 65 m within the first 100 m of depth (e.g., minimum thickness of the lava layer that is assumed to behave as bedrock). This zone is subdivided into two subzones.

Zone 1A. This subzone is characterized by a lava layer that is exposed or is within 5 m from the surface (stiff soils).

Zone 1B. This subzone is characterized by a bedrock layer with a depth ranging from 5 m to 35 m (shallow soils).

Zone 2. This zone is characterized by a bedrock thickness of less than 35 m within the first 100 m of depth (deep soils).

The layer of soils that covers the bedrock at these sites is formed by two pyroclastic and epiclastics tuff units (Michael Rymer, 1987), the coffee-colored tuff (tobas color cafe) and the white earth (tierra blanca). The average shear-wave velocity (V_S) of these deposits range from 150 mls to 450 mls and their average compressional-wave velocity (V_P) range from 300 mls to 1000 mls (Consorzio Salvador e., 1988). The bedrock is formed by

compact andesitic lava flows with an average V_S ranging from 2000 m/s to 2600 m/s and an average V_P ranging from 2600 m/s to 3200 m/s.

The geologic classification at recording stations in Guatemala and Nicaragua were assumed as deep and shallow soils, respectively (David Harlow, oral communications). For site geology classification at these recording stations see Tables 6.1 and 6.2.

6.4 Ground Motion Model.

The functional form adopted for modelling the attenuation of near-field and far-field strong ground motion parameters is represented by the following equation:

$$\log Y = a + bM - c\log (r_o^2 + \Delta^2)^{1/2} \qquad (6.1)$$

where Y is the strong ground motion parameter in consideration (PGA), and M is the generic magnitude defined above. In order to study the attenuation due to geometrical spreading the term $c\log (r_o^2 + \Delta^2)^{1/2}$ is present in the equation; r_o, is the epicentral distance in kilometers and the parameter Δ is included to recognize that the strong ground motion comes from some depth below the surface and also to recognize the concept of saturation of the strong ground motion at short distances. Notice that terms representing anelastic attenuation and site geology are not included in the model. A preliminary test of the model including these terms showed the value of the anelastic attenuation term nearly zero and positive, it was therefore removed from the model. In addition, due to the lack of data a further categorization of the data base by soil condition was considered inadequate for regression analysis purposes, i. e. a poor constraint of the attenuation curves was evident when site geology was considered. Consequently, soft and stiff soil conditions are taken as the site geology for the near-source and far-source attenuation functions respectively (see Tables 6.1 and 6.2).

The value of Δ in the attenuation model is determined by a non-linear regression analysis (Neter et al., 1985), and the values of the coefficients **a**, **b**, and **c** are determined by a subsequent linear regression.

6.5 Regression Analysis.

Table 6.3 shows the results obtained in the regression analysis performed. The goodness of fit is represented by an r^2 value of 0.64 and 0.77, the correlation coefficient squared, for the near-source and far-source regression analyses, respectively. The 84 percentile values of PGA are obtained by multiplying the median value by a factor of 1.62 for both attenuation functions. Plots of both relationships for the 50 and 84 percentiles, as functions of distance and magnitude, are shown in Figures 6.1 and 6.2. For both plots, the curves representing the 50 percentile (heavy lines) are dashed whenever they are not constrained by data and caution is recommended when extrapolation is intended beyond these limits.

	a	b	c	Δ	σlogY
Near-field sources PGA	-1.116	0.312	-1.000	7.9	0.21
Far-field sources PGA	-1.638	0.438	-1.181	70	0.21

Table 6.3. Regression coefficients given by equation (6.1).

Residuals of the data with respect to the predicted values are analyzed to test for biases given by the attenuation functions developed in this study. Figure 6.3 shows plots of standardized residuals against epicentral distance for different magnitude classes, and magnitude for the near-source attenuation function. No obvious differences in trend are observed in these plots for the three different magnitude classes, probably due to the lack of data. Therefore, it was assumed that the shape of the attenuation curves obtained are independent with magnitude. A similar test was performed for the far-source attenuation function and similar results were obtained. Plots of standardized residuals against distance and magnitude for this attenuation function are shown in Figure 6.4.

In Figures 6.5 and 6.6, the predicted ground motions given by the attenuation functions developed in this study are compared with the data for observed peak ground acceleration. In these plots, the data have been grouped in magnitude intervals of 5.0 to

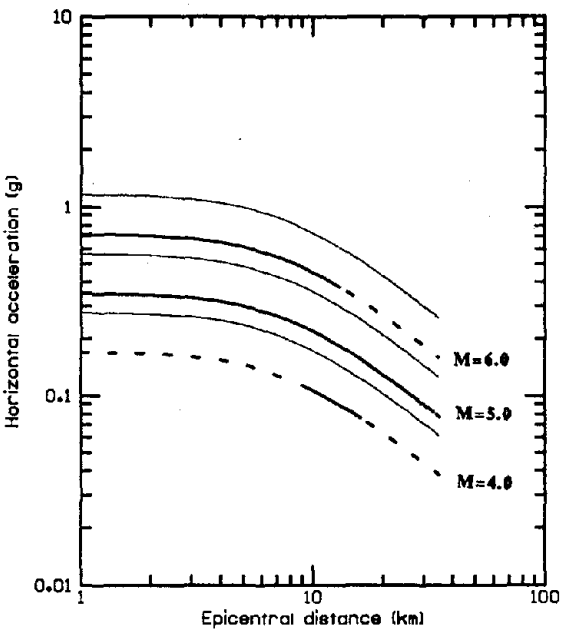

Figure 6.1. Peak ground acceleration attenuation function for near-sources in Central America. The plot shows the 50 percentile (heavy lines) and the 84 percentile (light lines) of the predictive attenuation function. The curves are dashed whenever they are not constrained by data.

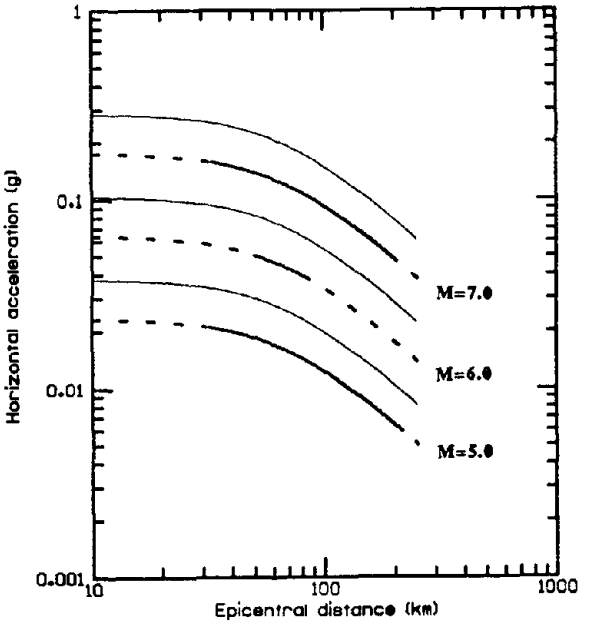

Figure 6.2. Peak ground acceleration attenuation function for far-sources in Central America. The plot shows the 50 percentile (heavy lines) and the 84 percentile (light lines) of the predictive attenuation function. The curves are dashed whenever they are not constrained by data.

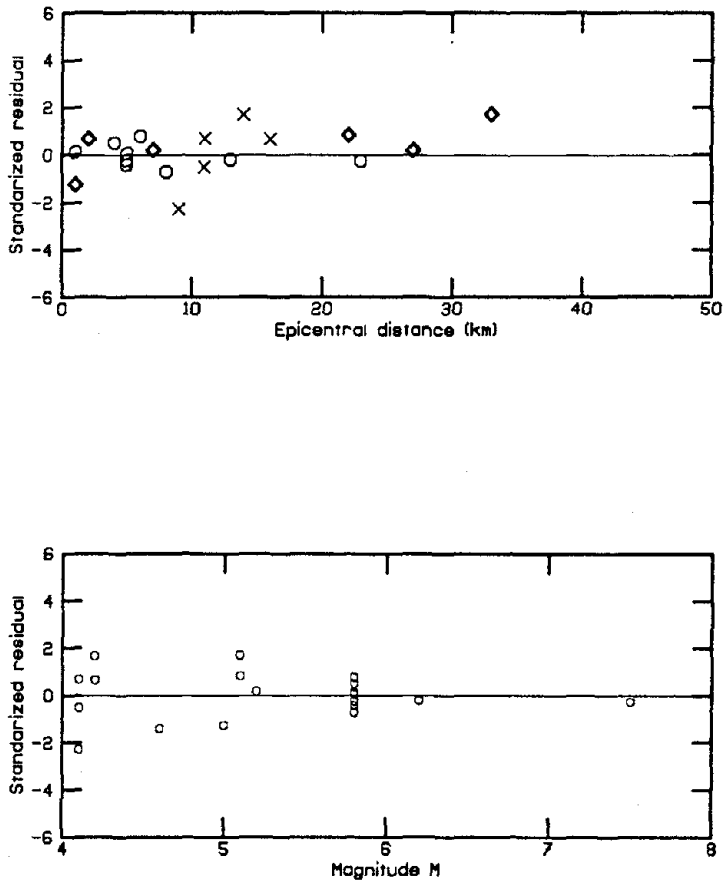

Figure 6.3. Standardized residuals of data respect to the near-source predictions from Equation (6.1). In the first plot, exes represent magnitudes from 4.0 to 4.5, diamonds represent magnitudes from 4.6 to 5.5, and circles represent magnitudes from 5.6 and above.

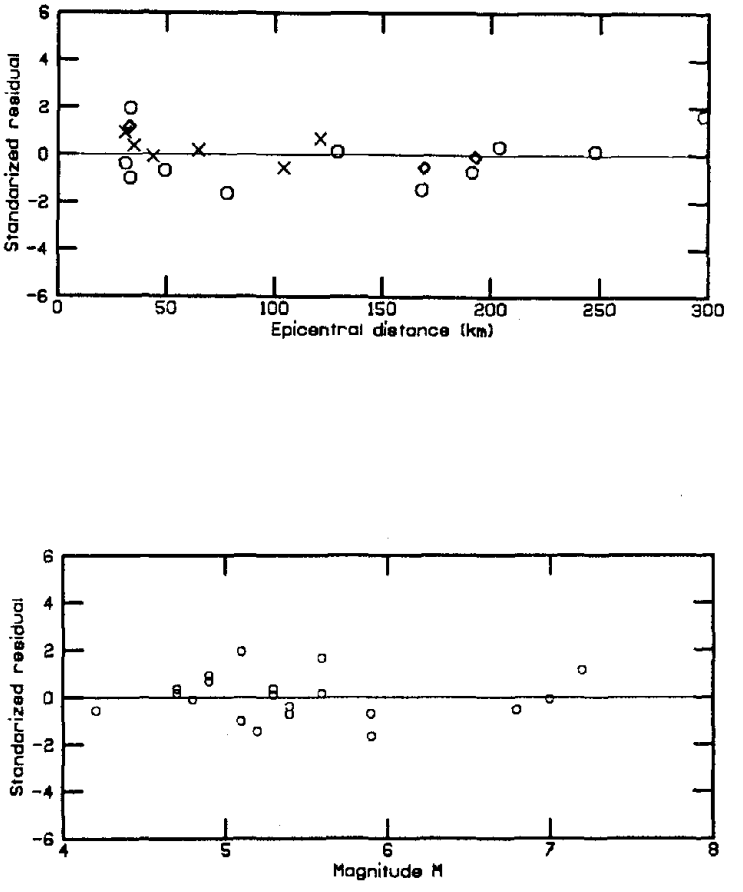

Figure 6.4. Standardized residuals of data respect to the far-source predictions from Equation (6.1). In the first plot, exes represent magnitudes from 4.0 to 5.0, circles represent magnitudes from 5.1 to 6.0, and diamonds represent magnitudes from 6.1 and above.

5.49 and 5.5 to 6.0. The heavy lines represent the 50 percentile curve for the magnitudes of 5.0 and 6.0. The light lines represent the 84 and 16 percentiles curves for the magnitudes of 6.0 and 5.0, respectively. It is observed in these figures that the predicted curves represent reasonably well the behavior of the data.

A comparison of the near-source attenuation function developed in this study with the ones developed by others (i.e., Joyner and Boore, 1988; Campbell, 1989) for western United States is very difficult. Since these authors used different definitions for the various variables (i. e., magnitude, distance, and site geology), a graphical comparison would require certain assumptions in order to reconcile these differences which in some cases it is almost impossible. For instance, Joyner and Boore (1988) used for the source-to-site distance, the closest distance of the vertical projection of the fault rupture to the recording station. In this study, instead, the epicentral distance is used for the source-to-site distance. Consequently, in this study, an overestimation on the prediction of the peak ground accelerations is expected, forehand.

Sabetta and Pugliese (1987) developed a relationship for the italian strong ground motion data. They used similar definitions for the various variables adopted in this study. In addition the seismotectonic environment, and site geology are believed to be similar to the ones of the Central American volcanic chain. Figure 6.7 shows a comparison of the attenuation function developed in this study (heavy lines) with the relationship mentioned above (light lines). The comparison is made for the magnitudes 5.0 and 6.0, and for different site geologies. In this plot, one can note that the results from this study are comparable to their results for the shallow soils (bedrock depth within 5 m and 20 m). This site geology classification represents in sixty percent the near-source data set of this study (see Table 6.1).

In Figure 6.8, the relationship for the far-source obtained in this study is compared with the ones developed by Esteva and Villaverde (1974) and Kawashima et al. (1984) for the subduction zones of Mexico and Japan, respectively. A focal depth of 70 kilometers was assumed for the relationship of Esteva and Villaverde to make the comparison possible. The comparisons are made for magnitude 7.0. In this plot one can observe that the relationship of Esteva and Villaverde is comparable to the one developed in this study.

In summary, in this study a development of near-source and far-source attenuation functions for PGA was undertaken. These attenuation functions along with the probabilistic hazard models and geometrical model discussed in previous chapters are used in the next chapter to compute hazard values for the entire country and specific sites of El Salvador.

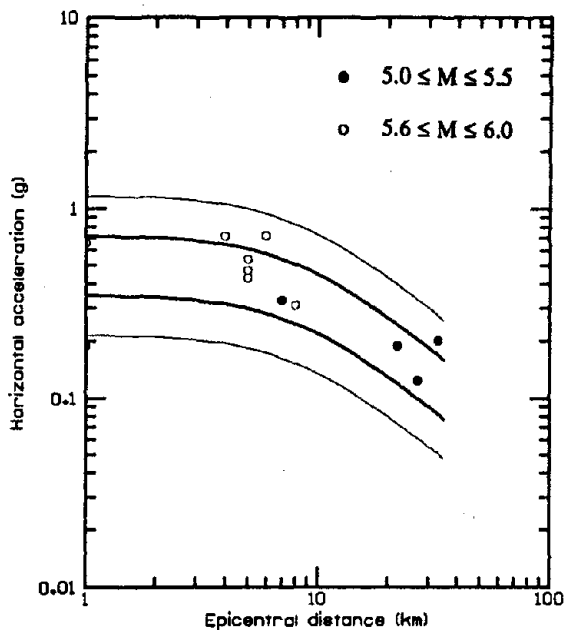

Figure 6.5. A comparison of the observed values of PGA with the near-source predicted values given by the coefficients of the Table 6.3. The heavy lines represent the 50 percentile for the magnitudes 5.0 and 6.0 and the light lines represent the 84 and 16 percentiles for the upper and lower bounds respectively.

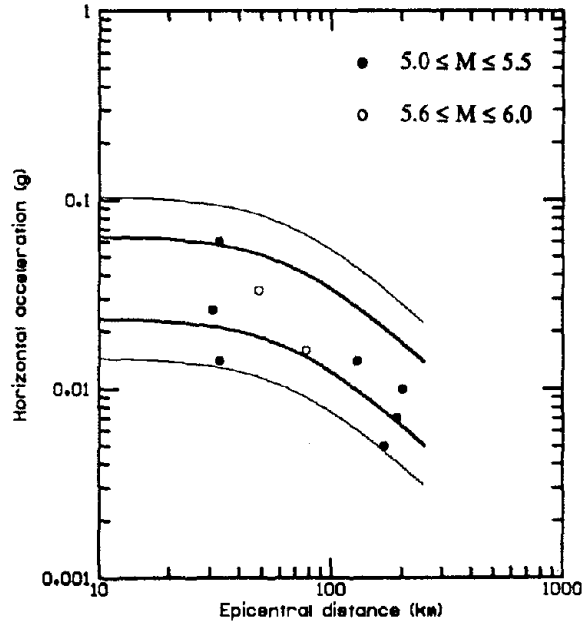

Figure 6.6. A comparison of the observed values of PGA with the far-source predicted values given by the coefficients of the Table 6.3. The heavy lines represent the 50 percentile for the magnitudes 5.0 and 6.0 and the light lines represent the 84 and 16 percentiles for the upper and lower bounds respectively.

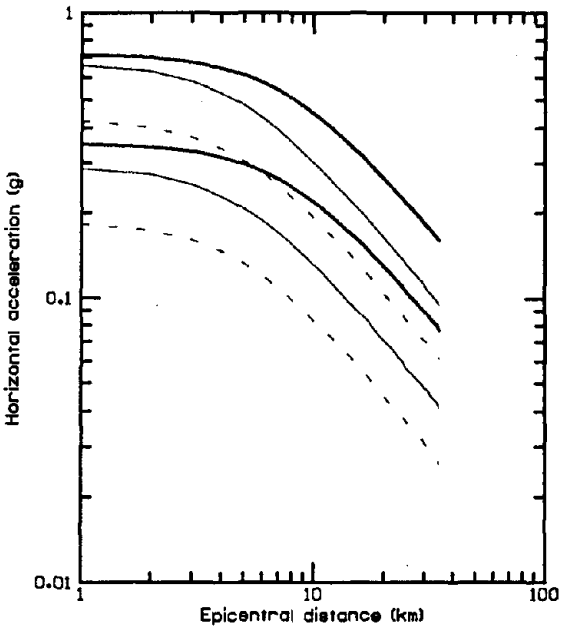

Figure 6.7. Comparison of the near- source attenuation function developed in this study (heavy lines) with the 50 percentile curves (light lines) from the relationship of Sabetta and pugliese (1987). The dashed-light lines represent the 50 percentile for deep soils (bedrock at depths greater than 20 mts) and rock, and the solid-light lines represent the 50 percentile for shallow soils (bedrock at depths within 5 and 20 mts).

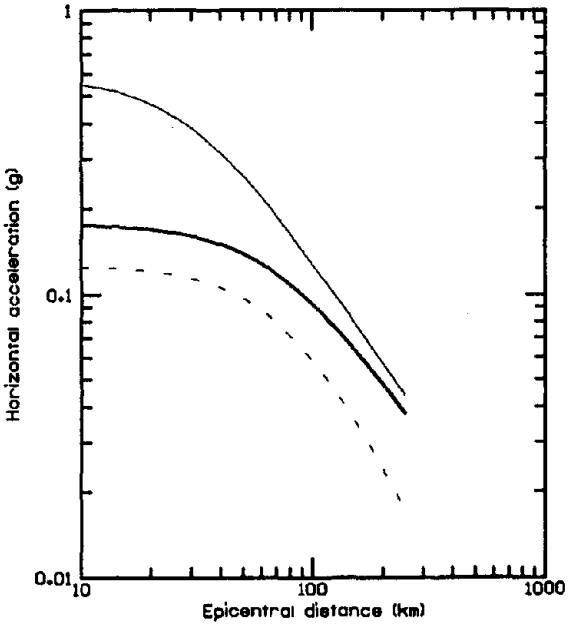

Figure 6.8. Comparison of the far- source attenuation function developed in this study (heavy lines) with the 50 percentile curves (light lines) from the relationships of Esteva and Villaverde (1974), dashed-light lines; and Kawashima et al. (1984), solid-light lines.

CHAPTER 7

APPLICATION OF THE MODELS

7.1 Introduction.

Based on the seismotectonic setting of the region, a geometrical model was proposed for the study area in Chapter 4. In Chapter 5, two seismic hazard models are reviewed and their suitability for hazard forecast of the region is discussed. In Chapter 6, a study of strong ground motion attenuation functions for Central America was conducted. Two peak ground acceleration attenuation functions were developed. In this chapter, these models are combined to develop iso-acceleration maps for El Salvador. In addition, site-specific seismic loads are computed at eleven locations in El Salvador.

7.2 Iso-Acceleration Maps

In order to develop the hazard maps, the Markov renewal and Bayesian hazard models described in the previous chapter, are applied to the seismicity of El Salvador. As it was expected, for regions where a seismic gap exists the Markov model is more conservative than the Bayesian model giving higher peak ground acceleration values. For this reason, a combined Markov-Bayesian model is chosen for the final seismic hazard maps for El Salvador. The Markov model is applied to the seismic source of Figure 5.1 and the cumulative distribution function of peak ground acceleration (CDF) at each node is combined with the CDFs obtained by applying the Bayesian model to the remaining seismic sources. However, for comparison purposes hazard maps using only the Bayesian model for all sources are also developed.

All the seismic parameters described in Chapter 5 along with the seismic source and attenuation modeling are used to determine the CDF on peak ground acceleration (PGA). El Salvador and surrounding regions are divided into a grid of 1/5° longitude by 1/5° latitude spacings. The CDF of PGA at each node of the grid is computed by using the programs MARKOV. HAZARD (Kiremidjian and Suzuki, 1987) and SEISMIC. HAZARD (Chiang et al., 1984) to apply the Markov renewal and Bayesian models, respectively. Then for a specific hazard level the PGA values calculated from the CDFs at each node are evaluated using the computer program CONST. PROB.

Finally, the iso-acceleration lines are obtained by interpolation of the values of PGA between nodes. For a full explanation of these computer programs and parameters needed see Chiang et al. (1984).

Seismic hazard maps are developed for 10% chance of exceedence in 100 years, 10% chance of exceedence in 50 years, and 20% chance of exceedence in 20 years. These forecasts correspond to return periods of events of 100, 500, and 1000 years, respectively. Figures 7.1 to 7.3 show the iso-acceleration maps for these return periods by using the Markov-Bayesian combined model. Similarly, Figures 7.4 to 7.6 show the iso-acceleration maps by using only the Bayesian model. In all cases, high seismicity is observed along the axis of the Volcanic Chain, but also, its influence is only strongly observed to about 20 km away from its axis. This fact is a result of the attenuation relationship used for the Volcanic Chain, which has a sharp drop at epicentral distances of 10 km (see Chapter 6). This phenomenon is clearly seen when the Markov model is used for the Subduction Zone. In Figure 7.3 one can observe that the iso-acceleration line of 0.60g is governed by the Subduction Zone seismic sources until it gets closer to the axis of the Volcanic Chain axis where an uplift of this line is observed.

Comparing the hazard maps for the Bayesian and Markov-Bayesian models for 100 year return period, one can see that higher peak ground acceleration levels are forecasted by the Markov-Bayesian model. In Figure 7.1, one can observe that in the Markov-Bayesian model the subduction sources govern over the volcanic sources in the hazard mapping. On the other hand, in Figure 7.4 in the Bayesian model the volcanic sources govern over the subduction sources for the same hazard evaluation giving then lower peak ground accelerations. This observed differences are due to assumptions on which the Markov and Bayesian models are based and that we discussed in Chapter 5.

7.3 Site-Specific Seismic Loading

Eleven important sites, major population and industrial facilities locations, were selected for the site-specific hazard analysis:

1. San Salvador
2. Santa Ana
3. San Miguel
4. Ahuachapan
5. Sonsonate
6. San Vicente

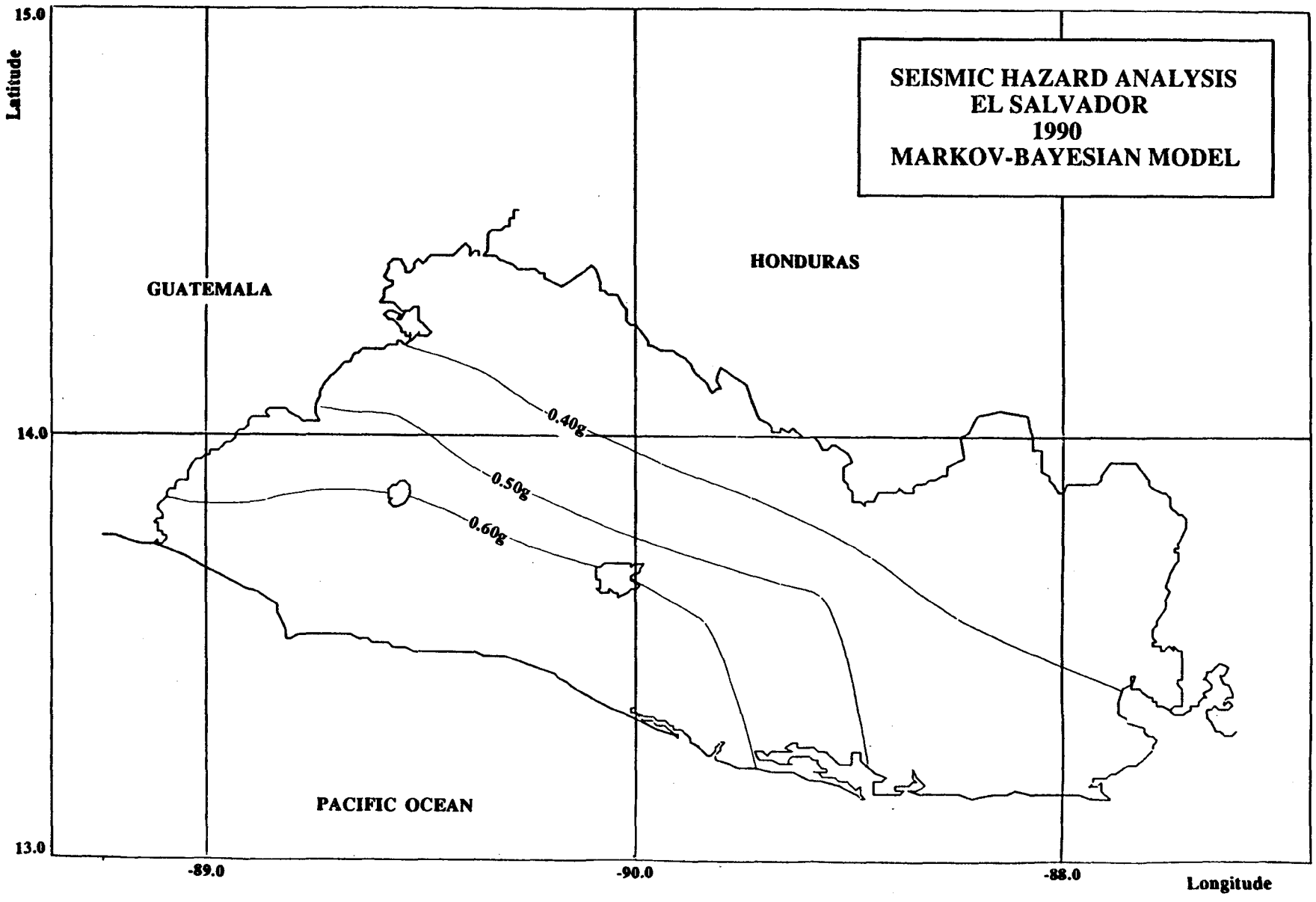

Figure 7.1. Preliminary iso-acceleration map for El Salvador for a future time of 20 yrs and 20% risk level.

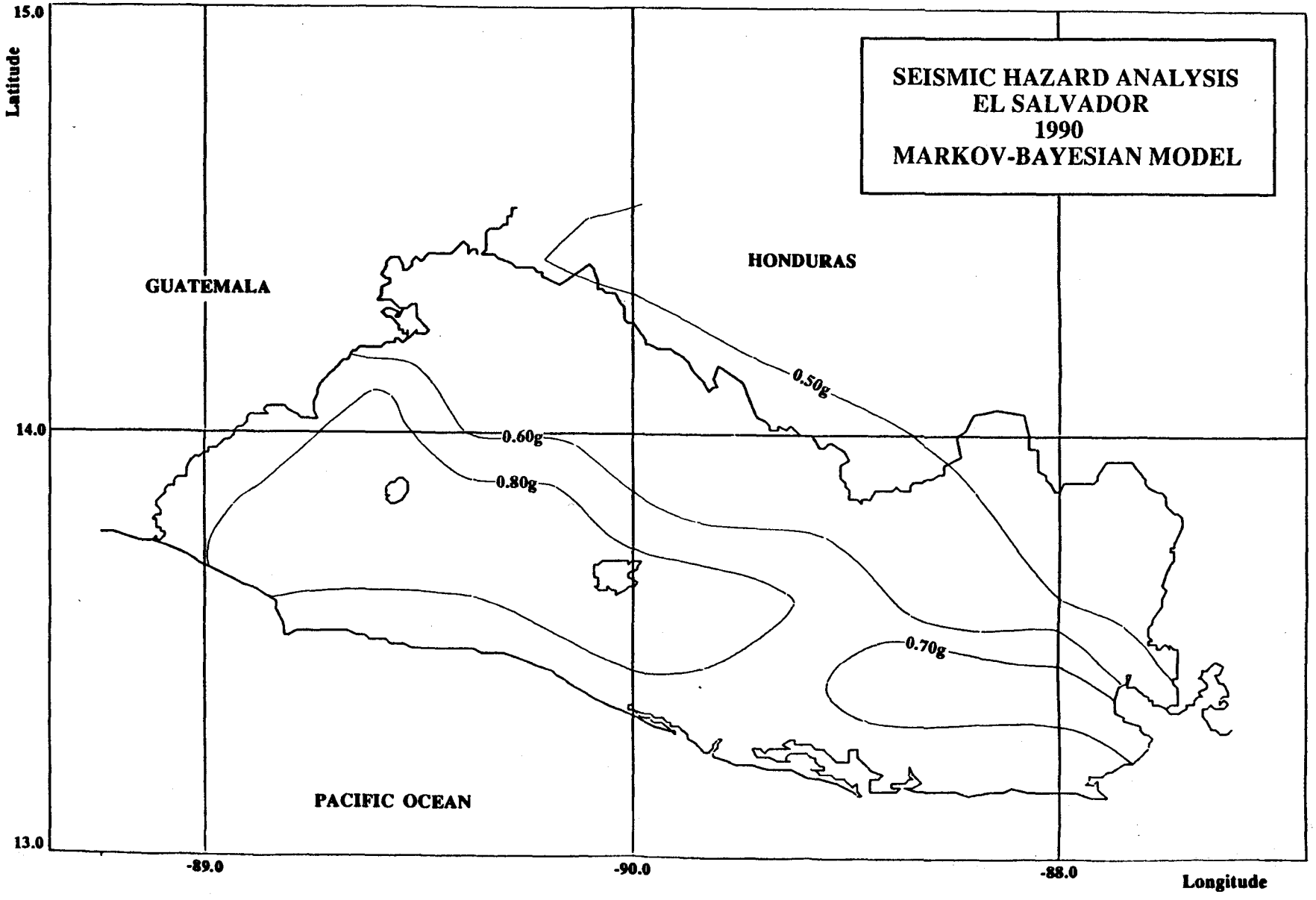

Figure 7.2. Preliminary iso-acceleration map for El Salvador for a future time of 50 yrs and 10% risk level.

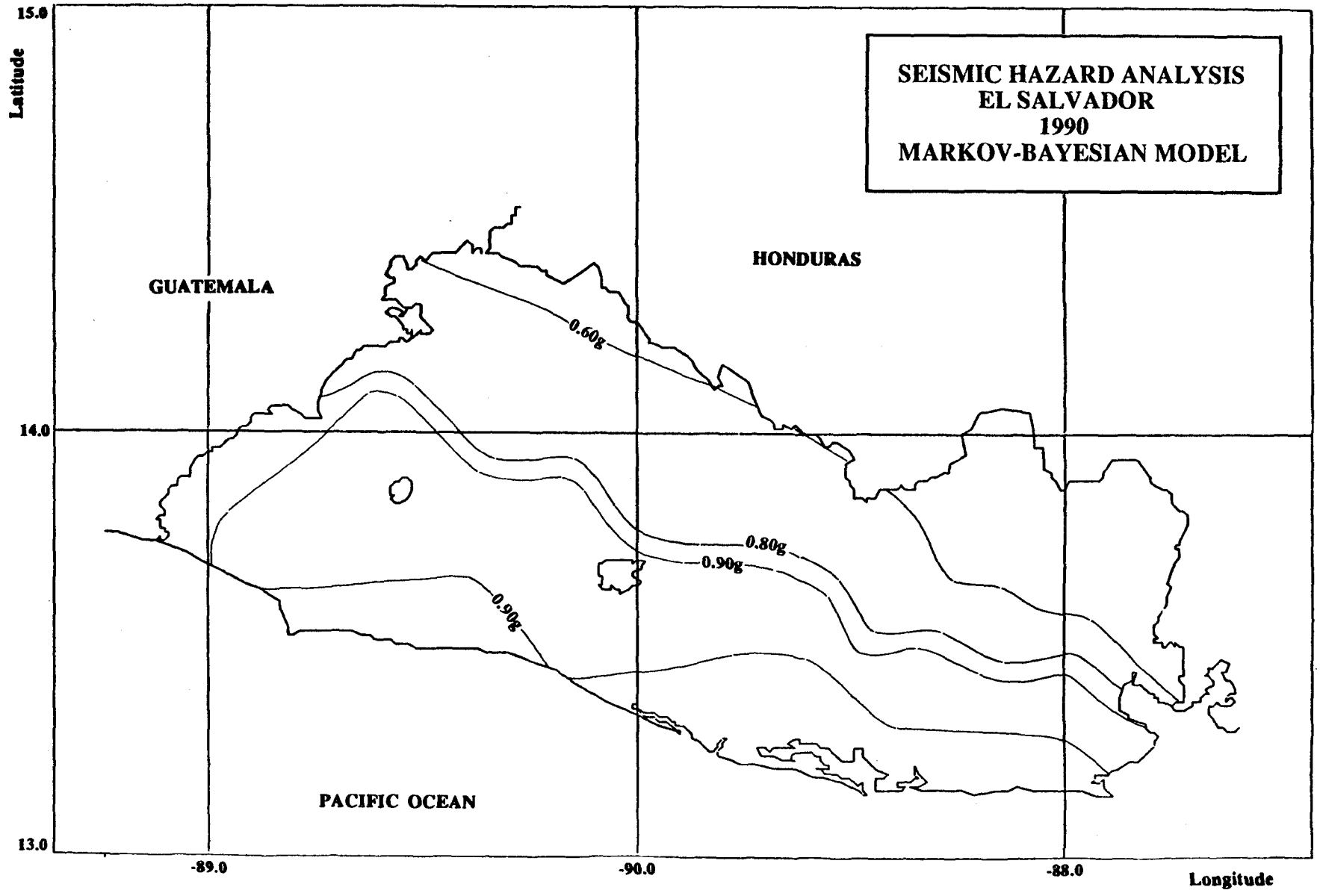

Figure 7.3. Preliminary iso-acceleration map for El Salvador for a future time of 100 yrs and 10% risk level.

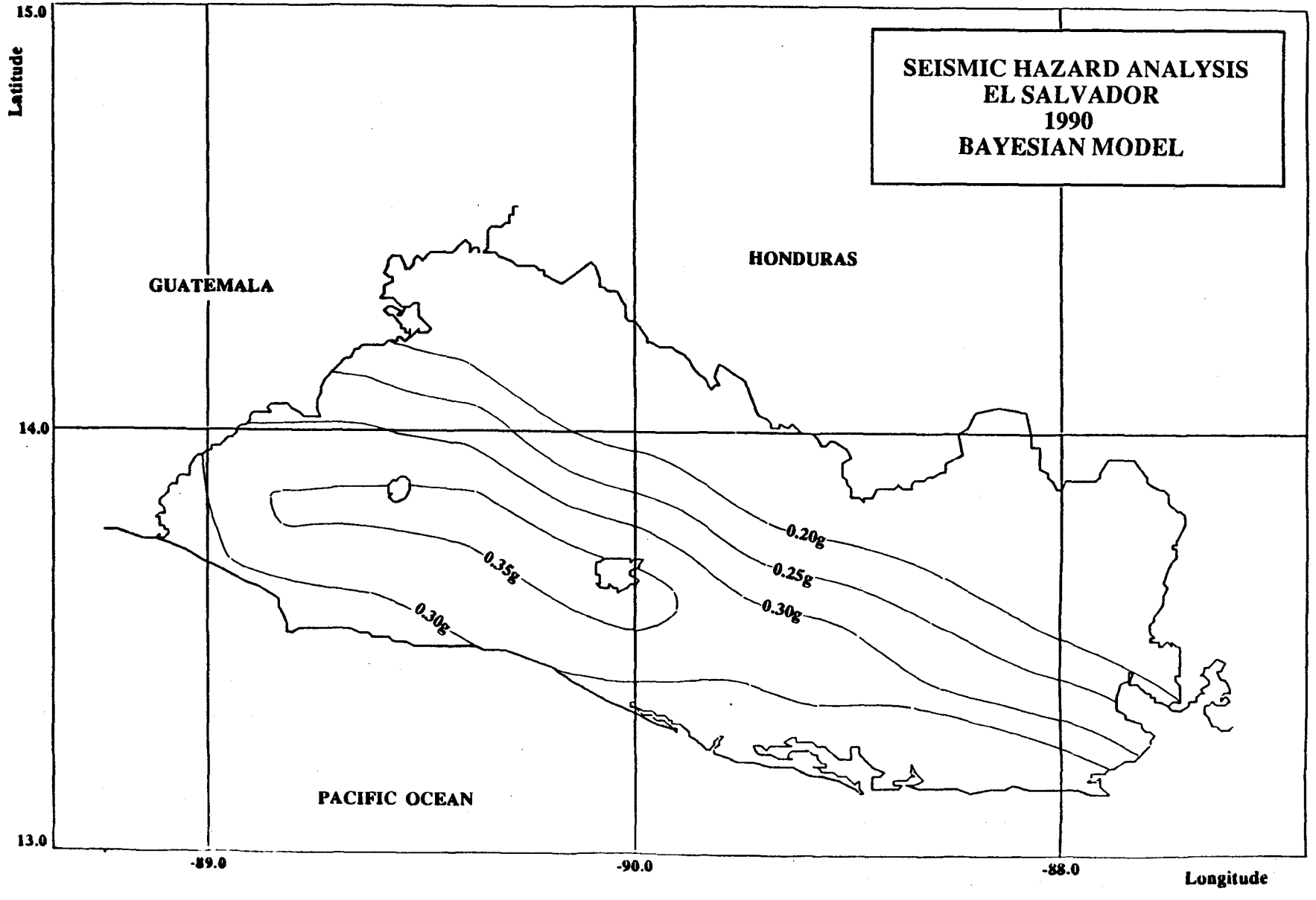

Figure 7.4. Preliminary iso-acceleration map for El Salvador for a future time of 20 yrs and 20% risk level.

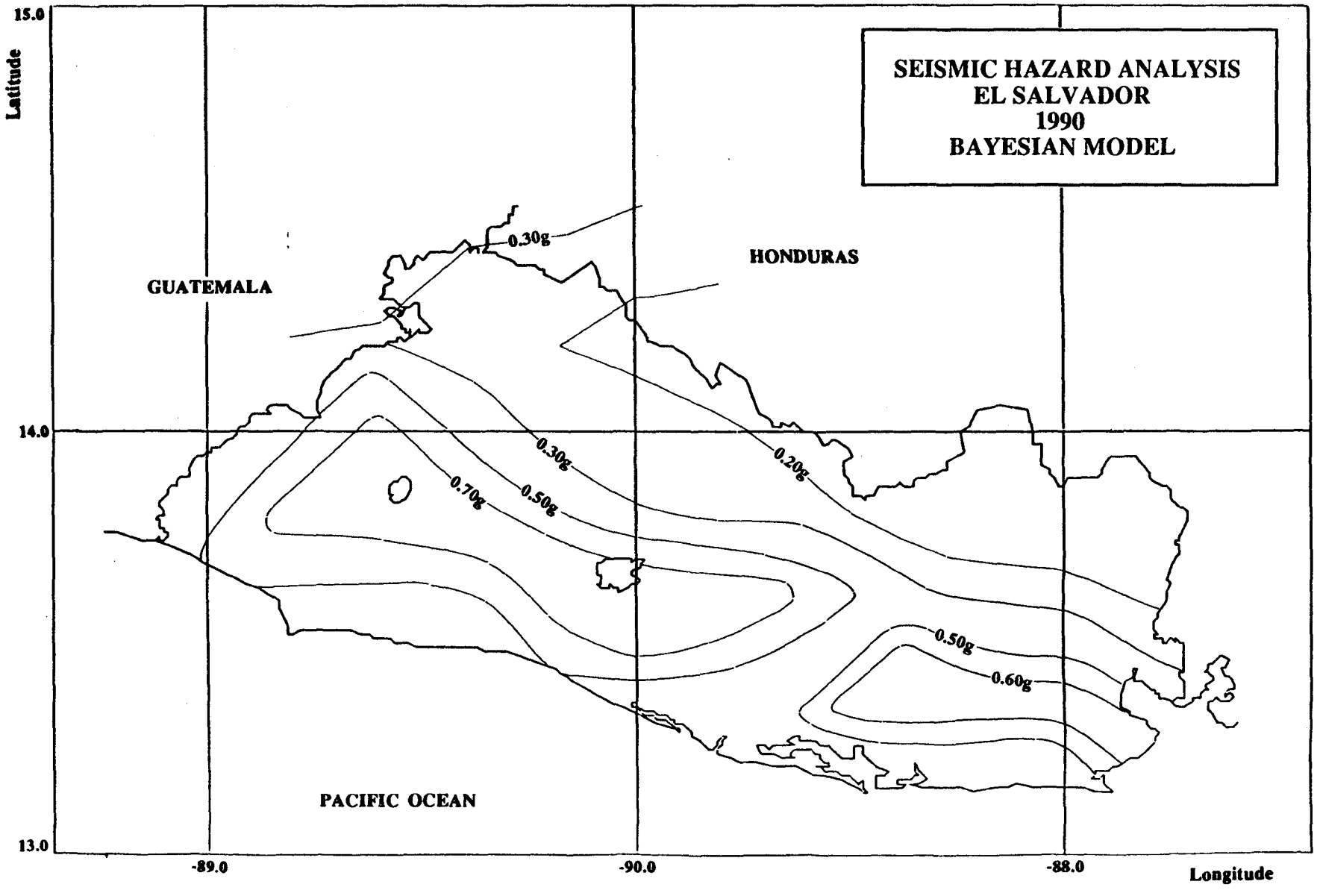

Figure 7.5. Preliminary iso-acceleration map for El Salvador for a future time of 50 yrs and 10% risk level.

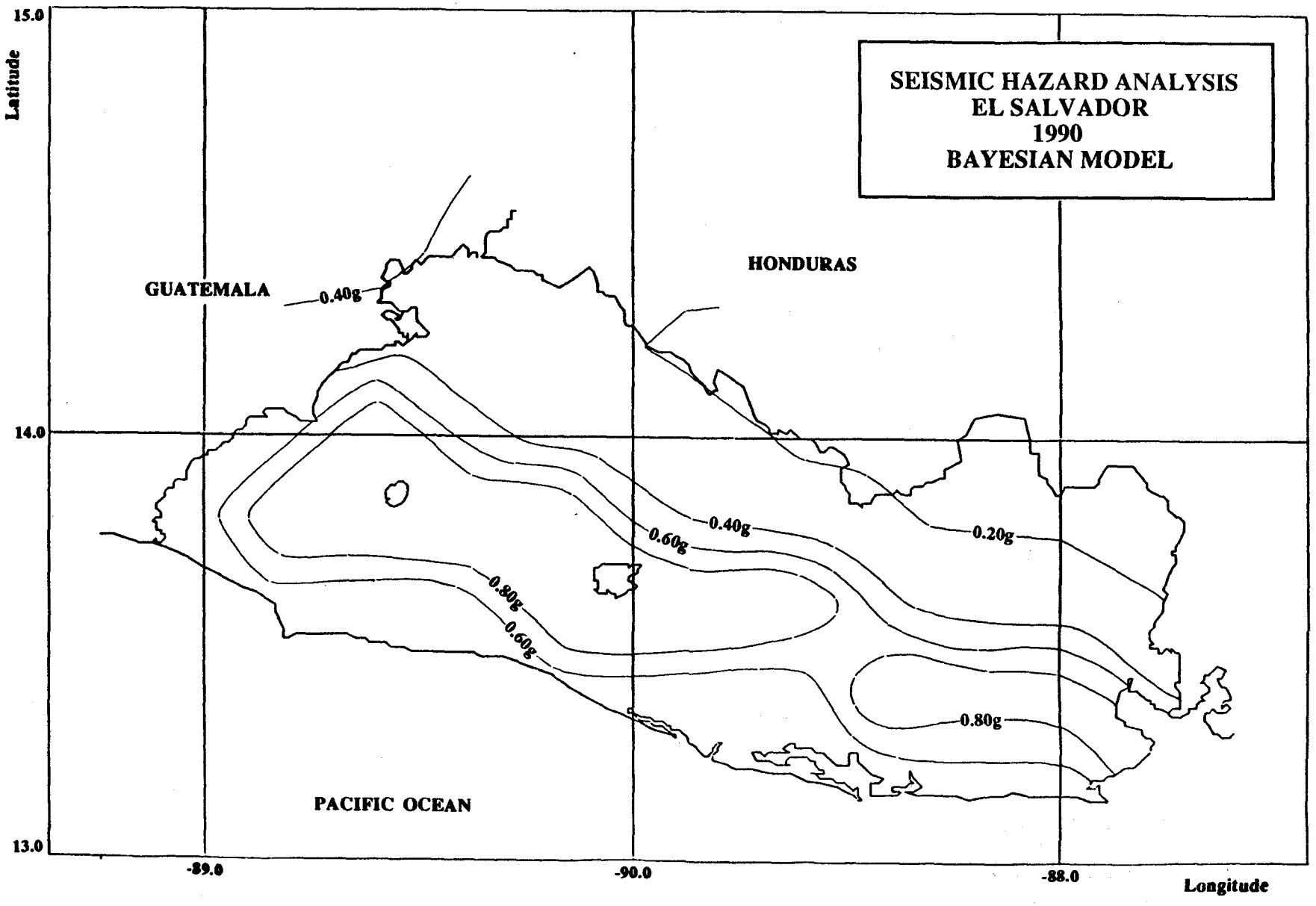

Figure 7.6. Preliminary iso-acceleration map for El Salvador for a future time of 100 yrs and 10% risk level.

7. Acajutla
8. La Union
9. Puente Cuscatlan
10. Puente de Oro
11. Presa 5 de Noviembre

The cumulative distribution function of PGA at these eleven locations were computed by using the Markov-Bayesian model. Also, the hazard at these locations can be represented in terms of acceleration zone graphs (AZG) (Kiremidjian et al., 1979). Figures 7.7 to 7.17 show the AZGs for the locations previously indicated.

In order to indicate the implications of the AZGs, the relationship between an acceptable level of risk, return period, and economic life are reviewed (see also, Kiremidjian et al., 1977 and Kiremidjian et al., 1979). The CDF of PGA based on the Markov-Bayesian model is obtained for a specified future time period. This time period is related to the economic life of the structure or facility, and the probability at selected PGA value indicates the hazard associated with this PGA level. The return period of a PGA value for a specified economic life and corresponding hazard level can be computed based on the Binomial distribution. Considering this distribution, the probability of r successes in n independent Bernoulli trials, with probability p of success at each trial is given by

$$P_n(r) = \binom{n}{r} p^r (1 - p)^{n-r} \tag{7.1}$$

Thus, the probability of zero successes in ten trials (years) is

$$P_{10}(0) = \binom{10}{0} p^0 (1 - p)^{10} = (1 - p)^{10}$$

Let $P_{10}(0) = (1 - p)^{10}$ be equal to 0.90. Then the probability of no occurrence (or success) of a certain level of loading in ten years is given by 0.90 or $(1 - p)^{10} = 0.90$. Hence, $p = 0.01048$ or return period RP = 95 years.

In other words, for a structure whose economic life is ten years and for a acceptable risk level of exceeding the specified loading level by 10%, the structure should be designed for a return period of 95 years. Table 7.1 gives the relationship between acceptable risk level, economic life, and return period. For instance, if the acceptable risk level is 20% for a structure whose economic life is 20 years, then the loading level should correspond to a return period of 90 years. If the structure is to be built in San Salvador, the corresponding PGA is approximately 0.52g. If the same structure for the same risk level is to be built in

San Miguel, the corresponding PGA level is approximately 0.34g. Thus, for a given class and use of structure, having the same economic life (20 years) and the same acceptable risk (20%) the two consistent PGAs in San Salvador and San Miguel are 0.52g and 0.34g, respectively. This is the concept of consistent risk design in regions with different seismicity levels. Figure 7.18 shows the graph relating the risk level, economic life and return period independently of any region. Once an acceptable risk level for a given economic life is selected for a given class and use of structure, the corresponding return period is immediately obtained from Figure 7.18. Then, based on the graph of return period versus peak ground acceleration (Figures 7.7 to 7.17), the loading at a site can be determined.

Let consider another example. Consider two separate classes of structures to be built in San Salvador. Let an office building with an economic life of 40 years have an acceptable risk level of 20% and a warehouse with a 10 year economic life have a 40% acceptable risk level. Referring to Figure 7.18, the return period for which the office

Probability of exceeding % \ Economic life (years)	10	20	30	40	50	100
10	95	190	285	390	475	950
20	45	90	135	180	225	449
30	29	57	84	113	140	281
40	20	40	59	79	98	196
50	15	29	44	58	72	145
60	11	22	33	44	55	110
70	9	17	25	34	42	84
80	7	13	19	25	31	63
90	5	9	14	18	22	44
95	4	7	11	14	18	34
99	3	5	7	9	11	22
99.5	2	4	6	8	10	19

Table 7.1. Return Period as a function of economic life and probability of non-exceedence. (Kiremidjian et al., 1979)

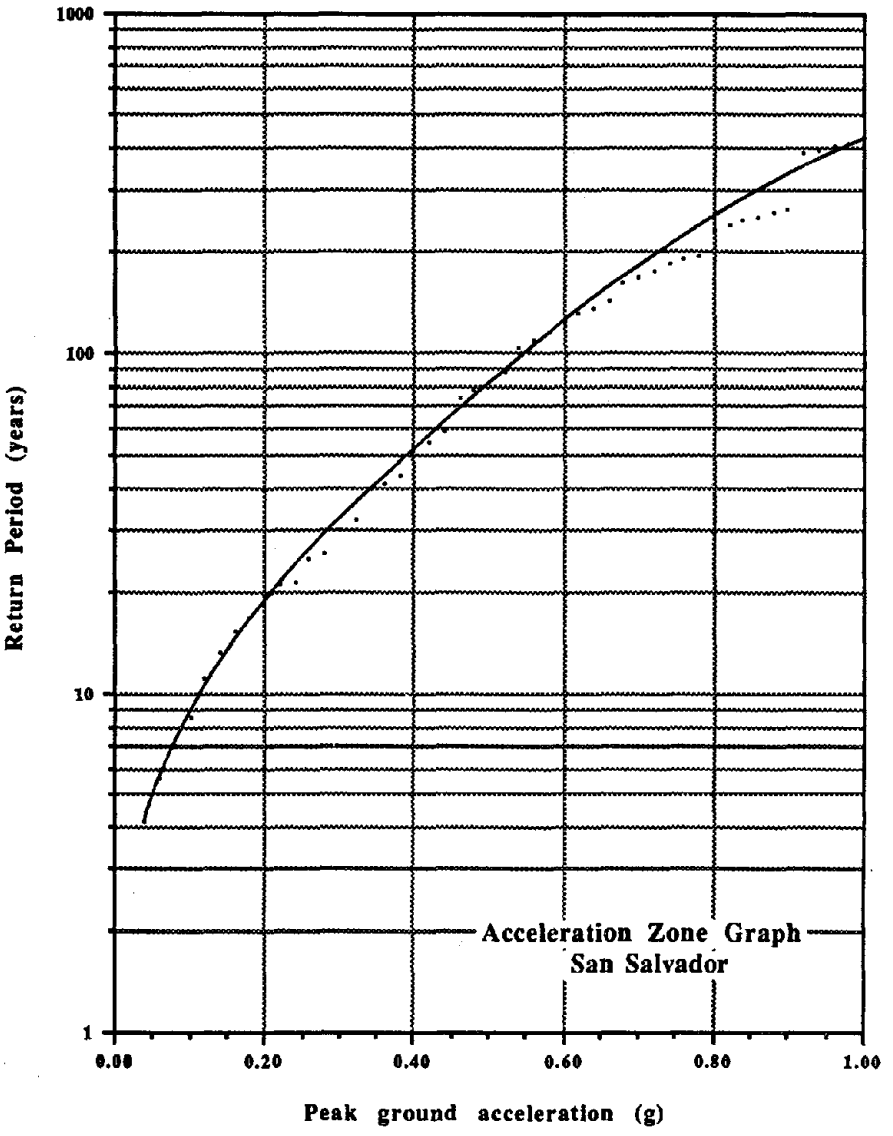
1000
100
10
1
Return Period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
San Salvador

Figure 7.7.

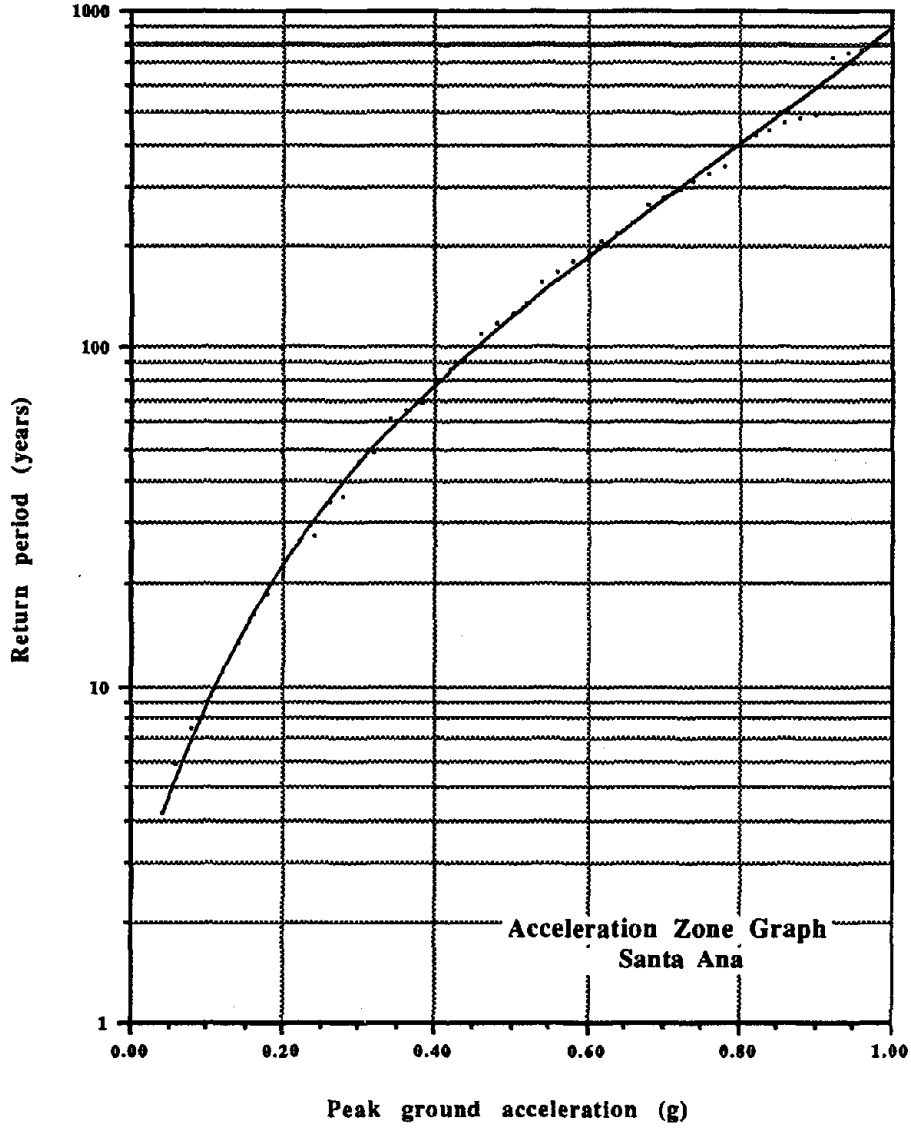
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Santa Ana

Figure 7.8.

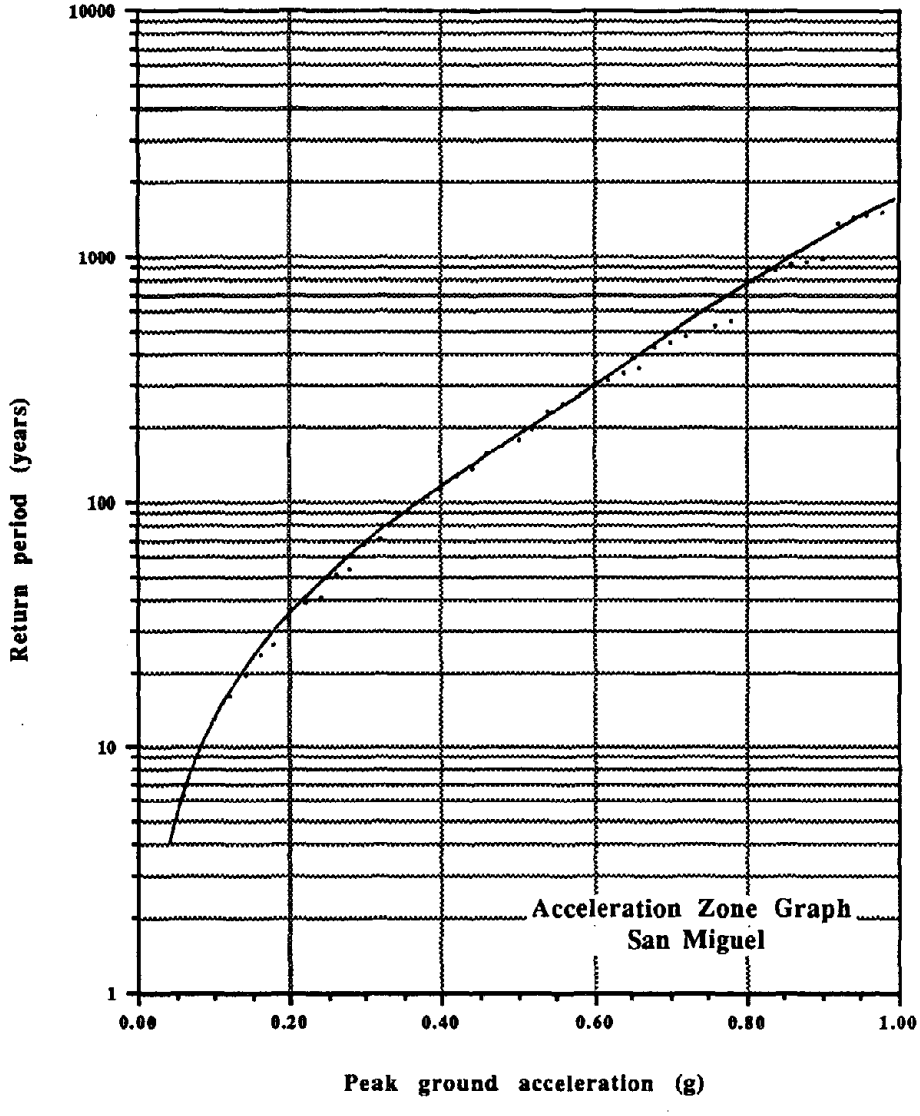
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
San Miguel

Figure 7.9.

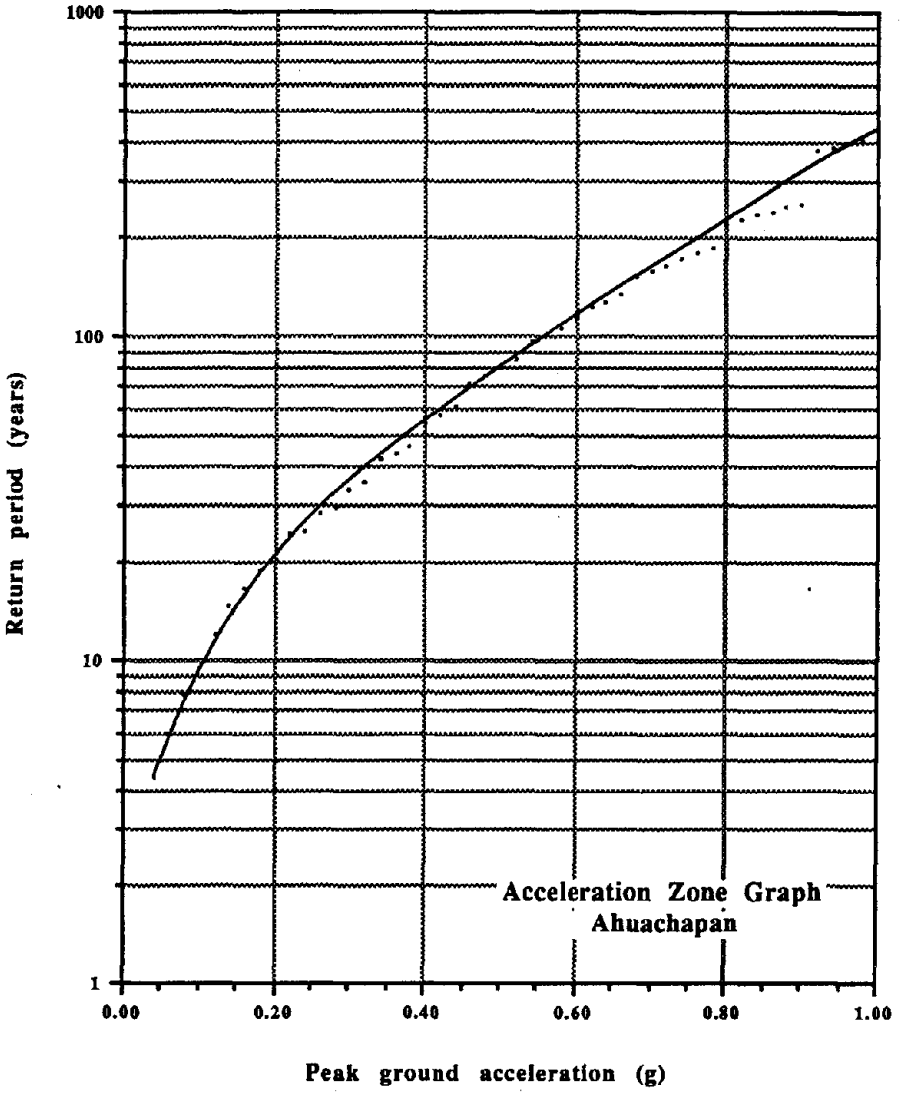
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Ahuachapan

Figure 7.10.

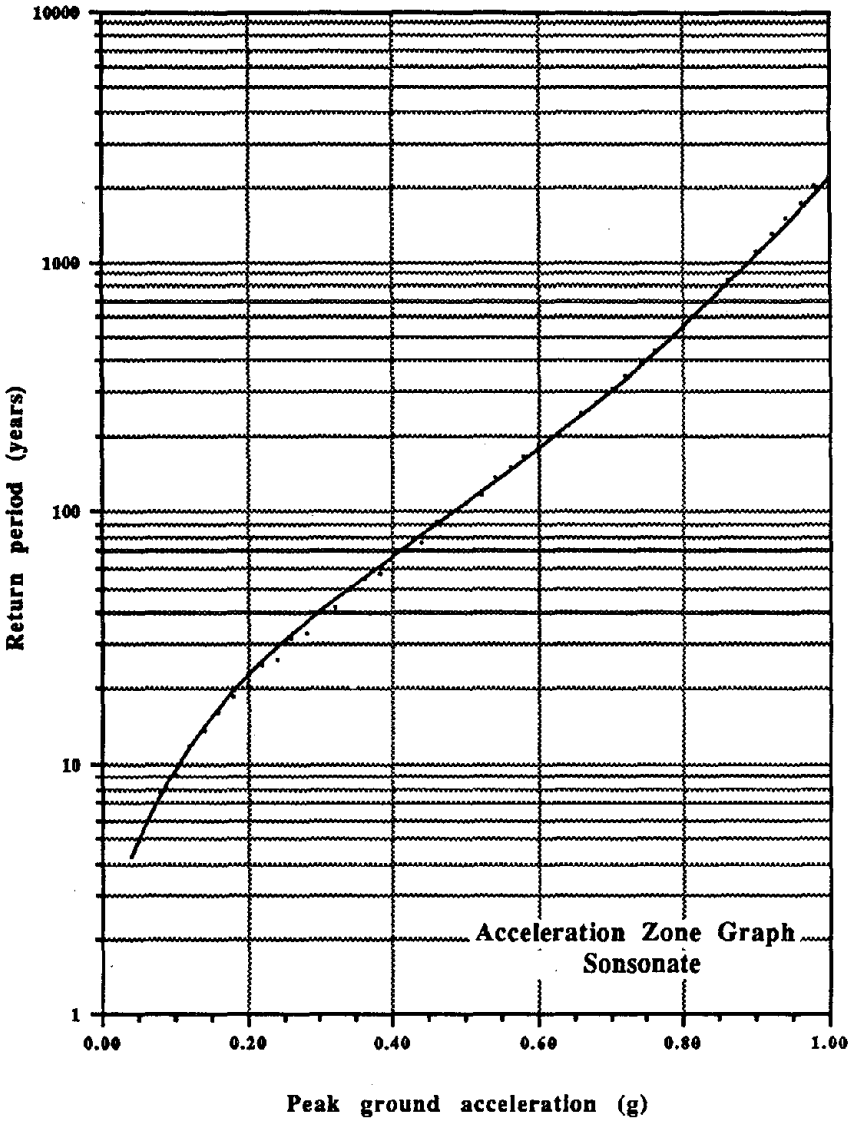
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Sonsonate

Figure 7.11.

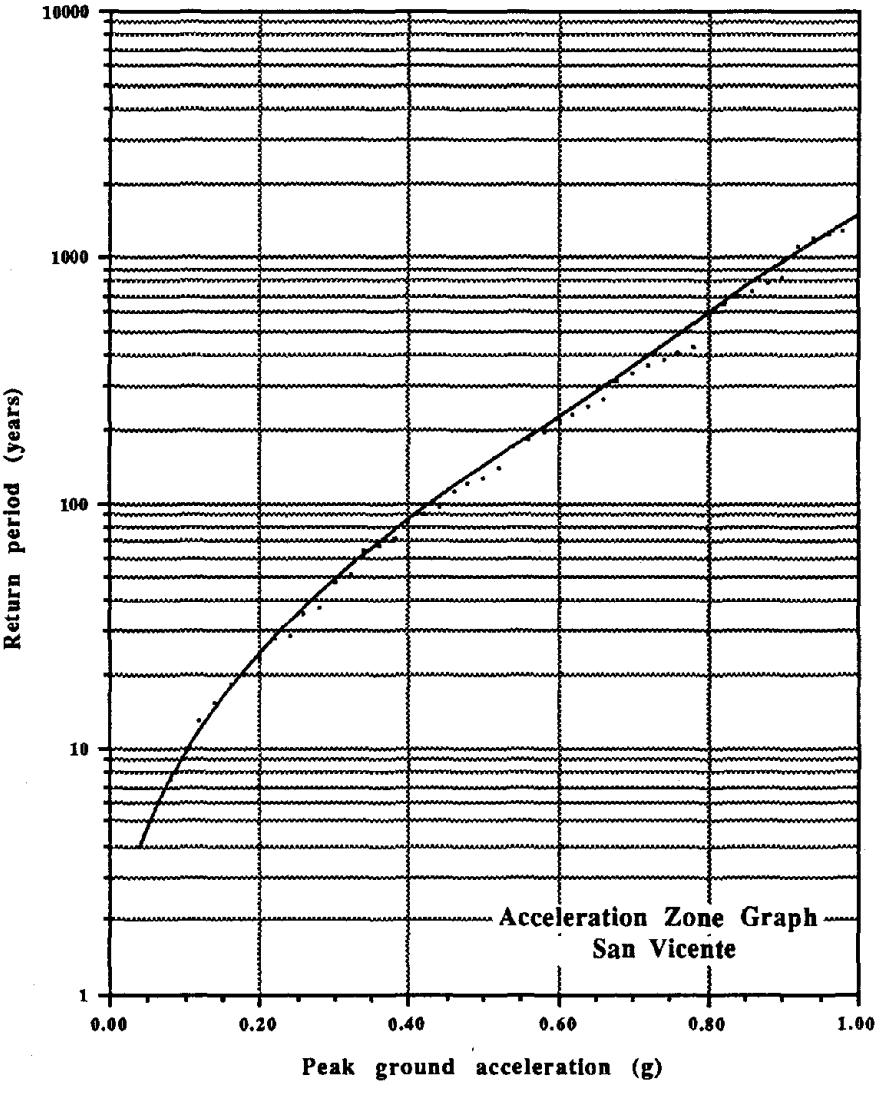
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
San Vicente

Figure 7.12.

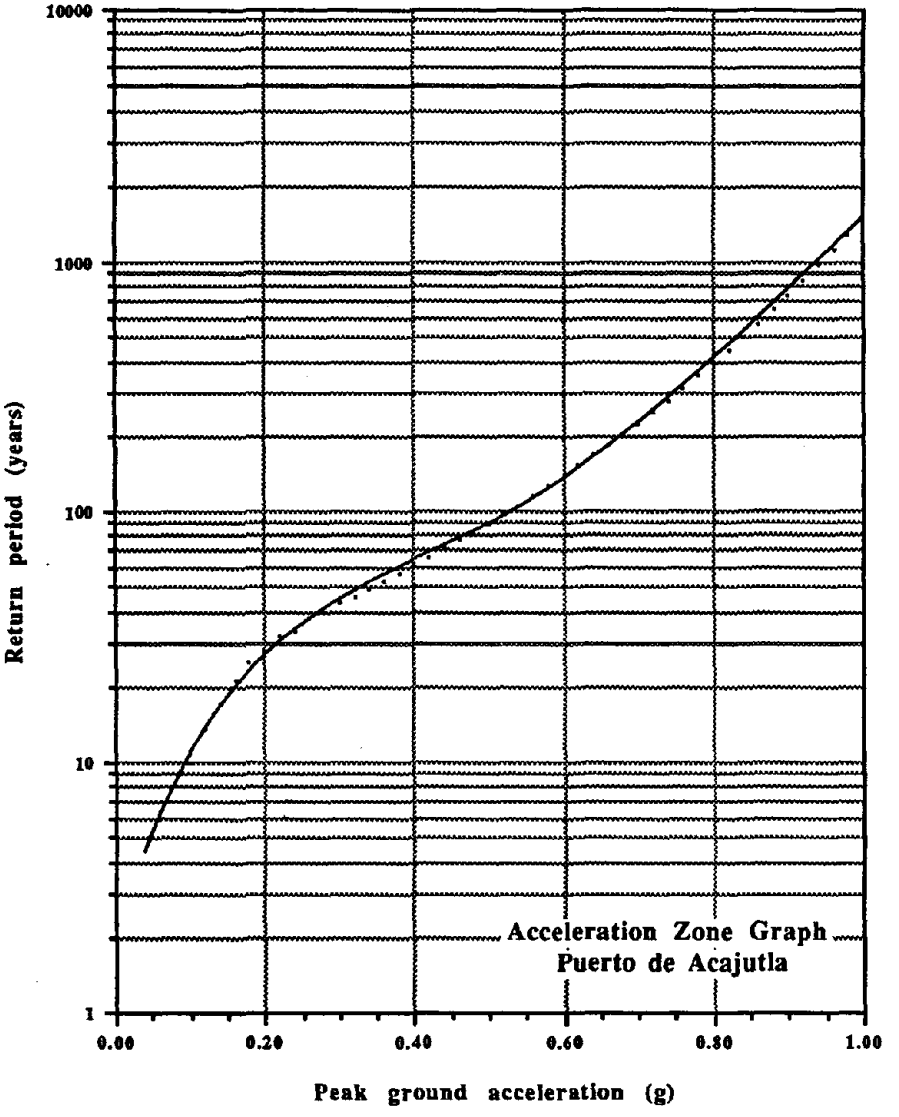
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Puerto de Acajutla

Figure 7.13.

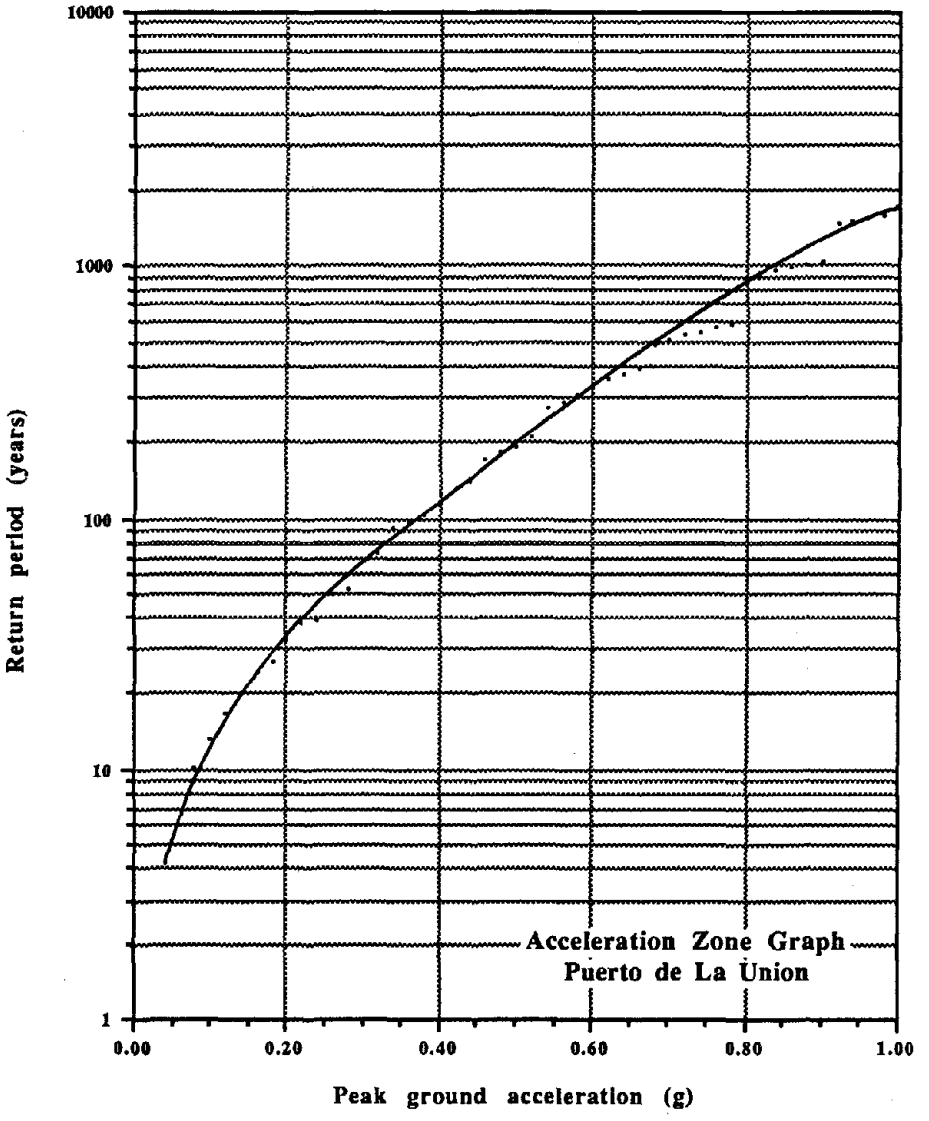
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Puerto de La Union

Figure 7.14.

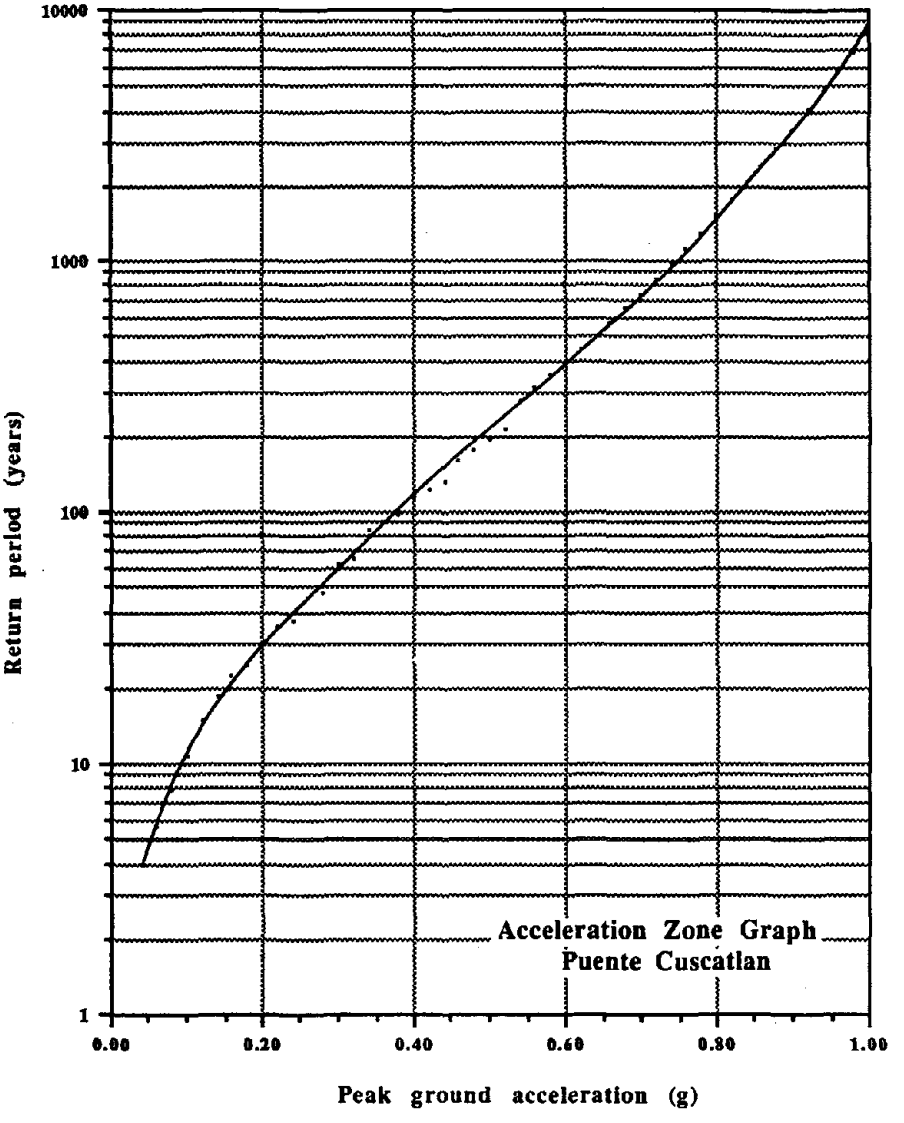
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Puente Cuscatlan

Figure 7.15.

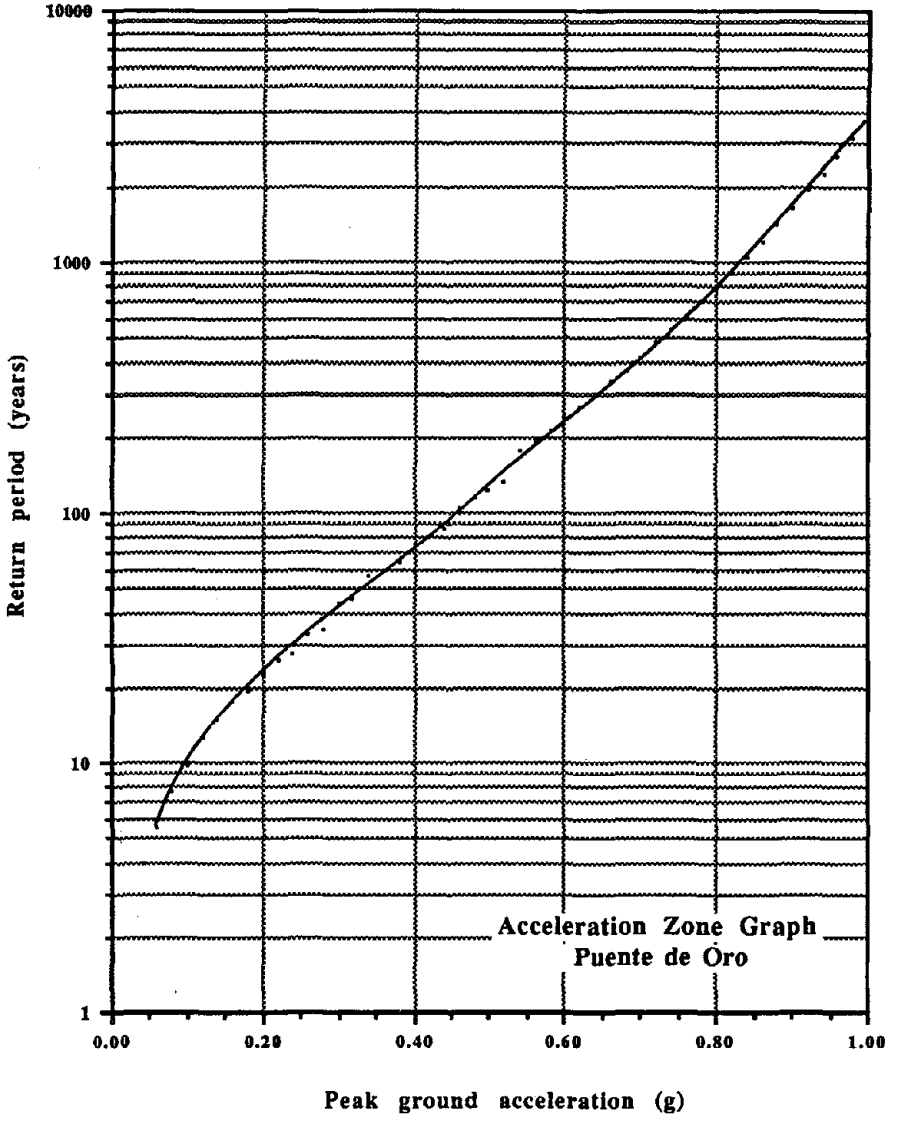
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Puente de Oro

Figure 7.16.

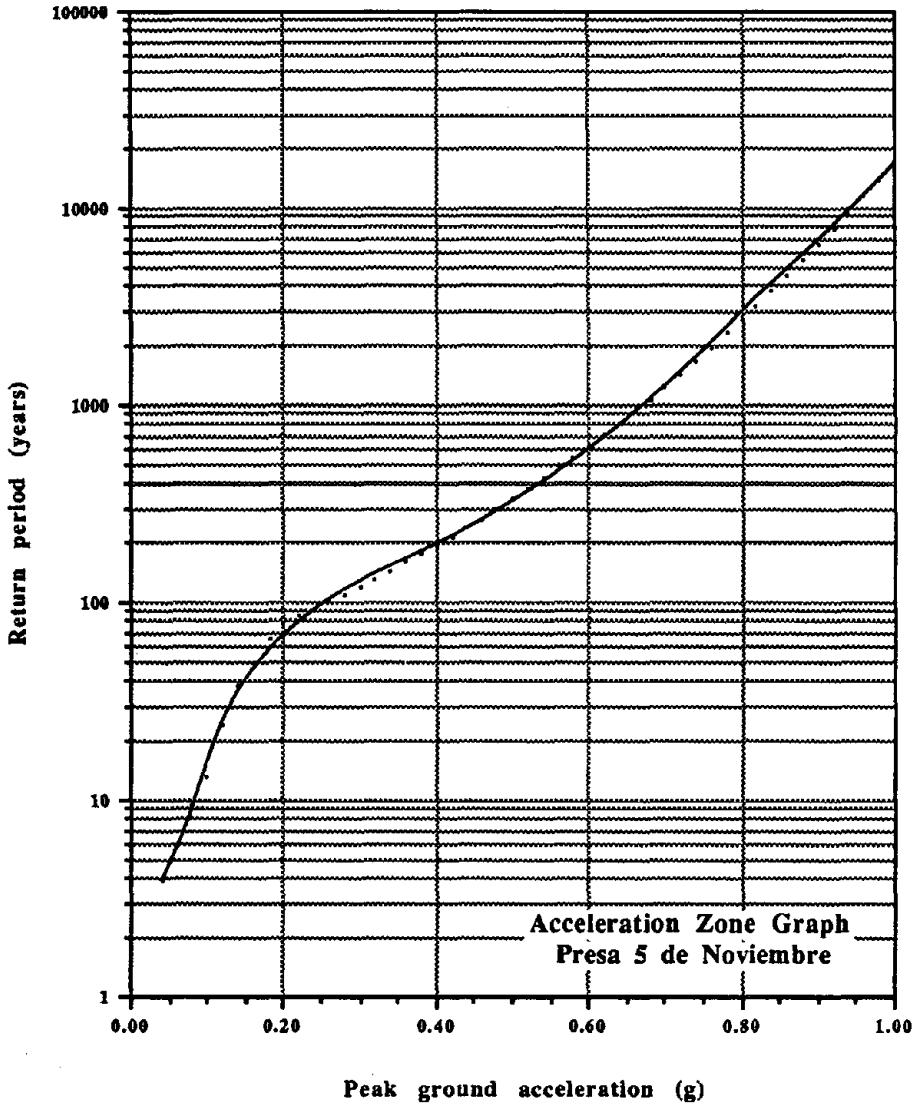
100000
10000
1000
100
10
1
Return period (years)
0.00
0.20
0.40
0.60
0.80
1.00
Peak ground acceleration (g)
Acceleration Zone Graph
Presa 5 de Noviembre

Figure 7.17.

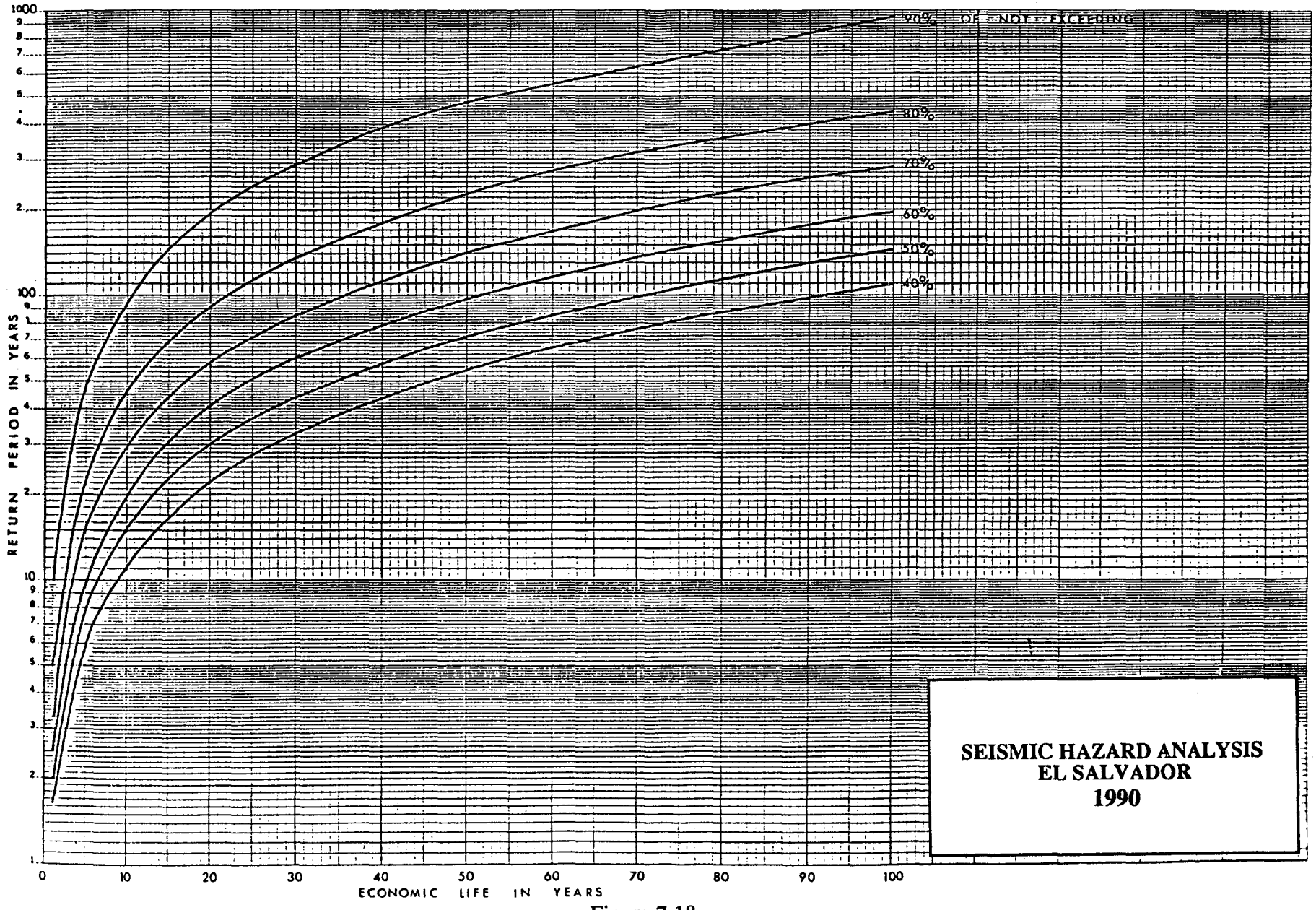
90% OF NOT EXCEEDING
80%
70%
60%
50%
40%
RETURN PERIOD IN YEARS
1000
100
10
1
0
10
20
30
40
50
60
70
80
90
100
ECONOMIC LIFE IN YEARS
SEISMIC HAZARD ANALYSIS
EL SALVADOR
1990

Figure 7.18.

building should be designed is 180 years and the return period for which the warehouse should be designed is 20 years. Now, from the San Salvador AZG (Figure 7.7), the corresponding PGA values are 0.70g and 0.20g for the office building and warehouse, respectively. If the same two facilities were to be built in San Miguel, the corresponding PGA values would be 0.39g and 0.14g.

It should also be indicated that even though the AZGs for San Salvador and Ahuachapan suggest for a return period of 1000 years a PGA greater than 1.0g, a 1.0g PGA value is recommended in this study for these cities. Further studies for these cities is strongly recommended taking in consideration local site conditions so that more accurate PGA values can be forecasted.

Finally, the following statements should be understood in using the concept of return period:

1) A return period is the mean waiting time for an event of interest. For example, the average (waiting) time between two events producing 0.20g in San Salvador is approximately 22 years.

2) The probability that an event corresponding to a return period RP will occur in any given year is given by $P = \frac{1}{RP}$. Thus, the probability of exceeding 0.20g in San Salvador in any given year is $1/22 = 0.0454$.

3) The probability that not a single event of the RP type will occur in RP years is given by $\frac{1}{e}$ where $e = 2.718$, the Naperian base. Thus, the probability that in 22 years, there will not be a single event producing a PGA of 0.20g in San Salvador is given by $1/e \approx 0.36$. Hence, there is a 64% chance that in 132 years there will be at least one event producing PGA of 0.20g or more in San Salvador.

For relative seismicity, it can be noticed in the AZGs charts (Figures 7.7 to 7.17) that San Salvador and Ahuachapan have the highest seismicity whereas the Presa 5 de Noviembre has the lowest seismicity. For a given hazard level, i.e. return period, a risk-consistent design for each location will demand the structure to resist a different level of PGA as specified in Figures 7.7 to 7.17. These types of figures are very useful in micro-zoning the country and formulation of building codes.

CHAPTER 8

SUMMARY AND CONCLUSIONS

This chapter summarizes the work conducted in this study. In addition, the main conclusions are indicated and some recommendations are made for the use of the results.

The seismic activity of the region of study was presented in terms of several tectonic provinces. These seismic regions: the Volcanic Chain Zone, the Benioff Zone, the Caribbean Plate Boundary and the Honduras Depression Zone were defined according to the seismic parameters of events occurred into the regions themselves, and the location of the faults between the zones.

An exhaustive search was conducted to obtain the existing data for the study region. Two kind of data were found: non-instrumental and instrumental. For both kind of data, a methodology of calculation of earthquake parameters was described and their relation to the seismic provinces was discussed. The acquired data was sorted according to the seismic provinces in which they occurred. This sorted data was analyzed to obtain frequency of earthquake occurrences with time in order to obtain the parameters needed for the probabilistic hazard models.

Two seismic hazard models were applied to the seismicity of the region, the stochastic slip-predictable and Bayesian models. Since the slip-predictable model was applied to only one seismic source, and since the computed peak ground accelerations resulted more conservative than using the Bayesian model for the same seismic source, a combined Markov-Bayesian model was adopted for the final seismic hazard computations. However, for comparison purposes hazard maps were also developed using only the Bayesian model. Iso-acceleration maps were developed for return periods of events of 100, 500 and 1000 years based on both models, the Markov-Bayesian and Bayesian models. In addition, acceleration zone graphs, which describe the peak ground acceleration values vs. return period, were developed for eleven locations in El Salvador.

Several aspects of the results obtained were found interesting to note:

- As it was expected, in seismic sources where enough information is available to apply the slip-predictable model, more conservative peak ground acceleration values were obtained.

- It was also observed that attenuation relationships developed the region represent well the observed peak ground accelerations. Two attenuation functions were developed: near-field and far-field attenuation functions.

- It is also important to indicate that the presented iso-acceleration maps and AZGs graphs were computed for the Volcanic Chain soil conditions where a sharp fluctuation of peak ground accelerations have been observed for range of epicentral distances from 1 to 8 km. For more accurate hazard analysis in specific sites, local soil conditions studies should be performed.

- From the study of the seismic provinces of the region, the major sources of earthquake activity were found in the Benioff Zone. Additionally, a potential threat of a large earthquake (Ms > 7.5) in the near future from a Benioff seismic source 50 miles away from San Salvador was found. However, earthquakes occurring in local seismic sources were found more damaging than subduction earthquakes.

- The highest risk was observed along the axis of the Volcanic Chain where accelerations are higher than 0.80g for 500 years return period.

- The lowest risk was observed in the northern part of El Salvador where accelerations are less than 0.60g in 500 years return period.

Finally, it is recommended that the results obtained in this study should be further used in the development of seismic code formulation for structural and analysis purposes. Ground acceleration values, a, may be established for a given structure and location and then converted to seismic load information. With this information, structures designed for these load levels, could have a desired reliability R_D of damage protection and a much higher reliability R_C against total building condemnation or incipient collapse during the lifetime of the structure.

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APPENDIX A

EARTHQUAKE DATA FROM 1525 TO 1710

TABLE 2. EARTHQUAKES ALONG CHIAPAS, MEXICO TO EL SALVADOR (ALL SOURCES) FROM 1525 TO 1710

Year	Mo/Dy	Int(MM):Location	Description	[duration]
1526	7/20	VIII: Antigua; VII?: VFuego(G),StaAna(S) SSalvador(S); VI-?: Tecpan(G)	(8/15?) earthquake knocked down soldiers; affected affected; apparently unaffected	[long]
1530	5/29	Int?:CiudadVieja, Quezaltngo, SMarcos(G)	great earthquakes	
1533,	early	Int?: Guatemala(G), Tehuantepeque(M)	it shook often; events stronger in Guatemala than Tehuantepeque	
1556		VI-VII: SSalvador(S)	minor damage from several earthquakes	
1565	8/30	VIII: Antigua,Comalapa,Almolonga,Solola VII+:Escuintla,Chimaltngo(G),lasCasas(M)	there was a great earthquake; many houses fell extraordinary violence	["3 psalms" ~±90? sec]
1566	5	VIII: Quezaltngo,Taxisco(G),Sonsonate(S)	houses collapsed; aftershocks for 9 days	
1575		VIII:Chiapas(M) to Nicaragua, Antigua(G)	great destruction in all of Chiapas province to that of to Nicaragua	
1575	6/02	VIII: SSalv, Sierra Texacuangos towns(S)	(5/23?) 1st major earthquake here; all houses fell	
1576		VII: Antigua(G)	earthquakes; considerable damage	
1577	11/29	VIII: Antigua, SMarcos, Solola(G)	earthquake at midnight destroyed many buildings	[3 hrs]
1581		VIII: SSalvador(S)	total destruction; church ruined	
1585	1/16	VII+: Antigua, Solola(G)	began 2 yrs of earthquakes less than 9 days apart; many dead	
1586	12/05	VII: Antigua; VI: Solola(G)	earthquake destroyed some houses	
1586	12/23	VII-VIII: Antigua(G)	church buildings and ±60 poorer houses ruined	
1591	3/14	VIII: las Casas(M)	cathedral tower and main chapel destroyed	
1594	4/21	VII-VIII: SSalvador(S)	13 dead; 1 great shake..for an instant (shallow?)	[instant]
1607	10/09	VII: Antigua(G)	buildings cracked/ruined; 29 dead; aftershocks for 4-6 months	
1631	2/18	VII: Antigua; VI+: Mixco(G)	hospital damaged; earthquakes (aftershocks?) for 9 days	
1650		VIII: SSalvador(S)	great earthquakes; church destroyed	
1651	2/18	VII-VIII?: Antigua, Amatitlan(G)	all buildings badly damaged; aftershocks to mid-April;	
1652		VII-: las Casas(M)	old facade of cathedral damaged	
1658(1656?)		VIII: SSalvador + Sonsonate prova(S)	destroyed buildings; worst in 70 years	["1 creed" ~30± sec]
1659		V?: Antigua(G)	earthquakes alarmed populace	
1663	5/01	VII-?: Antigua(G)	partial ruin; series of earthquakes, worst on 5/01	
1666		VII-?: Antigua(G)	partial ruin	
1671	8/16	VIII: SSalvador(S)	all buildings fell/unuseable; greatest earthquake here so far	
1676±		VI-VII?: SAndres Itzapa, Antigua(G)	great earthquake (damage?)	
1679	3/04	VII+: Comalapa; VI+: Antigua(G)	church very badly damaged by earthquakes	
1681	7/22	Int?: Antigua(G)	series of earthquakes, worst on 7/22	
1683	5	Int?: Antigua(G)	series of earthquakes	
1684	8	Int?: Antigua(G)	series of earthquakes	
1687±		VII?: las Casas(M)	damage	
1687	9,10	Int?: Antigua(G)	earthquakes	
1688	10/10	VI?: Mexico, Guatemala, (VII+: Chiapas?)	earthquake felt	
1689	2/12	VIII: SPedro Huertas, Antigua(G)	all major buildings destroyed	
1689	2/23	VIII: Antigua(G)	stronger than event of 2/12/89	
1691		VII?: Antigua(G)	damage	
1693		Int?: SMiguel(S)	earthquake and thundering sounds	
1702	8/14	VII+?: Ahuachapan(S)	church ruined	
1707		Int?: SSalvador(S)	possible earthquake	

Abbreviations used in Tables 1 to 3: Int(MM) is an estimate of Modified Mercalli (MM) intensity, Int? indicates intensity unknown; Location, S =San, Sta =Santa, V =Volcano, L =Lake; prov(s) =province(s), n, s, e, w =northern, southern, eastern, and western, respectively; town names having three words are shortened as San Pedro Nonualco =SPNonualco; countries are abbreviated as (M) =Mexico, (G) =Guatemala, and (S) =El Salvador; Description, q(s) =earthquake(s), forq(s) =foreshock(s), aftq(s) =aftershocks, bldgs =buildings; under M_{int} is an estimate of the moment magnitude from the maximum diameter of the Modified Mercalli intensity VII (L_{VII}) and VIII (L_{VIII}) contours; Duration of felt shaking is given in [] under [duration] in seconds unless minutes are specified; M_s is instrumentally-determined surface wave magnitude, unless mb =body wave magnitude or M_t =tsunami magnitude (Abe, 1979) is specified, or, if preceeded by M indicates a "unified magnitude" from Gutenberg and Richter (1954); M_s is from Abe (1981) unless followed a three letter station code; Instrumental locations are from the NOAA hypocenter file unless followed by (K) =Kelleher and others (1973).

APPENDIX B

EARTHQUAKE DATA FOR EL SALVADOR SORTED BY SOURCES

SOURCE SYMBOLS

GUTE	B. Gutenberg and Richter, C. and Gutenberg, B.
LEEDS	D. Leeds
SSA	Seismological Society of America-Earthquake Notes
WHITE	R. White
BSSA	Bulletin of the Seismological Society of America
ISS	International Seismological Summary
GELL	R. J. Geller
TAC	Tacubaya, Mexico Seismological Station
SYKES	L. R. Sykes and Ewing, M. and Molnar, P. And Sykes, L. R.
CGS	Coast and Geodetic Survey
ISC	International Seismological Center
NOS	National Ocean Survey
ERL	Enviromental Research Laboratories
PDE	Preliminary Determination of Earthquakes
NMNH	National Museum of Natural History
SCHUL	R. Schulz
RVR	L. Rutten and Van Raadshooven, B.
ROTHE	J. P. Rothe
KELLE	J. Kelleher et al.

VOLCANIC CHAIN ZONE

CRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
12	WHITE2		730					13.738N	89.292W	0		5.50
13	WHITE2		733					14.294N	89.615W	0		7.20
28	WHITE2		04765					13.720N	89.066W	0		5.70
39	WHITE229	11	783					13.632N	88.783W	0		6.60
42	WHITE202	02	793					13.657N	89.135W	0		6.00
44	WHITE202	02	798					13.702N	89.208W	0		5.40
47	WHITE220	08	815					13.633N	89.175W	0		6.10
53	WHITE221	03	839					13.762N	89.230W	0		6.20
54	WHITE223	06	847					13.708N	89.469W	0		5.90
56	WHITE216	04	854					13.681N	89.135W	0		6.50
57	WHITE211	06	854					13.672N	89.038W	0		6.30
58	WHITE206	11	857					13.696N	89.009W	0		6.20
63	WHITE221	06	860					13.630N	88.887W	0		5.80
69	WHITE229	12	872					13.633N	88.876W	0		5.40
73	WHITE202	01	893					13.705N	89.164W	0		5.60
74	GELL	29	0489	8	16	18	00.0	12.000N	86.000W	0		7.90
75	WHITE225	03	899					13.651N	88.796W	0		5.70
80	DUDA	30	1270	7	05	26	59	12.100N	86.300W	0		7.20
83	WHITE219	07	12	00	00	00	00.0	13.867N	89.567W	0	0	5.90
84	WHITE208	03	13	15	40	00	00.0	14.300N	90.350W	0	0	6.10
91	WHITE208	06	17	00	55	00	00.0	13.700N	89.500W	0		6.40
92	WHITE208	06	17	01	30	00	00.0	13.750N	89.267W	0		6.30
94	WHITE226	12	17	05	57	00	00.0	14.533N	90.533W	0		5.80
95	WHITE229	12	17	20	30	00	00.0	14.533N	90.533W	0	0	5.80
96	WHITE204	01	18	04	30	00	00.0	14.533N	90.533W	0		6.00
97	WHITE225	01	18	01	18	00	00.0	14.533N	90.533W	0		6.20
101	RVR	19	10	18	03	22	45	14.500N	91.000W	0		0.
103	ISS	28	04	19	06	45	45	14.500N	91.000W	0		0.
104	WHITE228	04	19	07	25	00	00.0	13.667N	89.167W	0		6.00
106	ISS	01	07	19	21	30	25	14.500N	91.000W	0		0.
107	RVR	06	07	19	07	04	10	14.500N	91.000W	0		0.
111	RVR	23	03	20	15	21	48	14.500N	91.000W	0		0.
113	ISS	11	12	20	21	22	18	14.500N	91.000W	0		0.
118	RVR	01	05	24	19	54	15	14.000N	89.000W	0		0.
131	ISS	24	03	26	10	54	42	14.000N	89.000W	0		0.
135	ISS	24	02	27	04	13	52	14.500N	91.000W	0		0.
136	ISS	02	10	27	04	47	45	14.000N	88.000W	0		0.
137	ISS	02	10	27	09	29	15	14.000N	88.000W	0		0.
140	RVR	25	10	28	12	32	48	12.300N	85.800W	0		6.50
149	ISS	04	02	29	10	19	34	14.000N	88.000W	0		0.
152	ISS	19	03	29	20	53	42	14.500N	91.000W	0		0.
153	RVR	21	03	29	02	36	56	14.500N	91.000W	0		0.
156	WHITE207	07	30	13	33	00	00.0	14.167N	90.167W	30		6.00
157	WHITE214	07	30	22	40	00	00.0	14.250N	90.250W	30		6.90
159	ISS	29	07	30	06	24	06	12.700N	86.700W	0		0.
162	WHITE231	03	31	16	02	00	00.0	12.150N	86.283W	7		6.00
164	LEEDS	07	04	31				12.200N	86.300W	30		5.60
165	ISS	25	04	31				14.000N	89.000W	0		0.
175	BSS22	02	10	32	04	00	00	12.000N	86.000W	0		0.
180	LEEDS	11	07	33	07	00	00	12.200N	86.300W	30		5.60
181	LEEDS	24	08	33				12.200N	86.300W	30		5.60
183	CUTE	07	03	34	22	41	47.0	13.250N	87.750W	0	0	6.25
185	ISS	27	07	34				14.500N	91.000W	0		0.
196	RVR	19	11	36	21	10	25	14.000N	91.000W	0		0.
197	GELL	19	11	36	21	10	18.0	14.000N	90.700W	0		0.
198	RVR	22	11	36	18	19	22	14.500N	90.500W	0		0.
200	GELL	20	12	36	02	43	24.0	13.300N	88.900W	0		0.
201	WHITE220	12	36	02	43	00.0	13.717N	88.933W	0		6.10	
202	LEEDS	12	01	37				12.580N	87.160W	0		5.60
204	GELL	20	10	37	05	47	30.0	13.300N	88.000W	0		0.
210	WHITE225	12	37	23	50	00.0	13.933N	89.783W	0		5.90	
213	WHITE225	04	38	17	25	00.0	12.450N	86.850W	0		5.90	
214	WHITE206	05	38	18	17	00.0	12.533N	86.867W	0		6.10	
215	LEEDS	06	05	38	18	17	00	12.300N	86.900W	0		0.
232	BSS30	07	04	40	03	48	20	13.300N	88.800W	0		5.00
233	BSS30	07	04	40	08	38	10	13.300N	88.800W	0		5.00
234	SSA	07	04	40	08	38	00	13.300N	88.800W	0		0.
235	SSA	07	04	40	03	48	12	13.300N	88.800W	0		0.
239	GELL	06	04	41	22	55	18.0	13.900N	88.800W	0		0.
240	SSA	16	10	41	09	39	42	13.500N	88.000W	0		0.
242	ISS	23	02	42				14.000N	89.400W	0		0.
243	ISS	23	02	42				14.000N	89.400W	0		0.
244	SSA	01	03	42	09	52	05	14.000N	91.000W	0		0.
248	SSA	08	08	42	22	36	36	14.400N	90.900W	0		0.
251	ISS	15	08	42				13.900N	90.800W	0		0.
252	GELL	16	08	42	20	07	48.0	14.000N	90.900W	0		0.
253	GELL	20	08	42	22	37	00.0	14.000N	91.000W	0		0.
254	ISS	22	08	42				13.900N	90.800W	0		0.
255	KELLE	29	08	42	21	40	16	14.040N	90.700W	0		0.
258	ISS	07	09	42				13.900N	90.800W	0		0.
260	GELL	27	09	42	17	02	12.0	14.500N	91.000W	0		0.
280	ISS	16	08	46				12.500N	86.800W	0		0.
282	BSS38	25	01	47	03	52	39	13.400N	87.500W	0		0.
286	SSA	25	01	47	03	52	36	13.400N	87.500W	0		0.
290	LEEDS	15	07	47				12.500N	86.800W	30		6.50
298	ISS	03	08	48				12.500N	86.800W	0		0.
299	SSA	21	10	48	04	50	15	13.200N	88.000W	0		0.
308	GELL	15	04	50	14	51	18.0	13.900N	90.800W	0		0.
309	GELL	15	04	50	10	43	20.0	14.000N	91.000W	0		0.
313	LEEDS	05	01	51	14	21	00	12.200N	86.300W	30		5.60
315	GELL	20	01	51	13	12	11.0	14.500N	90.500W	0		0.
317	GELL	13	02	51	16	28	02.0	14.500N	90.500W	0		0.
318	GELL	13	02	51	08	50	13.0	14.500N	90.500W	0		0.
319	GELL	05	03	51	00	50	36.0	14.500N	91.000W	0		0.
324	WHITE206	05	51	23	03	00		13.517N	88.400W	0		6.00
325	WHITE206	05	51	23	08	00		13.517N	88.400W	0		6.20
326	WHITE207	05	51	20	22	00		13.483N	88.450W	0		5.80
328	LEEDS	08	07	51	11	00	00	12.000N	86.000W	0		5.30
331	WHITE202	08	51	20	30	00		13.000N	87.500W	0		6.00
333	WHITE203	08	51	00	23	00		13.000N	87.500W	0		6.00
335	GELL	03	08	51	00	35	10.0	13.000N	87.500W	0		0.
352	BSS44	08	02	54	22	00	00	14.480N	90.530W	0		0.
361	SYKES	09	09	54	03	43	55	12.110N	85.050W	0		0.
370	LEEDS	07	03	55	19	32	00	13.000N	87.000W	0		5.30
374	WHITE204	04	55	19	24	00.0	12.750N	87.167W	0	0	6.25	
378	SYKES	30	04	55	01	44	01	12.060N	86.530W	34		6.00
380	WHITE230	04	55	01	32	00.0	12.383N	86.517W	0	0	6.00	
381	SYKES	30	04	55	09	19	58	12.510N	86.530W	0		5.60
382	SYKES	30	04	55	09	14	59	12.300N	86.610W	0		0.
383	GELL	16	06	55	23	42	13.0	14.250N	91.000W	0		0.
384	SYKES	07	07	55	04	57	31	13.070N	87.510W	9		0.
389	GELL	04	09	55	02	50	55.0	14.000N	91.000W	0		0.
399	LEEDS	09	08	56	17	02	00	12.800N	86.000W	0		5.60
403	GELL	10	09	56	11	25	28.0	14.500N	89.500W	0		0.
408	LEEDS	28	01	57	23	59	00	12.000N	86.500W	0		5.30
428	LEEDS	04	06	58	03	50	00	12.000N	86.500W	0		5.30
429	LEEDS	05	06	58	13	23	00	12.500N	86.500W	0		5.30
440	LEEDS	02	11	58				12.700N	87.200W	0		0.
442	GELL	06	12	58	15	00	40.0	14.500N	90.500W	0		0.
443	GELL	06	12	58	09	46	10.0	14.500N	90.500W	0		0.
444	GELL	07	12	58	06	48	00.0	14.500N	90.500W	0		0.

445	GELL	11	12	58	09	34	34.0	14.500N	90.333W	0		0.
446	LEEDS	27	12	58				12.800N	87.300W	0		5.60
450	ISS	16	02	59	17	54	15.0	13.110N	87.340W	0	0	5.40
454	LEEDS	15	03	59	10	44	00	12.000N	85.000W	0		5.30
455	LEEDS	31	03	59	04	57	00	13.000N	87.000W	0		5.30
457	SYKES	05	06	59	20	37	14	12.070N	86.480W	33		5.30
461	GELL	24	07	59	19	02	36.0	14.000N	91.000W	0		0.
463	LEEDS	12	08	59	00	35	00	12.000N	86.000W	0		5.30
464	LEEDS	12	08	59	00	33	00	12.000N	86.000W	0		5.30
468	GELL	14	11	59	12	13	28.0	13.867N	89.767W	0		0.
469	GELL	14	11	59	12	04	51.0	13.867N	89.767W	0		0.
485	GELL	04	03	60	06	46	30.0	13.500N	88.000W	0		0.
493	GELL	11	07	60	22	27	54.0	14.000N	90.500W	0		0.
500	GELL	26	10	60	11	54	19.0	14.166N	90.833W	0		0.
505	GELL	03	01	61	02	25	50.0	14.000N	89.817W	5		0.
506	GELL	21	01	61	06	41	00.0	14.000N	89.817W	5		0.
507	GELL	21	01	61	06	46	08.0	14.000N	89.817W	5		0.
508	GELL	22	01	61	15	56	14.0	14.000N	89.817W	5		0.
509	GELL	23	01	61	08	48	03.0	14.000N	89.817W	5		0.
510	GELL	23	01	61	07	06	53.0	14.000N	89.817W	5		0.
511	GELL	23	01	61	04	58	08.0	14.000N	89.817W	5		0.
512	GELL	23	01	61	04	52	00.0	14.000N	89.817W	5		0.
513	GELL	24	01	61	22	20	04.0	14.000N	89.817W	5		0.
514	GELL	24	01	61	21	57	11.0	14.000N	89.817W	5		0.
515	GELL	24	01	61	21	53	34.0	14.000N	89.817W	5		0.
516	GELL	25	01	61	01	16	26.0	14.000N	89.817W	5		0.
517	GELL	27	01	61	08	22	32.0	14.000N	89.817W	5		0.
518	GELL	30	01	61	18	57	43.0	14.000N	89.817W	5		0.
526	GELL	26	04	61	10	45	00.0	13.700N	89.200W	3		0.
527	GELL	02	05	61	14	57	25.0	13.650N	89.176W	13		0.
528	GELL	02	05	61	14	56	08.0	13.650N	89.176W	13		0.
558	LEEDS	29	08	61	00	13	00	13.000N	87.500W	30		5.60
572	GELL	06	02	62	02	58	23.5	14.600N	90.800W	33		0.
575	LEEDS	16	06	62	11	10	00	13.300N	87.300W	33		5.30
579	LEEDS	16	08	62	05	37	00	12.600N	85.600W	30		5.60
586	LEEDS	24	11	62	10	30	00	13.000N	87.500W	25		6.50
589	LEEDS	15	01	63	13	50	00	13.000N	86.700W	30		5.30
591	LEEDS	16	01	63	04	29	00	13.000N	86.700W	30		5.30
600	ROTHE	10	03	63	06	04	33	14.000N	89.800W	0		5.30
604	SYKES	03	05	63	10	01	37	13.710N	89.080W	24		0.
606	CGS-B	09	05	63	15	06	24.4	12.700N	86.600W	33	410MB	3.29
615	CGS-B	15	07	63	16	32	18.6	14.400N	90.200W	33	380MB	2.80
627	LEEDS	13	10	63	10	21	00	12.500N	87.100W	30		5.60
637	LEEDS	21	12	63	05	05	00	13.400N	87.200W	30		5.60
638	CGS-B	27	12	63	03	57	09.8	14.500N	90.700W	33	390MB	2.96
662	ISC	04	02	64	02	06	00	13.600N	89.030W	10		0.
678	LEEDS	18	02	64	16	12	00	13.000N	87.500W	30		5.60
679	ISC	10	02	64	03	20	00	13.650N	89.170W	10		0.
680	ISC	11	02	64	13	48	00	13.970N	89.870W	10		0.
694	ISC	01	03	64	01	36	00	13.620N	89.130W	0		0.
695	ISC	01	03	64	05	12	00	13.620N	89.130W	0		0.
696	ISC	01	03	64	05	34	00	13.600N	89.030W	0		0.
705	ISC	06	03	64	04	59	26.5	14.000N	89.820W	10		0.
709	LEEDS	11	03	64	08	39	00	12.500N	87.100W	30		5.60
713	CGS-B	13	03	64	21	08	12.1	14.500N	90.900W	33	480MB	4.45
727	ISC	28	03	64	02	05	57.0	13.250N	88.170W	30		0.
738	ISC	07	04	64	17	26	31.0	13.250N	87.670W	30		0.
744	ISC	09	04	64	20	02	00	14.170N	90.100W	10		0.
747	ISC	10	04	64	21	12	00	14.000N	89.820W	10		0.
748	ISC	12	04	64	10	33	00	13.600N	89.030W	10		0.
750	ISC	15	04	64	07	58	00	13.600N	89.030W	10		0.
752	ISC	19	04	64	00	22	00	13.620N	89.130W	0		0.
757	ISC	22	04	64	02	56	21.0	13.600N	89.030W	10		0.
758	ISC	23	04	64	09	53	00	13.620N	89.130W	10		0.
763	ISC	26	04	64	08	09	00	13.620N	89.130W	10		0.
764	ISC	27	04	64	08	37	00	13.600N	89.030W	10		0.
775	ISC	03	05	64	06	19	00	13.620N	89.130W	10		0.
782	ISC	06	05	64	10	27	52.0	13.250N	87.670W	30		0.
783	ISC	08	05	64	22	01	00	14.420N	89.450W	10		0
790	ISC	16	05	64	04	10	00	13.620N	89.130W	10		0.

799	ISC	22	05	64	06	41	00	13.600N	89.030W	10		0.
809	ISC	03	06	64	06	03	26.9	14.470N	91.560W	33	350MB	2.30
840	ISC	21	07	64	02	06	50.0	13.500N	87.900W	0		0.
851	ISC	05	08	64	02	54	38.2	14.500N	92.100W	33	390MB	2.96
852	ISC	07	08	64	03	15	25.2	14.500N	92.000W	33	380MB	2.80
890	ISC	25	09	64	08	25	50.0	13.600N	89.100W	0		0.
900	ISC	07	10	64	20	32	19.8	14.500N	91.290W	33	370MB	2.63
907	CGS-B	29	10	64	12	21	52.9	13.200N	88.500W	33	400MB	3.13
921	CGS-B	27	11	64	10	55	11.3	13.400N	88.700W	33	410MB	3.29
929	CGS-B	14	12	64	21	29	05.8	13.900N	90.500W	33	440MB	3.79
931	ISC	29	12	64	05	06	22.0	13.300N	88.300W	0		0.
933	ISC	01	01	65	08	35	00	13.650N	89.150W	10		0.
941	ISC	13	01	65	06	42	33.0	14.600N	92.100W	33	390MB	2.96
942	ISC	14	01	65	23	07	00	13.650N	89.150W	10		0.
956	GELL	02	02	65	03	37	13.9	14.000N	91.000W	33	490MB	4.61
960	CGS-B	06	02	65	08	14	08.8	13.800N	89.300W	16	430MB	3.62
962	GELL	10	02	65	03	14	04.7	14.100N	91.000W	33		0.
981	ISC	26	03	65	22	40	00	13.850N	89.780W	10		0.
994	ISC	17	04	65	07	02	50.1	14.100N	91.300W	33	360MB	2.47
1000	WHITE203		05	65	10	01	00.0	13.700N	89.167W	15		6.00
1011	ISC	14	06	65	23	19	44.2	14.400N	92.100W	33	410MB	3.29
1023	ISC	08	07	65	16	31	00	13.980N	89.850W	10		0.
1037	ISC	29	08	65	01	26	07.6	14.800N	91.500W	33	390MB	2.96
1038	CGS-B	29	08	65	02	32	51.3	14.000N	90.900W	28	440MB	3.79
1048	ISC	01	10	65	00	39	00	13.650N	89.150W	10		0.
1057	ISC	01	11	65	04	34	00	13.650N	89.150W	10		0.
1066	CGS-B	11	12	65	15	30	09.1	14.200N	90.800W	33	420MB	3.46
1068	CGS-B	11	12	65	19	20	43.6	14.100N	90.900W	33	410MB	3.29
1077	CGS-B	25	12	65	04	13	29.7	13.900N	89.400W	33	430MB	3.62
1095	CGS-B	24	04	66	15	41	03.2	13.700N	88.300W	33	390MB	2.96
1099	CGS-B	11	05	66	05	57	02.2	12.300N	86.800W	33	400MB	3.13
1100	ISC	20	05	66	03	51	18.1	14.800N	91.700W	33	400MB	3.13
1102	ISC	01	06	66	02	52	05.9	14.700N	91.200W	26	360MB	2.47
1107	ISC	23	06	66	13	33	36.8	14.600N	91.300W	33	420MB	3.46
1114	ISC	08	07	66	01	12	04.7	15.000N	91.900W	33	370MB	2.63
1125	ISC	12	08	66	08	53	36.5	14.700N	91.100W	33	380MB	2.80
1128	ISC	18	08	66	19	40	52.2	14.900N	91.900W	33	370MB	2.63
1138	CGS-B	20	09	66	09	51	07.7	13.800N	89.000W	8	440MB	3.79
1165	ISC	10	12	66	15	16	07.5	14.600N	92.000W	33	380MB	2.80
1192	ISC	11	03	67	16	39	57.2	14.600N	91.500W	27	370MB	2.63
1200	CGS-B	30	03	67	05	30	44.3	13.873N	89.532W	33	400MB	3.13
1202	ISC	05	04	67	08	58	57.0	14.000N	91.000W	0	410MB	3.29
1216	ISC	30	04	67	16	28	15.1	14.300N	91.300W	16	480MB	4.45
1218	ISC	03	05	67	09	29	00	13.830N	89.750W	15		0.
1253	CGS-B	28	05	67	14	37	53.3	14.194N	90.872W	33	370MB	2.63
1256	ISC	31	05	67	18	19	00	13.620N	88.730W	20		0.
1273	ISC	08	07	67	08	45	31.7	14.300N	91.600W	33	400MB	3.13
1274	ISC	15	07	67	21	04	44.0	14.000N	90.000W	33	410MB	3.29
1279	ISC	11	08	67	12	26	18.3	11.800N	85.900W	21	470MB	4.28
1280	ISC	13	08	67	17	16	41.0	12.100N	85.000W	33	390MB	2.96
1290	ISC	18	09	67	11	19	09.0	14.370N	91.700W	0		0.
1314	CGSPDE	04	11	67	22	29	46.4	14.200N	89.700W	24	400MB	3.13
1315	CGSPDE	06	11	67	18	49	26.2	13.500N	88.000W	33	430MB	3.62
1317	CGSPDE	15	11	67	22	02	35.1	14.300N	90.400W	26	460MB	4.12
1325	ISC	24	11	67	09	20	03.7	14.100N	91.100W	33	420MB	3.46
1336	ISC	04	01	68	01	51	54.0	14.200N	90.900W	33	410MB	3.29
1337	CGSPDE	04	01	68	10	03	56.5	12.100N	86.300W	5	460MB	4.12
1403	CGS 7716		10	68	06	08	45.5	13.893N	88.250W	16	430MB	3.62
1430	CGS 1608		02	69	04	56	59.7	13.624N	88.271W	33	430MB	3.62
1446	ISC	09	04	69	17	21	22.0	15.000N	92.200W	33		0.
1460	ISC	09	05	69	10	09	01.3	14.600N	91.600W	33	380MB	2.80
1484	ISC	01	07	69	22	32	30.0	14.000N	90.800W	33	380MB	2.80
1507	ISC	07	10	69	02	28	41.0	14.300N	88.900W	0	350MB	2.30
1551	ISC	07	02	70	05	56	18.0	14.100N	90.800W	0	400MB	3.13
1552	CGS	1308	02	70	16	19	20.7	14.670N	90.237W	33	460MB	4.12
1553	ISC	10	02	70	05	24	26.0	14.100N	90.800W	0	390MB	2.76
1570	ISC	11	03	70	19	48	37.0	14.570N	90.000W	33		0.
1584	ISC	18	04	70	08	06	30.0	14.000N	90.900W	0	370MB	2.63
1599	ISC	08	06	70	02	10	04.0	13.220N	88.330W	33		0.
1626	CGS	5512	08	70	09	24	11.5	12.015N	86.542W	33	590MB	6.30

1627	CGS	5512	08	70	10	24	23.9	12.051N	86.539W	33	560MB	5.50
1634	ISC	12	09	70	09	24	11.5	12.000N	86.500W	33	590MB	6.26
1635	ISC	12	09	70	10	24	23.9	12.100N	86.500W	33	560MB	5.77
1670	ISC	04	12	70	03	09	19.5	14.400N	91.700W	33		0.
1721	ISC	25	03	71	21	21	27.0	14.440N	92.000W	33		0.
1742	ISC	09	06	71	19	08	33.5	14.670N	92.000W	33	520MB	5.11
1763	ISC	12	09	71	05	32	03.4	14.100N	91.300W	33	430MB	3.62
1783	ERL	103	01	72	04	31	04.8	12.311N	86.300W	33	410MB	3.29
1784	ERL	205	01	72	11	52	26.9	12.286N	86.236W	33	420MB	3.46
1785	ISC	07	01	72	14	29	39.4	15.000N	91.900W	33	470MB	4.28
1883	ISC	27	08	72	20	01	02.0	14.480N	92.130W	33		0.
1930	WHITE223		12	72	06	29	00.0	12.150N	86.283W	10	560MB	6.20
1931	ISC	23	12	72	06	39	52.0	11.900N	86.400W	0	440MB	3.79
1932	ERL	7723	12	72	07	19	49.0	12.000N	86.189W	5	520MB	5.11
1933	ERL	23	12	72	07	17	36.2	12.050N	86.378W	5	500MB	4.78
1962	ISC	25	05	73	13	42	53.0	14.000N	89.600W	0	430MB	3.62
2008	ISC	30	10	73	20	32	15.0	11.600N	86.200W	0	430MB	3.62
2024	ISC	27	11	73	13	05	03.5	14.300N	90.000W	0	430MB	3.62
2059	ISC	14	03	74	18	05	45.0	13.000N	86.400W	33	440MB	3.79
2143	ISC	21	12	74	18	11	09.6	11.740N	86.500W	33	430MB	3.62
2170	ISC	24	02	75	14	19	42.1	14.800N	91.900W	33	460MB	4.12
2202	ISC	26	05	75	00	16	36.0	13.200N	86.800W	0	430MB	3.62
2204	ISC	28	05	75	20	50	57.7	13.000N	87.200W	0	440MB	3.79
2247	ISC	11	10	75	11	17	20.2	12.550N	87.020W	33		0.
2248	ISC	15	10	75	01	05	16.4	12.350N	86.410W	33		0.
2250	PDE	15	10	75	20	55	50.9	13.453N	88.045W	33	470MB	4.28
2253	ISC	24	10	75	04	48	38.0	11.600N	86.200W	33		0.
2255	ISC	25	10	75	15	59	34.0	12.800N	86.770W	33		0.
2266	ISC	19	11	75	09	52	39.0	12.700N	86.300W	33		0.
2268	ISC	24	11	75	17	58	52.1	11.780N	86.090W	33		0.
2272	ISC	01	12	75	06	24	43.6	11.310N	85.800W	14	440MB	3.79
2277	ISC	07	12	75	01	20	22.6	11.960N	86.150W	33		0.
2288	ISC	07	01	76	17	38	10.5	11.720N	85.990W	33		0.
2303	PDE	04	02	76	11	24	57.1	14.696N	90.879W	5	470MB	4.28
2304	PDE	04	02	76	10	03	49.9	14.172N	90.727W	5	500MB	4.78
2311	ISC	05	02	76	01	00	50.7	14.700N	91.200W	5	440MB	3.79
2317	PDE	06	02	76	18	11	58.9	14.316N	90.432W	5	500MB	4.78
2319	ISC	06	02	76	20	02	06.0	14.700N	90.400W	0	460MB	4.12
2320	PDE	07	02	76	02	28	41.9	14.335N	90.886W	5	430MB	3.62
2323	PDE	08	02	76	04	38	27.8	14.392N	90.515W	5	390MB	2.96
2330	ISC	10	02	76	15	33	44.0	14.400N	90.200W	33		0.
2336	PDE	24	02	76	06	25	27.3	14.221N	90.418W	5	440MB	3.79
2340	ISC	07	03	76	02	54	04.2	14.700N	91.000W	5	510MB	4.94
2348	ISC	29	03	76	13	23	43.0	11.720N	85.900W	33		0.
2392	PDE	04	05	76	08	43	27.3	13.075N	87.568W	33	530MB	5.27
2393	ISC	04	05	76	09	10	56.8	13.300N	88.000W	33		0.
2396	ISC	10	05	76	02	51	54.4	12.900N	87.230W	33		0.
2427	ISC	20	06	76	20	14	05.6	14.300N	89.800W	33		0.
2494	ISC	19	09	76	11	52	32.0	14.380N	90.990W	33		0.
2521	ISC	12	11	76	08	06	37.0	14.240N	91.240W	33		0.
2526	ISC	01	12	76	23	24	57.0	14.600N	91.100W	33	500MB	4.78
2540	PDE	14	01	77	17	05	23.0	13.144N	87.755W	33	370MB	2.63
2547	ISC	18	01	77	05	11	30.0	14.100N	88.800W	33		0.
2553	ISC	09	02	77	22	21	20.3	14.500N	90.000W	33		0.
2559	ISC	28	02	77	03	31	50.0	14.200N	89.100W	33		0.
2562	ISC	03	03	77	12	11	23.4	14.410N	91.390W	33		0.
2574	PDE	11	04	77	10	01	26.3	13.154N	88.134W	10	520MB	5.11
2614	ISC	29	06	77	04	07	02.0	14.600N	92.200W	33		0.
2617	ISC	03	07	77	03	57	21.0	14.120N	91.630W	33		0.
2637	ISC	21	07	77	12	59	51.0	12.300N	86.100W	33		0.
2630	ISC	22	07	77	07	28	17.3	11.570N	86.100W	33		0.
2641	ISC	26	07	77	08	25	04.0	14.200N	91.160W	33		0.
2655	ISC	23	08	77	14	05	25.0	14.300N	91.500W	33		0.
2702	ISC	12	01	78	06	15	31.4	11.100N	84.800W	33		0.
2729	ISC	21	03	78	02	36	26.7	13.400N	89.200W	33	430MB	3.62
2730	ISC	25	03	78	16	39	20.0	12.700N	87.400W	33	450MB	3.95
2769	WHITE229		07	78	14	37	00.0	14.667N	91.000W	8		5.00
2777	ISC	19	08	78	19	46	10.2	13.000N	87.300W	33	430MB	3.62
2784	ISC	09	09	78	06	38	07.0	12.100N	86.300W	33	420MB	3.46
2795	ISC	17	09	78	03	57	21.4	14.930N	92.000W	33		0.

2800	ISC	24	09	78	01	29	46.2	13.900N	90.200W	33	440MB	3.79
2819	ISC	25	10	78	20	00	24.7	14.450N	90.880W	33		0.
2824	ISC	29	10	78	03	42	25.6	14.700N	91.800W	33	490MB	4.61
2862	ISC	21	12	78	04	16	34.0	14.260N	91.650W	33		0.
2880	ISC	08	02	79	14	55	58.1	13.920N	90.730W	33		0.
2924	ISC	06	07	79	09	33	00.5	14.400N	91.210W	33	480MB	4.45
2952	ISC	16	09	79	13	44	59.3	13.300N	88.100W	33	470MB	4.28
2958	WHITE209		10	79	07	49	00.0	14.167N	90.283W	8	0	5.00
2969	ISC	29	10	79	16	22	49.7	12.400N	86.200W	33	450MB	3.95
2999	ISC	26	01	80	15	48	23.0	14.100N	91.100W	33	450MB	3.95
3003	ISC	03	02	80	08	45	04.0	14.060N	89.280W	33		0.
3009	ISC	11	02	80	08	05	11.0	14.080N	90.790W	33		0.
3010	ISC	11	02	80	08	55	59.7	14.300N	90.800W	33	390MB	2.96
3011	ISC	11	02	80	09	21	34.0	13.730N	90.150W	33		0.
3012	ISC	11	02	80	23	27	33.6	14.300N	90.200W	33	480MB	4.45
3015	ISC	15	02	80	16	38	37.0	14.330N	90.080W	33		0.
3017	ISC	21	02	80	03	25	19.0	14.300N	91.100W	33	400MB	3.13
3018	ISC	27	02	80	11	53	58.0	13.830N	89.550W	33		0.
3028	ISC	14	03	80	22	06	17.0	14.170N	91.680W	33		0.
3030	ISC	16	03	80	10	37	52.0	14.200N	90.200W	33	440MB	3.79
3031	ISC	23	03	80	00	34	06.0	13.850N	90.480W	33		0.
3032	ISC	23	03	80	10	22	38.0	13.490N	89.800W	33		0.
3035	ISC	25	03	80	08	20	24.8	11.800N	85.800W	33	440MB	3.79
3039	ISC	30	03	80	10	20	28.7	14.300N	90.800W	33		0.
3041	ISC	04	04	80	04	04	51.3	13.790N	89.830W	33		0.
3047	ISC	12	04	80	10	44	17.4	13.730N	89.230W	33		0.
3050	ISC	15	04	80	23	54	26.4	14.100N	91.680W	33		0.
3051	ISC	18	04	80	23	26	41.5	14.020N	90.990W	33		0.
3053	ISC	21	04	80	06	00	44.2	14.170N	90.810W	33		0.
3060	ISC	30	04	80	09	27	27.2	14.120N	90.780W	33		0.
3089	ISC	14	07	80	10	12	42.7	11.220N	85.650W	33		0.
3134	ISC	23	11	80	08	25	41.0	13.700N	89.300W	33	450MB	3.95
3140	ISC	10	12	80	14	10	09.8	14.040N	91.400W	33	440MB	3.79
3147	ISC	10	01	81	15	15	13.1	13.900N	89.200W	33	490MB	4.61
3162	ISC	21	02	81	15	18	27.5	13.600N	87.600W	33	420MB	3.46
3171	ISC	12	03	81	03	17	14.5	11.300N	85.800W	33	470MB	4.28
3193	ISC	24	05	81	09	48	24.0	11.400N	85.400W	33	420MB	3.46
3201	ISC	12	06	81	12	26	28.8	13.400N	88.000W	33	440MB	3.79
3204	ISC	22	07	81	01	16	18.0	14.800N	92.000W	33		0.
3210	ISC	03	09	81	09	48	31.0	13.190N	88.560W	33	380MB	2.80
3224	ISC	19	10	81	19	01	39.5	14.200N	91.800W	33	460MB	4.12
3238	ISC	25	12	81	08	47	34.4	14.700N	90.000W	33	400MB	3.13
3241	ISC	30	12	81	12	47	20.3	14.700N	91.800W	33	490MB	4.61
3250	ISC	12	01	82	05	48	17.6	13.200N	87.600W	6	580MB	6.10
3251	ISC	12	01	82	07	04	07.4	13.100N	87.600W	10	480MB	4.45
3253	ISC	17	01	82	02	00	40.0	13.900N	89.600W	33	440MB	3.79
3271	ISC	30	03	82	17	37	34.9	13.100N	87.400W	33	470MB	4.28
3323	ISC	23	06	82	08	51	38.9	14.000N	88.600W	33	470MB	4.28
3363	ISC	25	08	82	09	46	59.6	14.000N	90.800W	33	450MB	3.95
3368	ISC	03	10	82	06	09	38.1	13.100N	87.700W	33	460MB	4.12
3369	ISC	03	10	82	21	38	34.2	14.400N	89.200W	29	440MB	3.79
3372	ISC	16	10	82	06	35	53.9	14.400N	89.400W	33	460MB	4.12
3392	ISC	19	11	82	23	22	03.7	11.300N	85.700W	18	500MB	4.78
3426	ISC	03	04	83	20	33	38.9	14.300N	90.500W	13		0.
3430	ISC	10	04	83	14	09	25.6	14.040N	90.930W	28		0.
3436	ISC	05	05	83	10	33	30.0	13.200N	87.900W	33	420MB	3.46
3437	ISC	08	05	83	14	47	42.0	14.100N	89.970W	33		0.
3446	ISC	27	06	83	14	16	51.0	13.800N	88.400W	33	480MB	4.45
3450	ISC	06	07	83	12	27	37.0	13.200N	87.800W	33	450MB	3.95
3457	ISC	22	07	83	13	26	53.0	14.200N	90.900W	33	460MB	4.12
3466	ISC	08	08	83	23	18	15.4	12.600N	86.700W	33	460MB	4.12
3472	ISC	06	09	83	05	58	33.3	14.180N	89.560W	33	460MB	4.12
3522	ISC	08	01	84	10	04	15.0	14.700N	90.240W	33	420MB	3.46
3534	ISC	23	01	84	12	42	46.4	14.090N	91.330W	33		0.
3552	ISC	27	02	84	00	49	09.1	13.900N	91.000W	33	480MB	4.45
3562	ISC	17	03	84	17	56	42.6	13.950N	91.280W	33		0.
3573	ISC	10	04	84	22	00	32.0	14.300N	91.500W	33	470MB	4.28
3593	ISC	14	06	84	01	49	24.8	14.200N	91.400W	33	420MB	3.46
3601	ISC	06	07	84	13	50	10.0	13.900N	91.100W	33	450MB	3.95
3637	ISC	13	09	84	18	55	20.0	12.500N	86.400W	33	440MB	3.79

3639	ISC	12	10	84	04	47	54.0	13.500N	89.500W	33	460MB	4.12
3677	ISC	18	12	84	16	06	42.4	14.300N	91.400W	33	450MB	3.95
3732	PDE	17	07	85	03	20	23.1	12.636N	86.887W	33	500MB	4.78
3739	PDE	18	08	85	23	15	00.3	13.990N	91.095W	33	470MB	4.28
3742	PDE	08	09	85	15	29	51.8	14.326N	91.279W	33	460MB	4.12
3769	PDE	14	12	85	12	39	19.3	11.626N	85.935W	33	500MB	4.78
3771	PDE	16	12	85	02	44	36.0	11.725N	85.838W	22	590MB	6.26
3780	PDE	03	02	86	15	12	46.7	15.075N	92.072W	16	470MB	4.28
3781	PDE	04	02	86	14	15	38.7	13.650N	87.920W	33	370MB	2.63
3813	PDE	04	05	86	17	56	19.1	14.280N	91.500W	33	470MB	4.28
3841	PDE	10	10	86	17	49	24.1	13.827N	89.119W	7	500MB	5.40
3842	PDE	10	10	86	18	03	27.4	13.754N	89.197W	5		0.
3843	PDE	10	10	86	19	27	11.5	13.792N	89.158W	5	460MB	4.12
3844	PDE	10	10	86	20	50	10.9	13.671N	89.219W	5		0.
3845	PDE	13	10	86	22	24	34.1	13.721N	89.237W	5		0.

SHALLOW BENIOFF ZONE

CRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
90	GUTE	27	02	16	20	20	48.0	12.000N	90.000W	0	0	7.50
115	GUTE	28	03	21	07	49	22.0	12.500N	87.500W	0	0	7.30
120	ISS	18	01	25	13	11	42	12.000N	91.000W	0		0.
127	GUTE	08	02	26	15	17	49.0	13.000N	89.000W	0	0	7.10
129	BSS16	15	02	26	03	59	00	12.000N	89.000W	0		0.
141	BSS19	24	01	29	20	36	19	12.000N	90.000W	0		0.
142	WHITE1	24	01	29				12.800N	91.000W	0		7.10
143	RVR	24	01	29	20	36	28	12.800N	91.000W	0		0.
144	ISS	25	01	29	01	28	12	12.800N	91.000W	0		0.
145	ISS	26	01	29	02	30	40	12.800N	91.000W	0		0.
146	ISS	28	01	29	21	56	42	12.800N	91.000W	0		0.
147	ISS	31	01	29	18	05	17	12.800N	91.000W	0		0.
148	ISS	03	02	29	18	00	40	12.800N	91.000W	0		0.
150	GELL	10	02	29	15	38	30.0	13.000N	91.000W	0		0.
151	ISS	15	02	29	08	04	24	12.800N	91.000W	0		0.
154	ISS	12	05	29	09	34	30	12.800N	91.000W	0		0.
155	ISS	09	06	29	01	02	45	12.800N	91.000W	0		0.
158	GELL	27	07	30	18	58	12.0	12.000N	91.000W	0		0.
168	GUTE	25	08	31	22	20	42.0	12.500N	89.500W	0	0	5.60
169	SSA	26	09	31	20	02	42	12.000N	91.000W	0		0.
170	SSA	26	09	31	19	49	54	12.000N	91.000W	0		0.
174	ISS	24	06	32				12.500N	89.200W	0		0.
179	ISS	04	06	33				12.800N	91.000W	0		0.
186	GELL	15	08	34	11	04	06.0	12.000N	89.000W	0		0.
191	LEEDS	01	09	35	00	48	00	12.000N	87.500W	0		5.30
195	WHITE1	19	11	36				13.500N	90.800W	0		7.00
199	GELL	20	12	36	13	23	30.0	13.000N	89.000W	0		0.
203	ISS	03	04	37				12.000N	90.700W	0		0.
216	GELL	14	05	38	23	41	48.0	12.000N	88.300W	0		0.
217	GELL	01	09	38	22	48	24.0	13.000N	89.000W	0		0.
218	SSA	20	01	39	20	40	24	13.000N	90.500W	0		0.
219	GELL	25	01	39	14	11	48.0	13.000N	90.000W	0		0.
220	ISS	27	01	39				13.100N	89.500W	0		0.
221	GELL	29	01	39	18	50	24.0	13.000N	90.000W	0		0.
223	GELL	16	08	39	17	07	06.0	13.000N	90.000W	0		0.
226	GELL	05	12	39	17	51	48.0	12.700N	88.800W	0		0.
227	GELL	19	12	39	19	49	30.0	12.400N	87.800W	0		0.
230	LEEDS	20	02	40				12.500N	87.500W	0		6.50
245	GELL	28	06	42	00	06	54.0	13.000N	89.000W	0		0.
247	KELLE	07	08	42	06	04	29	12.470N	90.620W	0		0.
249	KELLE	11	08	42	07	11	15	12.460N	90.480W	0		0.
250	KELLE	11	08	42	04	48	10	13.420N	90.960W	0		0.
256	KELLE	29	08	42	12	23	49	13.680N	90.910W	0		0.
257	SSA	04	09	42	02	53	42	12.500N	91.000W	0		0.
259	GELL	26	09	42	04	00	18.0	12.800N	87.700W	0		0.
262	SSA	24	01	43	20	42	06	13.700N	91.000W	0		0.
264	WHITE1	28	06	44				14.250N	92.650W	0	0	7.00
266	LEEDS	05	08	44	13	06	00	12.500N	87.500W	0		5.30
268	ISS	02	01	45				13.700N	90.200W	0		0.
271	GELL	03	10	45	06	19	25.0	12.000N	91.000W	0		0.
273	GUTE	07	10	45	13	23	27.0	12.250N	89.250W	0	0	6.75

283	ISS	25	01	47				13. 000N	87. 800W	0		0.			
284	ISS	25	01	47				13. 000N	87. 800W	0		0.			
285	ISS	25	01	47				13. 000N	87. 800W	0		0.			
291	ISS	05	09	47				12. 000N	90. 700W	0		0.			
292	ISS	12	09	47				12. 000N	90. 700W	0		0.			
300	BSS39	21	10	48	04	50	02	12. 500N	88. 000W	0		5. 75			
304	SSA	08	07	49	12	40	30	13. 000N	91. 000W	0		6. 00			
306	GELL	10	02	50	20	23	24. 0	12. 000N	90. 000W	0		0.			
310	BSS41	09	05	50	02	35	07	13. 000N	89. 500W	0		0.			
320	GELL	24	03	51	20	52	30. 0	13. 100N	88. 400W	0		0.			
321	GELL	25	03	51	15	33	15. 0	13. 100N	88. 400W	0		0.			
322	ISS	02	04	51	00	13	37. 0	13. 000N	90. 000W	33	0	6. 38			
323	LEEDS	02	04	51	18	00	00	12. 000N	87. 000W	0		5. 30			
325	ISS	06	05	51	23	08	01. 0	13. 000N	87. 800W	0	0	6. 50			
331	ISS	02	08	51	20	30	17. 0	13. 000N	87. 800W	33	0	5. 75			
332	ISS	03	08	51	05	25	44. 0	13. 000N	87. 800W	33	0	5. 50			
333	ISS	03	08	51	00	23	58. 0	13. 000N	87. 800W	33	0	6. 00			
334	GELL	03	08	51	05	25	44. 0	13. 000N	87. 800W	33		5. 50			
337	GELL	31	12	51	20	05	45. 0	13. 000N	90. 000W	33		0.			
342	GELL	03	12	52	10	17	08. 0	12. 117N	90. 850W	0		0.			
346	ISS	29	07	53	18	15	36. 0	13. 000N	90. 000W	0	0	6. 00			
347	GELL	13	08	53	10	07	34. 0	12. 083N	90. 667W	0		0.			
347	GELL	13	08	53	10	07	34. 0	12. 083N	90. 667W	0		0.			
350	BCIS	01	12	53	20	35	36. 0	12. 000N	89. 000W	0	0	5. 25			
353	CGS	19	02	54	21	34	41. 0	12. 500N	87. 500W	0	0	6. 63			
357	GELL	02	05	54	18	17	07. 0	13. 617N	90. 600W	0		0.			
360	GELL	17	08	54	04	56	11. 0	12. 500N	90. 000W	0		0.			
362	GELL	19	09	54	21	24	27. 0	13. 000N	88. 000W	0		0.			
365	LEEDS	27	11	54	16	02	00	12. 000N	87. 000W	0		5. 30			
385	SYKES	16	08	55	04	18	50	12. 400N	87. 950W	0		0.			
387	LEEDS	29	08	55	07	53	00	12. 000N	87. 000W	0		5. 30			
390	LEEDS	13	10	55	21	50	00	12. 000N	87. 000W	0		5. 30			
394	LEEDS	21	04	56				12. 000N	87. 330W	0		5. 60			
400	GELL	11	08	56	13	17	58. 0	12. 500N	89. 000W	0		0.			
405	BSS47	24	10	56	14	42	10	12. 000N	87. 000W	0		7. 25			
406	CGS	25	10	56	05	21	40. 0	12. 000N	87. 000W	0	0	6. 37			
411	SYKES	19	05	57	21	00	29	12. 150N	87. 190W	2		5. 30			
413	GELL	07	08	57	04	12	42. 0	12. 000N	91. 000W	0		0.			
421	GELL	11	02	58	12	46	22. 0	13. 750N	91. 000W	0		0.			
425	GELL	09	04	58	16	15	20. 0	12. 500N	90. 000W	0		0.			
426	GELL	19	04	58	02	24	42. 0	12. 000N	88. 000W	0		0.			
427	GELL	21	05	58	11	52	06. 0	13. 000N	90. 000W	0		0.			
430	GELL	05	06	58	04	29	51. 0	13. 250N	89. 500W	0		0.			
432	GELL	17	06	58	13	04	20. 0	13. 200N	89. 950W	0		0.			
435	GELL	20	07	58	06	24	06. 0	13. 000N	88. 500W	0		0.			
436	SYKES	21	07	58	09	39	08	12. 220N	88. 140W	0		0.			
437	GELL	29	07	58	08	09	00. 0	13. 500N	91. 000W	0		0.			
438	GELL	22	08	58	03	47	30. 0	12. 500N	90. 000W	0		0.			
460	GELL	24	07	59	05	53	24. 0	13. 500N	90. 500W	0		0.			
466	LEEDS	11	09	59	23	08	00	12. 000N	87. 500W	0		5. 30			
473	GELL	29	12	59	10	58	48. 0	13. 000N	91. 000W	0		0.			
474	LEEDS	21	01	60	21	24	00	12. 000N	87. 250W	0		5. 30			
476	GELL	27	01	60	13	04	22. 0	12. 750N	91. 000W	0		0.			
477	GELL	28	01	60	02	52	12. 0	13. 000N	91. 000W	0		0.			
478	GELL	29	01	60	15	32	54. 0	12. 000N	91. 000W	0		0.			
479	GELL	31	01	60	14	54	42. 0	12. 750N	88. 500W	0		0.			
481	LEEDS	15	02	60	07	36	00	12. 000N	87. 000W	0		5. 30			
483	RUTHE	21	02	60	23	37	45	13. 500N	90. 000W	0		5. 30			
488	GELL	17	04	60	18	29	18. 0	13. 000N	90. 500W	0		0.			
491	GELL	04	07	60	09	45	42. 0	13. 500N	90. 500W	0		0.			
502	GELL	27	11	60	00	35	34. 0	12. 500N	89. 000W	0		0.			
529	GELL	08	05	61	14	24	06. 2	13. 100N	90. 000W	33		0.			
547	GELL	28	06	61	01	17	15. 6	12. 000N	89. 000W	33		0.			
552	GELL	10	07	61	01	08	53. 0	12. 917N	89. 330W	33		0.			
554	GELL	22	07	61	16	24	31. 7	12. 200N	88. 600W	33		0.			
588	LEEDS	15	01	63	03	23	00	12. 000N	87. 500W	20		5. 60			
590	LEEDS	15	01	63	04	46	00	12. 000N	87. 500W	20		5. 60			
598	LEEDS	26	02	63	16	54	00	12. 400N	87. 400W	30		5. 30			
616	CGS-B	22	07	63	00	16	33. 1	13. 600N	89. 900W	34	400MB	3. 13			
621	CGS-B	08	09	63	05	28	37. 8	12. 300N	87. 900W	31	410MB	3. 29			
633	LEEDS	23	11	63	02	59	00	12. 000N	87. 200W	30		6. 50			
634	CGS-B	16	12	63	06	23	20. 4	12. 200N	88. 400W	34	430MB	3. 62			
647	ISC	20	01	64	07	11	39. 0	12. 700N	91. 800W	25		0.			
656	ISC	30	01	64	21	45	36. 0	13. 050N	90. 000W	30		0.			
663	ISC	04	02	64	08	45	25. 0	13. 100N	90. 000W	30		0.			
670	ISC	07	02	64	11	03	26. 7	11. 800N	88. 300W	33	420MB	3. 46			
676	CGS-B	09	02	64	10	49	21. 1	12. 300N	90. 600W	33	390MB	2. 96			
682	ISC	16	02	64	05	23	03. 0	13. 000N	89. 520W	0		0.			
716	ISC	16	03	64	16	35	30. 0	12. 700N	88. 600W	30		0.			
731	CGS-B	02	04	64	03	48	59. 6	12. 500N	87. 800W	32	420MB	3. 46			
734	ISC	05	04	64	18	16	39. 0	12. 920N	88. 500W	0		0.			
736	ISC	07	04	64	08	08	00	13. 600N	90. 900W	0		0.			
737	ISC	07	04	64	10	14	00	12. 800N	87. 600W	0		0.			
742	ISC	09	04	64	10	58	00	12. 700N	90. 500W	0		0.			
743	ISC	09	04	64	12	35	00	12. 700N	90. 500W	0		0.			
745	ISC	10	04	64	02	07	57. 1	13. 800N	91. 200W	24	360MB	2. 47			
754	ISC	20	04	64	13	56	15. 0	13. 500N	90. 800W	25		0.			
767	LEEDS	29	04	64	20	24	00	12. 300N	87. 400W	30		5. 30			
768	CGS-B	29	04	64	08	08	41. 3	12. 100N	88. 400W	33	390MB	2. 96			
770	ISC	29	04	64	21	53	15. 9	11. 800N	87. 600W	33	450MB	3. 95			
773	ISC	30	04	64	15	05	57. 9	11. 200N	86. 700W	33	430MB	3. 62			
785	ISC	14	05	64	16	39	49. 0	13. 000N	90. 400W	30		0.			
792	ISC	17	05	64	09	49	34. 0	12. 700N	88. 000W	0		0.			
806	ISC	29	05	64	11	26	00	13. 670N	90. 370W	30		0.			
808	ISC	03	06	64	03	39	52. 0	12. 000N	87. 500W	0		0.			
810	ISC	04	06	64	06	45	47. 0	13. 000N	91. 300W	0		0.			
813	CGS-B	14	06	64	05	42	08. 5	12. 000N	89. 200W	33	410MB	3. 29			
815	CGS-B	15	06	64	11	27	23. 9	12. 100N	89. 300W	33	360MB	2. 47			
816	CGS-B	15	06	64	11	13	47. 3	12. 600N	88. 000W	14	410MB	3. 29			
818	CGS-B	17	06	64	09	11	42. 0	12. 000N	87. 200W	33	410MB	3. 29			
826	ISC	01	07	64	22	29	03. 0	12. 500N	89. 500W	0		0.			
828	CGS-B	03	07	64	02	33	50. 0	13. 000N	90. 900W	8	390MB	2. 96			
831	CGS-B	06	07	64	09	31	56. 2	13. 500N	90. 400W	33	400MB	3. 13			
833	ISC	07	07	64	09	59	21. 1	11. 000N	86. 600W	33	430MB	3. 62			
837	ISC	13	07	64	07	42	15. 0	12. 200N	89. 200W	0		0.			
838	ISC	18	07	64	20	37	35. 9	11. 000N	87. 000W	33	460MB	4. 12			
845	ISC	26	07	64	11	43	48. 1	12. 800N	88. 300W	33	420MB	3. 46			
846	ISC	26	07	64	13	53	25. 1	11. 800N	88. 200W	9	440MB	3. 79			
857	ISC	10	08	64	17	14	31. 3	13. 000N	88. 000W	0		0.			
859	ISC	15	08	64	03	23	57. 7	12. 330N	88. 900W	33	340MB	2. 14			
862	CGS-B	16	08	64	12	34	34. 8	12. 000N	88. 600W	33	430MB	3. 62			
864	ISC	20	08	64	08	26	52. 3	11. 700N	87. 200W	25	430MB	3. 62			
865	ISC	20	08	64	09	12	53. 7	11. 000N	87. 500W	33	420MB	3. 46			
866	ISC	21	08	64	03	29	18. 7	13. 900N	93. 000W	33	440MB	3. 79			
868	ISC	24	08	64	01	10	56. 0	13. 500N	90. 500W	0		0.			
870	ISC	26	08	64	09	00	19. 5	13. 900N	92. 600W	33	390MB	2. 96			
871	ISC	27	08	64	15	16	16. 0	12. 500N	88. 500W	0		0.			
872	ISC	27	08	64	15	23	15. 0	12. 500N	88. 500W	0		0.			
873	ISC	29	08	64	20	51	54. 8	11. 400N	87. 200W	33	420MB	3. 46			
877	ISC	05	09	64	08	12	30. 0	11. 300N	86. 400W	0		0.			
878	ISC	12	09	64	19	05	47. 4	11. 200N	86. 900W	33	470MB	4. 28			
881	ISC	13	09	64	08	02	12. 0	12. 000N	89. 000W	0		0.			
887	ISC	22	09	64	01	13	50. 0	13. 000N	89. 000W	0		0.			
891	CGS-B	28	09	64	05	25	12. 1	13. 600N	90. 000W	33	430MB	3. 62			
896	ISC	02	10	64	09	25	15. 0	13. 300N	90. 500W	0		0.			
897	ISC	04	10	64	06	30	14. 4	11. 300N	87. 400W	33	420MB	3. 46			
898	ISC	05	10	64	22	58	04. 9	13. 800N	91. 300W	33	440MB	3. 79			
901	CGS-B	18	10	64	10	07	58. 2	12. 100N	89. 600W	33	420MB	3. 46			
902	CGS-B	18	10	64	10	45	15. 5	12. 200N	89. 300W	33	470MB	4. 28			
903	ISC	20	10	64	23	48	13. 9	13. 600N	92. 200W	33	390MB	2. 96			
906	ISC	27	10	64	07	33	48. 0	13. 000N	91. 500W	0		0.			
908	ISC	01	11	64	12	07	59. 0	13. 900N	92. 300W	33	390MB	2. 96			
913	CGS-B	07	11	64	01	36	56. 5	12. 000N	88. 000W	33	440MB	3. 79			
915	CGS-B	10	11	64	19	13	25. 1	12. 500N	90. 300W	33	420MB	3. 46			
923	CGS-B	03	12	64	14	51	10. 9	12. 300N	88. 500W	33	410MB	3. 29			
934	CGS-B	05	01	65	06	24	10. 1	13. 300N	90. 800W	33	430MB	3. 62			
938	ISC	11	01	65	16	25	58. 4	14. 200N	92. 000W	33	390MB	2. 96			
939	ISC	12	01	65	01	27	36. 6	13. 200N	91. 050W	33	370MB	2. 63			
943	ISC	14	01	65	23	54	00. 4	14. 400N	92. 900W	33	480MB	4. 45			

944	ISC	15	01	65	06	57	40.0	14.	600N	92.	800W	33	390MB	2.	96
950	ISC	23	01	65	19	38	50.0	13.	500N	90.	800W	0		0.	
951	ISC	28	01	65	04	03	09.5	15.	300N	93.	900W	33	530MB	5.	27
954	ISC	02	02	65	01	14	34.0	14.	100N	92.	400W	33	390MB	2.	96
959	ISC	05	02	65	08	35	24.2	15.	200N	93.	500W	17	410MB	3.	29
968	ISC	24	02	65	09	37	17.6	14.	200N	92.	100W	33	510MB	4.	94
976	ISC	22	03	65	00	17	27.4	11.	900N	87.	900W	33	430MB	3.	62
978	CGS-B	23	03	65	02	58	39.7	12.	300N	88.	200W	33	410MB	3.	29
979	ISC	23	03	65	17	18	29.1	11.	800N	88.	200W	33	420MB	3.	46
980	ISC	23	03	65	21	21	52.9	11.	000N	86.	600W	33	480MB	4.	45
982	CGS-B	30	03	65	14	01	00.2	13.	800N	90.	800W	33	430MB	3.	62
983	CGS-B	02	04	65	01	13	29.5	13.	800N	90.	800W	33	390MB	2.	96
985	ISC	06	04	65	06	28	27.0	12.	880N	88.	880W	0		0.	
987	ISC	09	04	65	15	09	15.9	11.	400N	87.	400W	33	420MB	3.	46
989	ISC	13	04	65	01	17	30.8	13.	900N	92.	000W	33	410MB	3.	29
990	ISC	16	04	65	03	57	55.0	14.	000N	91.	800W	17	400MB	3.	13
995	ISC	18	04	65	13	03	06.2	11.	800N	89.	800W	33	460MB	4.	12
996	ISC	18	04	65	21	13	37.0	14.	000N	91.	800W	33	420MB	3.	46
1001	CGS-B	15	05	65	05	06	25.5	12.	400N	89.	500W	33	400MB	3.	13
1005	ISC	31	05	65	20	46	54.4	11.	100N	86.	000W	28	470MB	4.	28
1006	CGS-B	06	06	65	03	37	37.0	12.	700N	90.	100W	30	400MB	3.	13
1007	ISC	06	06	65	08	34	17.3	11.	100N	87.	200W	33	460MB	4.	12
1008	ISC	08	06	65	01	25	59.6	11.	000N	86.	800W	33	470MB	4.	28
1012	GELL	11	06	65	22	33	06.6	13.	200N	91.	000W	33	390MB	2.	96
1013	GELL	12	06	65	16	35	43.8	13.	700N	91.	000W	33	450MB	3.	95
1015	ISC	18	06	65	09	28	21.5	11.	600N	88.	200W	33	430MB	3.	62
1017	CGS-B	19	06	65	01	39	38.7	13.	100N	90.	400W	32	460MB	4.	12
1018	ISC	23	06	65	07	37	46.0	11.	400N	87.	800W	24	450MB	3.	95
1020	CGS-B	27	06	65	13	08	28.6	12.	600N	87.	900W	33	410MB	3.	29
1026	ISC	16	07	65	10	34	12.0	11.	600N	88.	000W	30	490MB	4.	61
1027	ISC	16	07	65	11	21	10.4	11.	600N	87.	800W	33	480MB	4.	45
1032	ISC	28	07	65	13	55	05.0	14.	000N	91.	900W	33	390MB	2.	96
1033	CGS-B	30	07	65	06	33	30.6	12.	000N	88.	500W	33	420MB	3.	46
1047	CGS-B	27	09	65	17	37	53.8	12.	900N	88.	400W	33	420MB	3.	46
1058	ISC	12	11	65	13	40	34.7	14.	200N	92.	200W	33	370MB	2.	63
1059	CGS-B	21	11	65	02	19	12.4	12.	100N	88.	900W	33	430MB	3.	62
1065	CGS-B	10	12	65	17	59	11.8	12.	400N	87.	300W	33	420MB	3.	46
1085	CGS-B	22	03	66	03	41	47.4	13.	100N	90.	000W	20	460MB	4.	43
1089	CGS-B	12	04	66	17	30	49.2	12.	600N	88.	000W	33	440MB	3.	79
1090	ISC	14	04	66	06	54	34.6	14.	400N	93.	400W	33	370MB	2.	63
1092	CGS-B	16	04	66	13	21	40.0	12.	300N	88.	400W	33	440MB	3.	79
1098	ISC	09	05	66	03	40	57.0	13.	700N	91.	200W	23	440MB	3.	79
1101	ISC	28	05	66	14	34	41.9	12.	100N	88.	000W	33	420MB	3.	46
1106	CGS-B	23	06	66	09	01	48.1	13.	400N	90.	300W	33	400MB	3.	13
1109	ISC	25	06	66	21	56	57.7	14.	000N	91.	700W	33	380MB	2.	80
1110	CGS-B	26	06	66	05	52	55.7	12.	300N	88.	700W	33	380MB	2.	80
1118	ISC	17	07	66	20	44	27.0	13.	400N	91.	500W	33	400MB	3.	13
1119	CGS-B	24	07	66	18	50	54.8	12.	200N	88.	700W	33	410MB	3.	29
1132	CGS-B	29	08	66	17	35	22.3	13.	300N	90.	900W	33	380MB	2.	80
1143	ISC	20	10	66	18	28	40.5	13.	600N	91.	800W	5	440MB	3.	79
1146	ISC	23	10	66	22	32	40.6	12.	800N	91.	400W	33	390MB	2.	96
1150	ISC	02	11	66	18	51	18.0	14.	100N	91.	900W	33	410MB	3.	29
1151	ISC	04	11	66	06	49	26.0	14.	700N	93.	300W	33	410MB	3.	29
1152	ISC	04	11	66	08	21	15.0	14.	700N	92.	700W	33	430MB	3.	62
1153	ISC	05	11	66	07	08	33.0	14.	600N	93.	200W	33	380MB	2.	80
1155	ISC	15	11	66	00	26	57.0	12.	000N	87.	000W	0	420MB	3.	46
1158	ISC	05	12	66	16	10	56.3	11.	000N	89.	900W	33	430MB	3.	62
1161	ISC	10	12	66	13	26	41.0	14.	500N	92.	300W	33	420MB	3.	46
1162	ISC	10	12	66	13	57	27.0	12.	000N	90.	000W	0	380MB	2.	80
1164	ISC	10	12	66	14	56	27.9	14.	100N	92.	000W	33	390MB	2.	96
1167	ISC	12	12	66	13	52	38.1	14.	600N	92.	900W	33	390MB	2.	96
1169	ISC	13	12	66	11	51	38.6	14.	700N	92.	500W	33	380MB	2.	80
1170	ISC	14	12	66	06	52	34.2	14.	400N	92.	300W	23	440MB	3.	79
1172	CGS-B	23	12	66	22	10	25.0	12.	600N	87.	700W	32	450MB	3.	95
1174	ISC	25	12	66	04	55	55.0	11.	500N	87.	140W	33	420MB	3.	46
1178	ISC	04	01	67	13	43	42.0	12.	000N	91.	000W	0	400MB	3.	13
1182	ISC	29	01	67	20	11	22.9	12.	000N	88.	900W	33	450MB	3.	95
1183	CGS-B	30	01	67	09	30	27.2	12.	196N	87.	596W	8	410MB	3.	29
1184	CGS-B	05	02	67	05	24	21.0	13.	232N	90.	893W	33	430MB	3.	62
1187	ISC	05	03	67	15	56	18.0	12.	000N	89.	000W	0	400MB	3.	13

1194	CGS-B	20	03	67	08	42	06.0	13.	433N	90.	048W	8	370MB	2.	63
1204	CGS-B	11	04	67	07	49	55.9	12.	259N	89.	800W	33	440MB	3.	79
1205	CGS-B	12	04	67	04	56	25.9	12.	217N	88.	102W	33	480MB	4.	45
1207	CGS-B	15	04	67	22	10	08.8	12.	743N	88.	163W	33	430MB	3.	62
1210	ISC	18	04	67	08	24	18.0	11.	500N	88.	100W	33	410MB	3.	29
1213	ISC	19	04	67	11	23	49.0	12.	600N	93.	000W	33	390MB	2.	96
1223	ISC	08	05	67	11	45	03.0	13.	290N	90.	000W	15		0.	
1224	CGS-B	08	05	67	14	40	08.3	12.	974N	88.	073W	33	460MB	4.	12
1235	ISC	20	05	67	21	38	16.0	12.	800N	90.	800W	33	400MB	3.	13
1236	ISC	20	05	67	23	42	20.3	11.	800N	86.	700W	33	420MB	3.	46
1241	ISC	22	05	67	05	36	15.0	11.	400N	87.	230W	33	400MB	3.	13
1248	ISC	24	05	67	13	46	57.0	12.	500N	87.	500W	33	420MB	3.	46
1258	ISC	21	06	67	03	08	43.3	14.	800N	93.	300W	20	410MB	3.	29
1259	CGSPDE	23	06	67	13	30	46.0	12.	900N	87.	800W	11	420MB	3.	46
1262	ISC	27	06	67	12	18	26.0	14.	400N	93.	000W	33	370MB	2.	63
1264	ISC	04	07	67	06	12	57.5	10.	800N	86.	400W	33	410MB	3.	29
1266	ISC	04	07	67	13	29	04.5	11.	600N	87.	200W	33	420MB	3.	46
1267	ISC	06	07	67	02	11	56.0	12.	300N	91.	100W	0		0.	
1268	ISC	07	07	67	04	12	38.4	12.	900N	88.	960W	33	410MB	3.	29
1269	ISC	07	07	67	15	51	47.0	11.	800N	87.	780W	33	410MB	3.	29
1271	ISC	08	07	67	05	31	23.0	13.	780N	91.	830W	0		0.	
1272	ISC	08	07	67	08	34	07.0	12.	300N	87.	700W	33	400MB	3.	13
1277	ISC	27	07	67	21	59	33.0	12.	800N	91.	300W	0	410MB	3.	29
1283	ISC	18	08	67	16	16	41.0	13.	100N	91.	300W	0		0.	
1287	ISC	31	08	67	14	06	38.0	11.	200N	87.	800W	33	390MB	2.	96
1289	ISC	13	09	67	17	21	33.0	11.	500N	89.	000W	33	430MB	3.	62
1292	ISC	29	09	67	05	18	49.6	12.	300N	91.	200W	33	520MB	5.	11
1297	ISC	07	10	67	07	27	26.2	15.	000N	73.	650W	0		0.	
1298	ISC	08	10	67	14	28	07.6	11.	300N	86.	000W	33	420MB	3.	46
1301	ISC	14	10	67	18	12	35.0	12.	400N	87.	200W	33	430MB	3.	62
1308	ISC	26	10	67	09	54	35.0	11.	000N	87.	000W	33	420MB	3.	46
1310	ISC	27	10	67	02	03	24.0	13.	600N	91.	600W	33	400MB	3.	13
1311	ISC	28	10	67	06	28	17.6	14.	420N	92.	830W	0		0.	
1312	ISC	29	10	67	02	19	12.0	12.	800N	91.	800W	0	420MB	3.	46
1313	ISC	29	10	67	02	30	15.5	15.	170N	93.	720W	0		0.	
1318	ISC	17	11	67	18	38	26.0	12.	700N	92.	250W	0	430MB	3.	62
1319	ISC	17	11	67	21	00	54.0	14.	330N	93.	330W	0		0.	
1331	ISC	09	12	67	01	49	45.0	14.	400N	93.	800W	33		0.	
1333	ISC	19	12	67	08	58	41.0	14.	600N	92.	700W	33	380MB	2.	80
1334	ISC	24	12	67	15	44	42.2	14.	200N	92.	200W	33	430MB	3.	62
1343	ISC	12	02	68	05	17	55.0	13.	600N	90.	500W	0	400MB	3.	13
1345	CGSPDE	14	03	68	10	09	19.8	12.	000N	86.	800W	25	450MB	3.	95
1346	ISC	21	03	68	10	49	25.0	12.	700N	89.	200W	0	410MB	3.	29
1349	ISC	28	03	68	03	35	23.0	11.	300N	88.	500W	0	430MB	3.	62
1350	CGSPDE	01	04	68	07	28	28.7	12.	400N	88.	500W	33	440MB	3.	79
1351	CGSPDE	03	04	68	00	06	00.1	12.	200N	88.	300W	33	430MB	3.	62
1354	ISC	15	04	68	10	36	08.5	15.	120N	93.	350W	0		0.	
1355	ISC	15	04	68	11	09	35.5	14.	120N	92.	100W	0		0.	
1360	ISC	03	05	68	01	24	22.0	11.	300N	88.	600W	33	420MB	3.	46
1367	ISC	11	05	67	09	44	58.0	14.	100N	92.	100W	33	390MB	2.	96
1376	ISC	10	06	68	17	10	36.0	12.	300N	90.	400W	0	390MB	2.	96
1379	ISC	15	06	68	05	11	17.2	14.	400N	92.	900W	25	540MB	5.	44
1380	ISC	15	06	68	08	40	09.0	12.	900N	92.	000W	33		0.	
1382	ISC	15	06	68	11	20	37.0	14.	800N	93.	500W	33		0.	
1383	ISC	16	06	68	10	46	10.0	11.	800N	88.	200W	33	400MB	3.	13
1384	ISC	17	06	68	07	56	56.2	14.	400N	92.	900W	33	490MB	4.	61
1385	ISC	23	06	68	06	11	17.0	15.	000N	93.	300W	0	450MB	3.	95
1392	CGSPDE	02	09	68	04	53	14.1	13.	108N	90.	365W	33	410MB	3.	29
1395	CGSPDE	19	09	68	00	37	17.6	12.	143N	88.	714W	33	440MB	3.	79
1400	ISC	07	10	68	13	44	10.4	14.	700N	93.	800W	33	440MB	3.	79
1401	ISC	09	10	68	03	09	38.7	14.	500N	92.	900W	33	440MB	3.	79
1408	ISC	16	11	68	15	14	37.6	11.	100N	86.	900W	33	460MB	4.	12
1409	ISC	19	11	68	00	09	27.9	11.	300N	86.	700W	33	460MB	4.	12
1411	ISC	21	11	68	07	19	34.9	11.	200N	86.	900W	33	450MB	3.	95
1420	ISC	04	01	69	18	12	20.0	11.	500N	88.	200W	0	420MB	3.	46
1421	ISC	06	01	69	09	24	23.3	11.	400N	87.	200W	33	480MB	4.	45
1422	ISC	06	01	69	09	44	41.2	11.	400N	87.	200W	33	430MB	3.	62
1431	ISC	05	02	69	15	46	48.0	11.	200N	88.	400W	0	450MB	3.	95
1436	ISC	16	03	69	06	05	50.7	13.	100N	91.	900W	33	390MB	2.	96
1437	ISC	19	03	69	19	49	22.1	11.	800N	88.	900W	23	470MB	4.	28

1441	ISC	23	03	69	01	53	18.0	12.200N	88.900W	0	450MB	3.95
1444	ISC	06	04	69	23	02	27.0	12.900N	92.100W	33	430MB	3.62
1449	ISC	16	04	69	16	17	41.0	15.180N	93.950W	33		0.
1452	ISC	22	04	69	02	23	58.0	13.670N	91.600W	33	450MB	3.95
1454	ISC	22	04	69	14	51	46.0	13.950N	91.700W	33	400MB	3.13
1455	ISC	23	04	69	17	33	26.0	13.700N	90.970W	33		0.
1462	ISC	10	05	69	05	45	18.0	13.800N	91.000W	33	370MB	2.63
1463	ISC	10	05	69	08	47	47.0	14.330N	93.300W	33	410MB	3.29
1467	ISC	13	05	69	14	36	16.7	10.800N	86.300W	33	450MB	3.95
1468	CGS	3813	05	69	16	39	27.4	12.447N	87.830W	33	420MB	3.46
1474	ISC	02	06	69	16	16	50.0	13.000N	92.800W	33	340MB	2.14
1477	ISC	17	06	69	11	35	13.0	14.400N	93.700W	33	430MB	3.62
1479	CGS	4123	06	69	20	46	40.2	12.410N	88.052W	33	470MB	4.28
1483	ISC	01	07	69	08	08	20.0	13.000N	89.700W	0	380MB	2.80
1489	ISC	20	07	69	14	27	16.0	13.800N	91.900W	0	380MB	2.80
1490	ISC	22	07	69	12	21	53.3	13.310N	91.860W	33	450MB	3.95
1492	ISC	23	07	69	03	53	57.0	12.100N	88.900W	0	370MB	2.63
1496	CGS	5409	08	69	01	19	04.2	13.202N	90.892W	33	400MB	3.13
1501	ISC	07	09	69	18	40	48.0	11.800N	88.600W	33	410MB	3.29
1502	ISC	20	09	69	16	20	24.0	12.200N	88.600W	0	390MB	2.96
1505	CGS	6501	10	69	08	41	31.3	12.084N	88.358W	33	440MB	3.79
1506	ISC	05	10	69	23	34	31.0	12.600N	89.200W	0	400MB	3.13
1511	ISC	11	10	69	21	05	30.0	11.900N	87.800W	33		0.
1513	ISC	14	10	69	02	32	35.0	12.600N	91.800W	33	380MB	2.80
1515	ISC	19	10	69	03	18	02.0	11.200N	88.800W	0	380MB	2.80
1516	ISC	06	11	69	07	11	27.6	11.180N	87.000W	33	430MB	3.62
1517	ISC	06	11	69	07	46	09.2	11.400N	86.900W	33	410MB	3.29
1519	ISC	08	11	69	18	43	02.0	13.000N	91.500W	33	480MB	4.45
1523	ISC	19	11	69	16	54	32.3	14.480N	93.230W	33	490MB	4.61
1527	ISC	27	11	69	19	34	19.0	14.000N	93.300W	33	440MB	3.79
1529	ISC	04	12	69	23	54	01.0	14.700N	92.800W	33		0.
1530	ISC	06	12	69	21	56	06.0	15.300N	94.000W	33		0.
1532	ISC	19	12	69	06	06	53.0	12.500N	91.400W	33	430MB	3.62
1535	CGS	503	01	70	05	39	12.3	12.388N	89.797W	33	430MB	3.62
1536	ISC	04	01	70	19	04	23.0	12.100N	89.800W	33	460MB	4.12
1539	ISC	15	01	70	16	57	47.2	11.600N	86.900W	33	480MB	4.45
1540	ISC	15	01	70	19	08	59.2	11.200N	86.000W	33	460MB	4.12
1541	ISC	17	01	70	11	49	00	13.500N	90.400W	0	420MB	3.46
1549	ISC	06	02	70	07	25	05.0	13.200N	89.900W	0	330MB	1.97
1550	ISC	06	02	70	15	46	11.0	13.030N	92.200W	33	510MB	4.94
1557	ISC	17	02	70	09	39	13.0	12.500N	90.900W	33		0.
1558	ISC	18	02	70	07	18	03.0	11.600N	88.800W	33	410MB	3.29
1560	ISC	19	02	70	04	48	28.0	13.630N	92.000W	33	490MB	4.61
1562	ISC	24	02	70	07	27	22.0	11.500N	86.900W	33	430MB	3.62
1563	ISC	25	02	70	16	24	02.0	13.500N	93.330W	33	330MB	1.97
1565	ISC	26	02	70	04	13	55.0	13.300N	89.800W	0	320MB	1.81
1566	ISC	28	02	70	13	51	28.0	13.100N	89.300W	33	420MB	3.46
1567	ISC	06	03	70	02	14	50.0	13.250N	91.300W	33		0.
1568	ISC	07	03	70	00	06	49.0	13.330N	91.400W	33		0.
1569	ISC	07	03	70	23	14	16.0	13.700N	90.800W	0	420MB	3.46
1573	ISC	19	03	70	07	08	31.0	13.300N	90.450W	33	510MB	4.94
1575	ISC	26	03	70	19	29	01.0	14.250N	91.950W	33	490MB	4.61
1577	ISC	29	03	70	11	04	29.0	13.000N	91.000W	33	480MB	4.45
1578	ISC	01	04	70	09	28	27.0	13.400N	90.400W	33		0.
1580	ISC	05	04	70	19	49	52.0	13.030N	90.010W	33		0.
1581	ISC	07	04	70	14	39	48.0	12.700N	90.700W	33	470MB	4.28
1583	ISC	09	04	70	05	42	13.0	11.400N	87.600W	0	370MB	2.63
1586	ISC	22	04	70	04	54	00.0	11.600N	87.600W	33	430MB	3.62
1588	ISC	30	04	70	04	45	08.0	12.600N	90.400W	33	410MB	3.29
1589	ISC	23	05	70	16	26	59.0	13.900N	91.950W	33		0.
1591	ISC	01	06	70	23	04	13.5	14.670N	93.370W	33		0.
1593	ISC	04	06	70	18	09	42.5	14.270N	93.080W	33		0.
1595	ISC	05	06	70	16	25	32.5	14.400N	93.600W	33		0.
1596	ISC	05	06	70	20	33	00.0	14.200N	92.900W	20		0.
1597	ISC	06	06	70	17	12	28.0	14.900N	93.530W	33		0.
1601	ISC	08	06	70	06	20	08.5	14.720N	93.900W	33		0.
1603	ISC	08	06	70	13	52	10.0	13.750N	91.750W	33		0.
1609	ISC	17	06	70	16	35	24.0	14.800N	93.400W	33		0.
1610	ISC	19	06	70	20	14	48.5	14.170N	93.400W	33		0.

1611	ISC	20	06	70	19	45	34.5	15.000N	93.500W	33		0.
1612	ISC	20	06	70	22	11	15.5	14.500N	92.970W	33		0.
1613	ISC	23	06	70	19	05	47.0	12.800N	90.400W	33	480MB	4.45
1615	ISC	26	06	70	17	14	18.5	13.750N	91.900W	33		0.
1618	CGS	4805	07	70	05	42	05.0	12.561N	87.446W	33	450MB	3.95
1619	ISC	10	07	70	09	19	04.6	12.150N	88.550W	33		0.
1622	ISC	24	07	70	18	50	30.0	13.000N	91.300W	33	510MB	4.94
1624	ISC	08	08	70	18	26	27.0	12.330N	91.800W	33		0.
1625	ISC	10	08	70	06	18	20.5	12.830N	90.700W	33		0.
1628	ISC	20	08	70	08	35	33.0	11.900N	90.350W	33		0.
1629	ISC	22	08	70	05	07	41.0	12.200N	89.900W	0	380MB	2.80
1631	ISC	04	09	70	07	39	07.2	14.930N	93.300W	33	430MB	3.62
1632	ISC	04	09	70	10	34	07.0	13.800N	92.200W	33	490MB	4.61
1637	ISC	22	09	70	07	34	26.0	15.200N	93.700W	32	400MB	3.13
1643	CGS	6804	10	70	13	28	39.8	12.687N	90.318W	33	420MB	3.46
1645	ISC	08	10	70	03	48	37.0	14.300N	93.200W	0	350MB	2.30
1648	ISC	17	10	70	03	35	25.0	11.400N	86.900W	33	410MB	3.29
1649	ISC	18	10	70	04	28	50.0	14.400N	92.400W	0	370MB	2.63
1650	ISC	21	10	70	17	19	15.5	14.900N	93.930W	33		0.
1656	ISC	05	11	70	09	33	46.0	14.830N	94.000W	33		0.
1657	ISC	05	11	70	15	46	46.0	14.300N	92.800W	33		0.
1658	ISC	07	11	70	06	12	11.0	13.100N	91.200W	30	430MB	3.62
1660	ISC	12	11	70	03	55	08.0	12.200N	88.700W	0	390MB	2.96
1661	ISC	13	11	70	04	47	37.0	12.400N	88.700W	0	390MB	2.96
1662	ISC	13	11	70	07	56	15.5	14.800N	93.370W	33		0.
1668	ISC	30	11	70	03	16	23.9	11.620N	89.010W	30	420MB	3.46
1673	ISC	15	12	70	07	15	45.0	11.100N	88.300W	0	420MB	3.46
1674	ISC	15	12	70	07	54	51.6	14.400N	93.100W	33	510MB	4.94
1675	ISC	15	12	70	10	32	59.0	14.300N	93.100W	33	520MB	5.11
1676	ISC	15	12	70	10	53	19.5	14.500N	93.100W	33	480MB	4.45
1681	ISC	27	12	70	11	00	14.0	12.100N	87.700W	33	420MB	3.46
1682	ISC	28	12	70	03	20	50.0	11.100N	88.000W	0	390MB	2.96
1683	ISC	31	12	70	03	10	57.0	15.250N	93.700W	33		0.
1687	ISC	04	01	71	05	41	03.0	13.800N	92.500W	33		0.
1688	ISC	04	01	71	05	48	38.5	14.200N	93.000W	33		0.
1689	ISC	11	01	71	17	13	48.2	11.700N	87.800W	33	480MB	4.45
1691	ISC	13	01	71	00	27	49.5	14.440N	92.650W	33	440MB	3.79
1692	ISC	22	01	71	23	48	01.0	14.130N	93.200W	33	450MB	3.95
1693	ISC	26	01	71	03	45	54.0	14.000N	92.300W	33		0.
1694	ISC	27	01	71	18	03	38.0	14.370N	93.100W	33		0.
1695	ISC	27	01	71	22	13	06.0	14.550N	93.900W	33		0.
1699	ISC	14	02	71	03	37	03.0	13.830N	93.550W	33	540MB	5.44
1705	ISC	20	02	71	12	24	58.3	14.500N	93.300W	34	500MB	4.78
1706	ISC	20	02	71	17	54	25.0	14.670N	94.040W	33		0.
1711	ISC	05	03	71	23	32	06.0	14.900N	93.000W	33		0.
1713	ISC	08	03	71	12	58	37.0	14.750N	93.600W	33		0.
1717	ISC	24	03	71	02	54	30.0	14.150N	93.400W	33		0.
1719	ISC	25	03	71	01	48	48.0	13.200N	92.140W	33	400MB	3.13
1726	ISC	01	05	71	06	25	25.0	11.500N	88.500W	33	420MB	3.46
1729	ISC	21	05	71	14	48	58.0	13.000N	91.300W	33	440MB	3.79
1733	ISC	28	05	71	03	31	39.0	12.200N	90.000W	33	420MB	3.46
1737	ISC	30	05	71	09	22	12.0	11.800N	88.500W	33	450MB	3.95
1738	ISC	30	05	71	21	18	27.0	13.100N	92.400W	33	410MB	3.29
1740	ISC	09	06	71	04	21	35.0	12.200N	88.600W	33		0.
1741	ISC	09	06	71	16	53	41.0	12.900N	90.800W	33	500MB	4.78
1744	ISC	11	06	71	07	40	35.0	11.800N	91.400W	33		0.
1746	ISC	11	06	71	15	47	15.0	13.600N	91.900W	33	440MB	3.79
1748	ISC	16	06	71	04	18	56.4	11.700N	88.200W	33	450MB	3.95
1749	ISC	16	06	71	14	20	27.7	13.520N	92.740W	33	410MB	3.29
1756	ISC	20	08	71	21	36	09.6	13.400N	92.400W	33	580MB	6.10
1759	ISC	27	08	71	09	21	57.5	11.800N	88.900W	33	500MB	4.78
1760	ISC	29	08	71	08	26	52.4	11.500N	86.200W	33	490MB	4.61
1766	ISC	22	09	71	14	14	20.5	15.100N	93.700W	33	520MB	5.11
1768	ISC	24	09	71	08	28	43.6	14.000N	93.200W	33	440MB	3.79
1769	ISC	30	09	71	13	33	34.9	14.700N	92.800W	33	480MB	4.45
1770	ISC	10	10	71	01	50	36.3	14.400N	93.800W	33	450MB	3.95
1782	ISC	30	12	71	02	05	15.2	15.000N	94.100W	33	450MB	3.95
1792	ERL	1229	01	72	12	49	03.5	12.434N	90.687W	33	460MB	4.12
1801	ISC	28	02	72	05	21	19.5	13.600N	92.670W	33		0.
1802	ISC	28	02	72	05	24	38.5	13.670N	92.670W	33		0.

1803	ISC	01	03	72	23	38	19.0	12.300N	88.200W	0	440MB	3.79		
1804	ISC	02	03	72	19	13	30.0	13.000N	92.000W	0		0.		
1807	ISC	07	03	72	11	52	11.0	12.700N	90.700W	0	440MB	3.79		
1808	ISC	07	03	72	13	57	10.6	14.600N	93.800W	33	480MB	4.45		
1810	ISC	08	03	72	01	50	32.1	14.600N	93.700W	33	450MB	3.95		
1811	ISC	08	03	72	05	20	37.4	14.400N	94.000W	33	490MB	4.61		
1812	ISC	08	03	72	10	05	28.4	14.600N	93.900W	33	490MB	4.61		
1817	ISC	23	03	72	22	36	05.4	14.460N	94.670W	0		0.		
1820	ISC	04	04	72	15	06	51.0	14.000N	92.950W	0		0.		
1823	ISC	12	04	72	02	32	51.0	14.700N	93.000W	0		0.		
1824	ISC	12	04	72	16	59	12.6	14.100N	92.900W	33	450MB	3.95		
1825	ISC	12	04	72	17	30	38.0	13.600N	93.370W	0	430MB	3.62		
1830	ISC	14	05	72	08	49	47.0	13.400N	92.000W	0		0.		
1833	ERL	3705	06	72	06	22	36.7	13.356N	90.278W	33	470MB	4.28		
1834	ISC	05	06	72	14	59	53.0	12.500N	90.400W	33		0.		
1840	ISC	12	06	72	06	21	14.0	12.300N	90.600W	0	400MB	3.13		
1841	ISC	12	06	72	07	10	55.0	13.500N	91.000W	0	420MB	3.46		
1842	ISC	13	06	72	05	16	35.0	11.560N	89.800W	0	460MB	4.12		
1845	ISC	24	06	72	08	41	28.0	13.950N	92.580W	33		0.		
1849	ISC	30	06	72	03	56	28.6	14.000N	93.300W	33	500MB	4.78		
1850	ISC	30	06	72	12	45	20.2	14.500N	92.900W	33	490MB	4.61		
1852	ERL	4102	07	72	22	37	28.2	12.149N	89.709W	33	390MB	2.96		
1854	ISC	12	07	72	01	06	05.2	14.660N	93.720W	33		0.		
1855	ISC	11	07	72	04	33	43.0	11.200N	87.170W	0	420MB	3.46		
1856	ISC	13	07	72	19	17	30.2	12.840N	90.810W	33		0.		
1857	ISC	13	07	72	22	07	20.5	14.630N	93.270W	33		0.		
1858	ISC	14	07	72	10	54	47.4	14.170N	93.000W	33		0.		
1860	ISC	16	07	72	19	36	02.0	14.390N	92.340W	33		0.		
1863	ISC	22	07	72	12	25	06.7	14.470N	94.220W	33		0.		
1868	ISC	31	07	72	07	13	08.0	13.600N	92.400W	0	410MB	3.29		
1871	ISC	08	08	72	00	16	19.3	11.000N	90.800W	33	480MB	4.45		
1873	ISC	11	08	72	16	43	33.0	11.800N	87.480W	0	460MB	4.12		
1876	ISC	18	08	72	08	17	18.0	13.450N	92.180W	33		0.		
1877	ISC	21	08	72	00	47	48.0	12.900N	91.100W	33		0.		
1880	ISC	25	08	72	18	09	14.0	14.450N	93.900W	33		0.		
1881	ISC	25	08	72	18	14	07.0	14.410N	93.060W	33		0.		
1882	ISC	25	08	72	25	13	06.0	13.110N	91.000W	33		0.		
1884	ISC	30	08	72	00	13	27.7	14.700N	92.800W	27	430MB	3.62		
1886	ISC	13	09	72	14	46	00.0	12.900N	89.700W	5		0.		
1887	ISC	16	09	72	22	14	59.0	11.790N	89.100W	0	450MB	3.95		
1889	ISC	23	09	72	09	07	23.0	12.900N	90.200W	33		0.		
1890	ERL	5826	09	72	08	25	07.2	12.199N	90.192W	33	480MB	3.60		
1894	ERL	5701	10	72	00	21	07.6	12.275N	89.197W	33	430MB	3.62		
1895	ISC	01	10	72	04	02	59.0	13.360N	90.280W	33		0.		
1898	ISC	01	10	72	06	21	34.0	11.200N	86.000W	0	400MB	3.13		
1899	ERL	5704	10	72	04	52	30.7	12.207N	90.198W	33	470MB	4.28		
1900	ISC	05	10	72	01	33	32.9	14.800N	93.700W	33	430MB	3.62		
1902	ISC	07	10	72	11	01	50.0	13.000N	90.800W	33	420MB	3.46		
1904	ISC	10	10	72	14	00	45.0	13.200N	91.100W	33		0.		
1905	ISC	13	10	72	14	08	40.0	12.700N	90.860W	33		0.		
1906	ISC	21	10	72	20	06	05.0	11.600N	88.500W	0	460MB	4.12		
1909	ISC	30	10	72	08	37	45.0	14.840N	93.590W	33		0.		
1910	ISC	31	10	72	20	34	51.0	13.500N	91.790W	33		0.		
1911	ISC	02	11	72	18	25	01.0	12.600N	88.320W	24	460MB	4.12		
1912	ISC	02	11	72	19	41	52.8	13.860N	93.090W	33		0.		
1914	ISC	04	11	72	11	27	06.7	14.300N	93.460W	33		0.		
1917	ISC	05	11	72	22	34	16.0	13.430N	90.770W	33		0.		
1918	ISC	11	11	72	03	41	23.3	13.230N	90.860W	0		0.		
1919	ISC	11	11	72	09	33	21.0	11.600N	90.400W	0	390MB	2.96		
1920	ISC	15	11	72	09	40	08.0	13.400N	92.100W	33	410MB	3.29		
1923	ISC	08	12	72	10	59	01.0	11.400N	92.800W	0	390MB	2.96		
1925	ISC	11	12	72	12	51	04.1	11.400N	87.200W	27	440MB	3.79		
1926	ISC	11	12	72	13	19	04.4	11.300N	87.400W	0	410MB	3.29		
1938	ISC	15	02	73	00	15	53.7	11.500N	86.500W	33	510MB	4.94		
1942	ERL	1809	03	73	18	19	29.3	13.611N	90.687W	33	440MB	3.79		
1947	ISC	05	04	73	07	15	07.8	14.100N	92.200W	33	440MB	3.79		
1950	ISC	14	04	73	10	52	55.0	11.900N	87.700W	0	470MB	4.28		
1951	ISC	17	04	73	02	49	50.0	11.400N	87.700W	0	430MB	3.62		
1952	ISC	17	04	73	07	50	10.1	14.700N	93.600W	33	400MB	3.13		

1953	ISC	18	04	73	23	15	59.7	12.220N	88.400W	0	390MB	2.96		
1955	ERL	3425	04	73	10	45	35.9	12.454N	90.082W	33	390MB	2.96		
1957	ISC	27	04	73	07	40	31.0	11.800N	89.400W	0	440MB	3.79		
1960	ERL	3007	05	73	11	54	36.9	12.344N	87.949W	33	430MB	4.00		
1974	ISC	16	06	73	16	36	00.0	14.300N	93.500W	0	420MB	3.46		
1975	ISC	20	06	73	10	36	10.0	12.800N	91.400W	0	400MB	3.13		
1985	ISC	14	07	73	15	25	55.3	11.490N	87.600W	0	390MB	2.96		
1986	ISC	20	07	73	14	56	01.0	13.100N	88.300W	0	420MB	3.46		
1987	GS	5127	07	73	08	51	11.0	12.415N	87.407W	33	450MB	3.95		
1990	ISC	31	07	73	03	44	43.4	13.600N	92.300W	24	410MB	3.29		
1991	ERL	4704	08	73	11	54	16.6	12.140N	88.983W	33	440MB	3.79		
1992	ISC	06	08	73	09	43	23.0	12.500N	90.400W	0	370MB	2.63		
1995	ISC	15	08	73	13	36	26.0	13.000N	92.740W	0	420MB	3.46		
1998	ISC	05	09	73	05	33	08.4	13.700N	90.700W	0	420MB	3.46		
1999	PDE	05	09	73	06	15	36.2	13.000N	90.600W	33	420MB	3.46		
2001	ISC	11	09	73	05	47	41.0	13.200N	91.000W	0	440MB	3.79		
2004	ISC	18	09	73	02	52	48.0	13.000N	93.700W	0	420MB	3.46		
2007	ISC	25	10	73	17	07	48.0	14.900N	93.900W	0	440MB	3.79		
2009	ISC	31	10	73	16	06	49.0	14.890N	94.800W	0	430MB	3.62		
2016	GELL	10	11	73	02	50	32.3	12.417N	88.307W	33	460MB	4.12		
2018	ISC	12	11	73	03	05	31.0	11.700N	89.500W	0	460MB	4.12		
2020	ISC	21	11	73	16	13	40.1	14.200N	92.600W	33	450MB	3.95		
2021	ISC	21	11	73	23	21	48.0	13.800N	93.000W	0	420MB	3.46		
2022	ISC	22	11	73	12	52	17.0	13.300N	93.100W	0	430MB	3.62		
2026	ISC	29	11	73	06	18	31.8	13.300N	94.500W	33	460MB	4.12		
2027	ISC	03	12	73	12	05	30.7	14.100N	92.000W	33	450MB	3.95		
2030	ISC	08	12	73	00	47	35.0	11.800N	90.000W	0	430MB	3.62		
2032	ISC	08	12	73	01	00	57.0	12.900N	90.600W	0	430MB	3.62		
2033	ISC	15	12	73	10	21	07.0	14.300N	92.300W	0	440MB	3.79		
2040	ISC	21	01	74	22	48	52.1	14.800N	93.600W	33	500MB	4.78		
2041	ISC	31	01	74	08	11	26.0	12.700N	90.500W	0	380MB	2.80		
2043	ISC	04	02	74	16	56	20.0	13.800N	92.900W	33	450MB	3.95		
2044	ISC	06	02	74	14	38	37.0	13.100N	91.400W	33		0.		
2045	ISC	08	02	74	04	29	31.0	13.000N	91.910W	0	390MB	2.96		
2049	ISC	22	02	74	04	29	22.0	13.100N	92.100W	33		0.		
2050	ISC	22	02	74	09	54	19.8	14.500N	92.500W	33	460MB	4.12		
2051	ISC	23	02	74	18	31	26.1	14.250N	91.890W	33		0.		
2062	ISC	23	03	74	20	33	25.0	10.000N	88.100W	0	460MB	4.12		
2065	ISC	01	04	74	13	00	42.2	11.020N	87.900W	0	440MB	3.79		
2071	PDE	20	04	74	07	41	20.7	13.000N	90.000W	23	470MB	4.28		
2078	ISC	03	05	74	16	00	04.0	13.470N	90.730W	33		0.		
2079	ISC	04	05	74	01	58	24.7	15.100N	94.600W	33	470MB	4.28		
2081	ISC	06	05	74	05	21	49.6	14.600N	93.700W	33	470MB	4.28		
2082	ISC	06	05	74	05	39	47.4	15.000N	93.700W	33	450MB	3.95		
2083	ISC	11	05	74	08	46	55.0	14.100N	93.600W	0	440MB	3.79		
2084	ISC	14	05	74	13	21	03.0	14.710N	92.580W	33		0.		
2086	ISC	24	05	74	15	28	10.5	14.700N	92.800W	33		0.		
2087	ISC	24	05	74	22	21	39.7	14.860N	92.970W	33		0.		
2088	ISC	31	05	74	23	06	22.0	11.700N	87.000W	0	420MB	3.46		
2089	ISC	05	06	74	02	29	40.0	13.900N	93.600W	33		0.		
2090	ISC	06	06	74	18	39	13.3	14.210N	92.340W	0		0.		
2091	PDE	07	06	74	03	01	26.9	12.200N	88.200W	33	460MB	4.12		
2093	ISC	08	06	74	22	13	04.8	14.880N	92.820W	33		0.		
2094	ISC	09	06	74	11	40	01.4	13.900N	92.700W	0	440MB	3.79		
2095	ISC	09	06	74	19	03	41.0	11.300N	87.500W	0	420MB	3.46		
2097	ISC	21	06	74	06	18	01.8	15.330N	93.920W	33		0.		
2100	ISC	24	06	74	21	27	35.0	12.500N	87.200W	0	480MB	4.45		
2101	ISC	11	07	74	12	20	10.0	12.100N	91.400W	0	420MB	3.46		
2103	ISC	17	07	74	20	04	16.0	13.700N	93.900W	33	430MB	3.62		
2106	ISC	21	07	74	11	43	52.5	14.300N	92.300W	33	480MB	4.45		
2110	ISC	15	08	74	15	39	34.0	14.000N	93.400W	0	430MB	3.62		
2113	ISC	20	08	74	14	10	39.2	11.100N	86.500W	33	440MB	3.79		
2114	ISC	21	08	74	14	45	27.0	11.700N	88.400W	0	430MB	3.62		
2116	ISC	31	08	74	02	57	02.0	13.900N	92.000W	0	390MB	2.96		
2119	ISC	03	09	74	12	46	54.1	14.200N	93.300W	33	430MB	3.62		
2123	ISC	20	09	74	11	59	43.2	13.800N	91.100W	33	500MB	4.78		
2126	ISC	17	10	74	23	09	19.9	13.600N	93.100W	20	460MB	4.12		
2128	ISC	20	10	74	14	51	19.0	11.300N	87.500W	0	430MB	3.62		
2131	ISC	27	10	74	04	40	24.0	11.100N	91.800W	0	450MB	3.95		

2133	PDE	04	11	74	12	34	51. 4	13. 000N	90. 100W	33	430MB	3. 62
2134	PDE	04	11	74	21	23	24. 0	12. 700N	90. 100W	33	470MB	4. 28
2135	ISC	12	11	74	05	03	49. 1	13. 100N	91. 300W	33	430MB	3. 62
2137	ISC	24	11	74	17	25	55. 2	11. 900N	88. 900W	29	450MB	3. 95
2138	ISC	24	11	74	17	45	02. 0	11. 700N	88. 100W	33	460MB	4. 12
2140	PDE	03	12	74	04	42	23. 0	12. 400N	89. 900W	33	420MB	3. 46
2142	ISC	18	12	74	11	33	09. 0	14. 900N	94. 000W	33	470MB	4. 28
2150	ISC	01	01	75	02	12	44. 7	13. 400N	91. 700W	33	430MB	3. 62
2151	ISC	01	01	75	11	54	29. 2	13. 200N	91. 900W	33	400MB	3. 13
2154	ISC	03	01	75	07	40	48. 2	14. 200N	92. 180W	0	460MB	4. 12
2161	ISC	28	01	75	12	15	15. 0	12. 100N	89. 380W	0	420MB	3. 46
2162	ISC	01	02	75	20	09	31. 0	12. 800N	91. 600W	0	410MB	3. 29
2165	ISC	14	02	75	02	25	21. 1	14. 500N	93. 800W	33	460MB	4. 12
2166	ISC	14	02	75	07	51	37. 0	14. 400N	93. 870W	0	430MB	3. 62
2171	PDE	01	03	75	12	37	32. 6	12. 600N	89. 600W	33	440MB	3. 79
2183	PDE	25	03	75	02	31	22. 2	13. 600N	90. 700W	33	520MB	5. 11
2184	PDE	29	03	75	09	30	19. 8	12. 900N	88. 400W	33	450MB	3. 95
2185	ISC	03	04	75	09	58	33. 0	13. 000N	88. 980W	0	420MB	3. 46
2190	ISC	30	04	75	06	32	27. 0	13. 500N	91. 900W	0	450MB	3. 95
2191	ISC	01	05	75	11	50	03. 0	13. 200N	91. 600W	33	440MB	3. 79
2194	ISC	08	05	75	07	54	19. 1	12. 580N	90. 800W	0	400MB	3. 13
2195	GELL	11	05	75	08	55	47. 3	12. 136N	88. 984W	33	470MB	4. 28
2196	PDE	21	05	75	16	41	57. 8	13. 300N	89. 800W	33	460MB	4. 12
2197	PDE	22	05	75	12	51	11. 9	12. 700N	87. 900W	33	500MB	4. 78
2198	GELL	22	05	75	12	51	11. 9	12. 713N	87. 949W	33	500MB	4. 78
2199	ISC	23	05	75	06	27	30. 0	12. 500N	88. 100W	0	380MB	2. 80
2200	ISC	25	05	75	02	55	38. 0	13. 400N	90. 700W	33	400MB	3. 13
2201	ISC	25	05	75	07	43	52. 0	11. 400N	89. 100W	0	420MB	3. 46
2203	ISC	28	05	75	08	27	54. 0	11. 600N	90. 200W	0	420MB	3. 46
2206	PDE	04	06	75	19	36	21. 5	12. 700N	88. 500W	33	460MB	4. 12
2207	ISC	07	06	75	16	07	01. 1	14. 400N	92. 500W	33	450MB	3. 95
2208	ISC	08	06	75	10	46	29. 0	11. 900N	88. 200W	0	430MB	3. 62
2209	ISC	09	06	75	18	07	11. 1	11. 500N	87. 800W	33	460MB	4. 12
2211	ISC	18	06	74	00	24	15. 0	14. 400N	93. 800W	0	400MB	3. 13
2215	ISC	21	06	75	11	01	07. 0	11. 100N	87. 900W	0	450MB	3. 95
2219	ISC	01	07	75	18	07	10. 0	11. 000N	88. 200W	33		0.
2220	ISC	12	07	75	16	20	35. 0	14. 400N	93. 200W	33	440MB	3. 79
2226	ISC	19	07	75	00	55	26. 3	12. 800N	88. 700W	0	470MB	4. 28
2229	ISC	16	08	75	02	33	57. 0	14. 500N	93. 000W	33	460MB	4. 12
2232	PDE	04	09	75	19	14	06. 4	12. 900N	90. 700W	33	470MB	4. 28
2235	PDE	14	09	75	17	38	59. 5	12. 400N	88. 400W	33	480MB	4. 45
2236	ISC	21	09	75	13	13	02. 1	14. 700N	93. 900W	33	540MB	5. 44
2240	ISC	30	09	75	02	51	49. 3	11. 500N	88. 000W	34	340MB	2. 14
2246	ISC	10	10	75	01	33	44. 0	13. 700N	92. 700W	33	460MB	4. 12
2249	ISC	15	10	75	12	29	40. 0	11. 200N	86. 000W	33		0.
2256	ISC	29	10	75	15	36	10. 0	11. 060N	87. 600W	33		0.
2265	ISC	19	11	75	03	17	14. 0	12. 420N	88. 200W	33		0.
2270	ISC	28	11	75	00	56	32. 0	11. 600N	87. 300W	33		0.
2274	ISC	02	12	75	09	34	58. 8	11. 420N	86. 930W	33		0.
2279	ISC	09	12	75	01	56	26. 8	11. 400N	87. 500W	33	440MB	3. 79
2280	ISC	09	12	75	21	11	56. 1	14. 900N	93. 400W	33		0.
2287	PDE	04	01	76	11	34	50. 2	13. 037N	88. 666W	33	530MB	5. 27
2291	ISC	10	01	76	18	32	43. 6	12. 400N	88. 170W	33	450MB	3. 95
2292	ISC	16	01	76	19	40	20. 0	11. 700N	89. 590W	33		0.
2297	PDE	26	01	76	07	28	43. 3	13. 692N	90. 848W	33	480MB	4. 45
2321	ISC	07	02	76	23	59	59. 0	12. 100N	90. 900W	33	420MB	3. 46
2324	ISC	08	02	76	10	06	37. 2	11. 800N	88. 900W	33	440MB	3. 79
2331	PDE	11	02	76	10	18	21. 5	12. 313N	89. 080W	33	470MB	4. 28
2332	PDE	14	02	76	16	02	55. 9	13. 298N	89. 715W	33	470MB	4. 28
2335	ISC	23	02	76	04	58	01. 0	11. 000N	87. 200W	33	430MB	3. 62
2338	ISC	25	02	76	14	13	34. 0	11. 560N	88. 110W	33		0.
2344	ISC	11	03	76	22	01	21. 0	12. 080N	88. 400W	33		0.
2345	ISC	12	03	76	01	06	50. 0	12. 080N	88. 500W	33		0.
2347	ISC	19	03	76	10	55	29. 0	11. 700N	89. 300W	33	450MB	3. 95
2351	ISC	03	04	76	03	50	37. 6	14. 600N	92. 800W	33	450MB	3. 95
2354	ISC	08	04	76	09	44	28. 0	14. 800N	93. 380W	33		0.
2355	ISC	09	04	76	03	14	06. 1	14. 170N	92. 610W	33		0.
2358	ISC	12	04	76	11	05	43. 0	11. 970N	87. 900W	33		0.
2359	ISC	13	04	76	13	45	00. 8	15. 090N	93. 250W	33		0.
2360	ISC	15	04	76	12	55	06. 1	11. 250N	87. 020W	33		0.

2363	ISC	16	04	76	10	13	53. 4	12. 300N	87. 860W	33		0.
2365	ISC	18	04	76	16	17	22. 2	11. 990N	87. 880W	33		0.
2368	ISC	20	04	76	23	51	57. 0	11. 600N	87. 700W	33		0.
2369	ISC	21	04	76	03	58	41. 9	11. 260N	87. 160W	33		0.
2371	ISC	21	04	76	06	50	33. 0	11. 190N	87. 180W	33		0.
2373	ISC	21	04	76	08	58	37. 0	11. 300N	87. 100W	33		0.
2374	ISC	21	04	76	10	17	02. 0	11. 640N	87. 700W	33		0.
2377	ISC	24	04	76	11	38	29. 7	11. 600N	86. 500W	26	360MB	2. 47
2380	ISC	25	04	76	03	01	34. 0	14. 740N	93. 140W	33		0.
2381	ISC	25	04	76	13	13	01. 7	15. 170N	93. 500W	33		0.
2385	ISC	26	04	76	19	03	14. 0	14. 730N	92. 870W	33		0.
2389	ISC	29	04	76	02	41	03. 9	15. 230N	93. 430W	0		0.
2397	ISC	10	05	76	09	26	28. 6	12. 000N	87. 190W	33		0.
2398	ISC	12	05	76	03	58	09. 0	11. 330N	87. 420W	33		0.
2399	ISC	12	05	76	09	50	47. 4	14. 800N	93. 800W	33	470MB	4. 28
2401	ISC	13	05	76	05	16	44. 0	11. 890N	87. 620W	33		0.
2411	ISC	24	05	76	10	54	53. 4	11. 500N	86. 800W	33	530MB	5. 27
2415	ISC	31	05	76	09	16	19. 2	14. 900N	94. 000W	32	460MB	4. 12
2416	ISC	01	06	76	08	57	11. 7	14. 800N	93. 910W	33		0.
2419	PDE	08	06	76	11	14	29. 1	12. 646N	89. 448W	33	440MB	3. 79
2420	ISC	09	06	76	05	08	59. 0	14. 750N	93. 680W	33		0.
2423	ISC	17	06	76	13	06	49. 9	14. 840N	93. 340W	33		0.
2424	PDE	18	06	76	07	26	39. 9	12. 610N	87. 797W	31		0.
2430	ISC	24	06	76	07	14	05. 0	14. 460N	93. 800W	33		0.
2434	ISC	28	06	76	13	54	36. 2	14. 570N	93. 010W	33		0.
2436	ISC	29	06	76	10	46	35. 2	14. 460N	92. 590W	33		0.
2438	ISC	01	07	76	10	20	41. 9	14. 880N	92. 970W	33		0.
2440	ISC	04	07	76	02	20	21. 0	12. 480N	87. 760W	33		0.
2444	ISC	09	07	76	21	19	17. 0	13. 460N	91. 170W	14		0.
2446	ISC	13	07	76	17	46	16. 7	15. 330N	93. 710W	16		0.
2449	ISC	17	07	76	17	13	52. 4	14. 930N	93. 310W	33		0.
2450	ISC	18	07	76	21	10	23. 0	11. 900N	92. 300W	0	440MB	3. 79
2453	ISC	21	07	76	00	56	14. 4	15. 080N	93. 750W	33		0.
2459	ISC	27	07	76	08	56	00. 3	14. 000N	92. 760W	33		0.
2461	ISC	29	07	76	14	30	07. 6	14. 220N	93. 220W	33		0.
2462	PDE	29	07	76	16	03	52. 7	12. 647N	88. 786W	33	480MB	4. 45
2463	ISC	02	08	76	00	39	12. 0	11. 280N	87. 500W	33		0.
2468	ISC	12	08	76	01	50	11. 0	12. 600N	88. 400W	34		0.
2470	ISC	17	08	76	16	54	42. 0	11. 040N	87. 000W	33		0.
2474	ISC	01	09	76	12	45	45. 4	14. 270N	93. 180W	33		0.
2482	ISC	10	09	76	15	08	41. 6	14. 500N	93. 110W	33		0.
2489	ISC	17	09	76	09	17	00. 0	14. 210N	92. 890W	33		0.
2491	ISC	17	09	76	22	35	18. 0	14. 100N	92. 300W	33		0.
2493	ISC	19	09	76	07	03	31. 0	13. 050N	90. 450W	33		0.
2495	ISC	21	09	76	02	51	30. 0	14. 370N	92. 850W	33		0.
2496	ISC	21	09	76	19	44	23. 0	14. 860N	92. 970W	33		0.
2500	ISC	28	09	76	00	34	46. 0	14. 910N	93. 950W	33		0.
2501	ISC	03	10	76	07	24	53. 0	13. 530N	92. 050W	33		0.
2508	ISC	25	10	76	04	41	04. 9	15. 120N	93. 310W	33		0.
2510	ISC	26	10	76	00	50	15. 3	14. 900N	93. 300W	33	470MB	4. 28
2511	ISC	28	10	76	23	34	37. 7	14. 380N	92. 910W	33		0.
2512	ISC	29	10	76	04	48	51. 7	14. 200N	92. 000W	33	500MB	4. 78
2513	ISC	30	10	76	10	23	05. 5	13. 860N	92. 630W	33		0.
2514	ISC	04	11	76	00	52	52. 0	14. 300N	92. 530W	33		0.
2515	ISC	05	11	76	04	58	50. 0	11. 000N	91. 600W	33		0.
2520	ISC	10	11	76	17	33	25. 0	12. 280N	90. 060W	33		0.
2522	ISC	13	11	76	02	22	02. 0	14. 360N	92. 200W	33		0.
2527	ISC	05	12	76	11	37	54. 0	13. 600N	93. 100W	33		0.
2533	ISC	20	12	76	19	20	38. 0	11. 300N	86. 000W	33		0.
2538	ISC	10	01	77	09	29	52. 0	13. 300N	91. 100W	33	440MB	3. 79
2542	ISC	16	01	77	04	15	53. 0	13. 300N	90. 400W	33		0.
2545	PDE	17	01	77	00	55	06. 3	12. 417N	88. 601W	33	430MB	3. 62
2546	ISC	17	01	77	02	50	05. 3	13. 080N	91. 450W	33		0.
2550	ISC	28	01	77	14	44	34. 6	14. 600N	93. 070W	33		0.
2552	ISC	07	02	77	13	52	50. 3	14. 120N	93. 710W	33		0.
2555	ISC	21	02	77	01	58	29. 7	14. 340N	93. 980W	33		0.
2561	ISC	03	03	77	09	23	26. 7	12. 000N	88. 400W	33		0.
2563	ISC	04	03	77	20	41	34. 2	14. 110N	93. 630W	33		0.
2564	ISC	08	03	77	09	24	50. 0	14. 500N	93. 600W	33		0.

2565	ISC	08	03	77	17	19	08.9	14.940N	93.710W	33			0.	
2569	ISC	24	03	77	08	31	34.7	13.100N	88.200W	33			0.	
2573	ISC	09	04	77	15	12	00.7	14.400N	92.850W	33	450MB	3.	95	
2578	ISC	20	04	77	17	49	29.2	14.990N	93.640W	33			0.	
2581	ISC	26	04	77	07	47	35.7	15.280N	93.790W	16			0.	
2582	ISC	29	04	77	23	38	06.6	15.080N	93.560W	33			0.	
2584	ISC	03	05	77	05	53	16.8	13.030N	90.700W	33			0.	
2590	PDE	20	05	77	07	32	11.4	12.851N	89.144W	33	470MB	4.	28	
2592	ISC	24	05	77	00	40	22.4	14.560N	93.140W	33			0.	
2593	ISC	25	05	77	00	39	35.0	12.900N	92.600W	33			0.	
2594	ISC	28	05	77	07	08	32.1	14.880N	93.540W	33			0.	
2595	ISC	29	05	77	10	40	21.3	14.700N	92.500W	33	460MB	4.	12	
2596	ISC	30	05	77	03	06	02.4	15.040N	93.710W	33			0.	
2599	ISC	08	06	77	00	27	08.7	15.060N	93.310W	33			0.	
2601	ISC	10	06	77	12	51	49.0	13.200N	91.300W	33			0.	
2604	ISC	15	06	77	13	19	07.0	14.300N	92.800W	33	480MB	4.	45	
2605	ISC	16	06	77	04	09	17.2	14.840N	93.460W	33			0.	
2607	ISC	18	06	77	20	56	20.8	14.500N	92.900W	33	510MB	4.	94	
2609	ISC	20	06	77	03	10	36.5	14.600N	93.300W	0	470MB	4.	28	
2611	ISC	24	06	77	04	39	16.1	14.760N	93.160W	33			0.	
2618	ISC	03	07	77	22	24	15.0	14.000N	93.300W	33			0.	
2619	ISC	04	07	77	05	44	38.0	14.150N	93.050W	33			0.	
2620	ISC	04	07	77	20	56	46.5	13.170N	91.270W	33			0.	
2623	ISC	05	07	77	05	08	26.0	15.240N	93.860W	33			0.	
2629	ISC	11	07	77	04	21	52.0	13.600N	91.900W	33			0.	
2630	ISC	12	07	77	05	23	41.0	13.400N	91.000W	33			0.	
2632	ISC	13	07	77	22	46	29.6	14.600N	93.680W	33			0.	
2633	ISC	15	07	77	10	46	36.0	14.700N	93.500W	33			0.	
2635	ISC	17	07	77	23	53	01.0	13.900N	91.730W	33			0.	
2639	ISC	25	07	77	12	15	42.5	14.300N	93.420W	33			0.	
2640	ISC	25	07	77	17	34	47.8	13.430N	91.030W	33			0.	
2645	ISC	02	08	77	06	57	58.1	12.300N	87.940W	33			0.	
2646	PDE	04	08	77	13	20	52.5	12.346N	87.294W	33	540MB	5.	44	
2662	ISC	14	09	77	17	12	26.7	13.180N	89.590W	33			0.	
2668	ISC	16	10	77	02	16	36.3	14.650N	92.550W	33			0.	
2672	ISC	22	10	77	09	23	57.3	14.890N	92.800W	33			0.	
2673	ISC	22	10	77	12	00	25.8	13.570N	90.860W	33			0.	
2675	ISC	24	10	77	21	48	35.5	14.850N	93.780W	33			0.	
2681	ISC	29	10	77	21	05	56.0	13.800N	90.980W	33			0.	
2682	ISC	30	10	77	00	01	55.3	13.500N	91.400W	33	470MB	4.	28	
2685	ISC	31	10	77	22	47	48.5	13.670N	91.230W	33			0.	
2688	ISC	05	11	77	11	53	59.8	14.380N	93.550W	33			0.	
2698	ISC	01	01	78	23	06	25.0	13.900N	91.900W	33	440MB	3.	79	
2699	ISC	02	01	78	09	47	12.7	12.200N	89.300W	33	410MB	3.	29	
2700	ISC	10	01	78	01	23	38.0	13.800N	91.600W	33	470MB	4.	28	
2701	ISC	12	01	78	02	32	01.0	11.500N	86.800W	33	470MB	4.	28	
2706	ISC	28	01	78	18	49	12.7	12.100N	88.250W	33	440MB	3.	79	
2710	ISC	04	02	78	14	29	54.0	14.800N	93.900W	33	480MB	4.	45	
2714	ISC	18	02	78	16	28	48.3	12.600N	90.200W	22	440MB	3.	79	
2717	ISC	19	02	78	22	09	07.0	11.800N	88.500W	33	410MB	3.	29	
2721	ISC	02	03	78	08	05	41.0	13.500N	92.700W	33	470MB	4.	28	
2725	ISC	06	03	78	01	09	54.0	13.300N	92.300W	33			0.	
2733	ISC	30	03	78	03	47	10.0	11.400N	88.600W	33	430MB	3.	62	
2735	ISC	08	04	78	02	28	57.2	11.600N	88.100W	33	460MB	4.	12	
2741	ISC	26	04	78	21	00	54.0	11.600N	86.600W	33	500MB	4.	78	
2742	ISC	28	04	78	20	01	28.4	11.100N	85.800W	33	430MB	3.	62	
2743	ISC	04	05	78	05	30	26.6	13.500N	92.900W	33	400MB	3.	13	
2744	ISC	08	05	78	02	30	26.9	11.500N	87.600W	33	450MB	3.	95	
2752	ISC	25	05	78	11	17	05.7	14.000N	92.100W	33	500MB	4.	78	
2753	ISC	26	05	78	06	07	23.7	11.430N	87.790W	33	410MB	3.	29	
2757	ISC	13	06	78	08	04	12.8	12.500N	87.700W	33	420MB	3.	46	
2765	ISC	18	07	78	03	03	34.3	13.800N	92.900W	33	500MB	4.	78	
2767	ISC	23	07	78	02	53	00.0	11.200N	89.300W	33	440MB	3.	79	
2782	ISC	06	09	78	01	01	09.1	14.400N	93.000W	33	500MB	4.	78	
2785	ISC	08	09	78	07	53	37.0	14.100N	93.320W	33	440MB	3.	79	
2786	ISC	10	09	78	16	15	36.3	14.000N	93.500W	33	480MB	4.	45	
2790	ISC	12	09	78	21	13	22.5	14.000N	93.500W	33	440MB	3.	79	
2796	ISC	17	09	78	07	19	38.0	13.970N	93.160W	13	440MB	3.	79	
2802	ISC	28	09	78	17	05	39.6	14.100N	93.400W	33	480MB	4.	45	

2803	ISC	01	10	78	20	43	34.0	13.910N	92.400W	0			0.	
2804	ISC	05	10	78	03	09	48.0	14.330N	93.930W	33			0.	
2811	ISC	11	10	78	17	00	57.0	14.440N	92.920W	33			0.	
2814	ISC	20	10	78	20	01	56.2	12.680N	90.500W	33			0.	
2817	ISC	24	10	78	08	30	28.0	13.440N	92.790W	33			0.	
2818	ISC	24	10	78	21	24	33.0	13.700N	93.090W	33	480MB	4.	45	
2820	ISC	26	10	78	06	57	19.0	14.800N	93.100W	33			0.	
2822	ISC	26	10	78	21	33	49.1	14.140N	92.720W	33			0.	
2823	ISC	27	10	78	06	16	11.0	13.400N	92.700W	33	350MB	2.	30	
2830	ISC	30	10	78	19	47	09.1	13.360N	91.500W	33			0.	
2831	ISC	30	10	78	21	15	21.0	13.700N	91.200W	33	440MB	3.	79	
2832	ISC	31	10	78	02	56	20.0	13.220N	90.800W	33	360MB	2.	47	
2838	ISC	14	11	78	13	56	05.0	13.100N	91.760W	33	410MB	3.	29	
2839	ISC	17	11	78	08	12	52.1	12.410N	87.900W	33	430MB	3.	62	
2841	ISC	19	11	78	23	15	08.0	13.060N	90.590W	33			0.	
2842	ISC	19	11	78	23	32	23.0	14.600N	93.460W	33			0.	
2844	ISC	01	12	78	17	35	19.2	11.800N	86.800W	33	500MB	4.	78	
2845	ISC	06	12	78	11	53	34.0	13.100N	89.600W	33	580MB	6.	10	
2846	ISC	06	12	78	13	30	37.2	12.720N	90.600W	33			0.	
2847	ISC	06	12	78	14	26	52.6	13.700N	92.300W	32	570MB	5.	93	
2848	ISC	06	12	78	14	58	14.0	14.600N	92.380W	33	490MB	4.	61	
2849	ISC	06	12	78	15	12	57.1	13.600N	92.000W	33	480MB	4.	45	
2850	ISC	09	12	78	07	49	36.5	14.040N	91.830W	33			0.	
2854	ISC	10	12	78	16	06	11.2	14.050N	93.240W	33	410MB	3.	29	
2855	ISC	14	12	78	17	56	52.0	11.500N	87.400W	33	510MB	4.	94	
2858	ISC	19	12	78	08	57	28.0	12.000N	87.000W	32	530MB	5.	27	
2859	ISC	19	12	78	09	02	37.8	11.200N	88.000W	33	490MB	4.	61	
2863	ISC	23	12	78	14	50	51.0	13.800N	93.200W	33	440MB	3.	79	
2873	ISC	19	01	79	05	53	09.8	13.300N	89.800W	33	410MB	3.	29	
2876	ISC	05	02	79	17	57	02.9	13.900N	93.200W	33	490MB	4.	61	
2879	ISC	08	02	79	11	57	00.0	13.760N	91.610W	33			0.	
2882	ISC	17	02	79	14	18	09.4	12.970N	89.870W	33			0.	
2884	ISC	15	02	79	20	56	36.0	13.700N	91.400W	33			0.	
2892	ISC	15	03	79	03	45	56.0	12.700N	88.400W	33	450MB	3.	95	
2894	ISC	17	03	79	04	25	05.4	12.100N	87.100W	33	450MB	3.	95	
2897	ISC	24	03	79	19	08	45.3	12.200N	88.100W	33	420MB	3.	46	
2900	ISC	01	04	79	15	50	35.1	13.200N	90.700W	33	490MB	4.	61	
2907	ISC	28	04	79	00	39	14.3	11.600N	87.900W	33	470MB	4.	28	
2909	ISC	01	05	79	05	41	28.9	12.800N	89.400W	33	440MB	3.	79	
2913	ISC	26	05	79	00	16	18.1	13.500N	92.300W	10	530MB	5.	27	
2917	ISC	01	06	79	12	58	13.1	13.500N	92.000W	33	450MB	3.	95	
2920	ISC	09	06	79	04	17	30.0	14.330N	92.180W	16			0.	
2923	ISC	27	06	79	14	35	06.0	13.600N	93.000W	33	450MB	3.	95	
2928	ISC	21	07	79	12	12	14.0	14.000N	93.400W	26	570MB	5.	93	
2935	ISC	29	07	79	07	48	22.5	14.600N	92.800W	33	480MB	4.	45	
2938	ISC	08	08	79	04	46	29.8	13.900N	93.000W	33	430MB	3.	62	
2939	ISC	11	08	79	05	37	50.5	12.200N	88.800W	33	470MB	4.	28	
2940	ISC	11	08	79	19	22	06.3	14.700N	93.800W	33	440MB	3.	79	
2942	ISC	18	08	79	17	06	04.0	12.600N	89.700W	33	460MB	4.	12	
2943	ISC	24	08	79	10	14	04.5	13.600N	92.600W	33	400MB	3.	13	
2946	ISC	29	08	79	05	15	35.1	14.400N	92.500W	33	490MB	4.	61	
2954	ISC	20	09	79	04	18	49.0	13.200N	90.100W	33	420MB	3.	46	
2955	ISC	01	10	79	12	15	01.1	11.500N	86.590W	33	450MB	3.	95	
2974	ISC	08	11	79	19	26	33.2	14.000N	92.600W	33	450MB	3.	95	
2981	ISC	06	12	79	10	34	02.0	13.400N	90.100W	33	430MB	3.	62	
2982	ISC	08	12	79	21	01	44.6	14.900N	93.700W	33	480MB	4.	45	
2983	ISC	09	12	79	15	46	10.0	13.000N	91.600W	33	450MB	3.	95	
2990	ISC	24	12	79	09	20	32.3	11.110N	86.680W	33			0.	
2996	ISC	08	01	80	00	54	24.2	12.700N	88.600W	33	490MB	4.	61	
3007	ISC	08	02	80	05	09	28.4	13.500N	90.700W	33	450MB	3.	95	
3014	ISC	15	02	80	07	22	56.0	12.280N	87.470W	33			0.	
3029	ISC	16	03	80	07	23	11.3	14.400N	92.400W	33	440MB	3.	79	
3033	ISC	24	03	80	15	09	07.3	13.000N	90.650W	33			0.	
3033	ISC	24	03	80	15	09	07.3	13.000N	90.650W	33			0.	
3038	ISC	28	03	80	08	56	10.1	13.100N	90.400W	33	410MB	3.	29	
3046	ISC	12	04	80	08	51	06.2	13.540N	90.680W	33			0.	
3049	ISC	12	04	80	20	15	29.1	12.620N	89.790W	20			0.	
3049	ISC	12	04	80	20	15	29.1	12.620N	89.790W	20			0.	
3056	ISC	23	04	80	05	51	08.0	12.650N	89.640W	33			0.	
3063	ISC	04	05	80	12	10	19.5	11.000N	87.800W	33	480MB	4.	45	

3071	ISC	20	05	80	11	52	25.0	13.300N	90.700W	33	420MB 3.46
3077	ISC	07	06	80	13	47	28.3	12.800N	89.000W	33	470MB 4.28
3081	ISC	28	06	80	17	18	29.4	12.500N	89.300W	33	400MB 3.13
3086	ISC	12	07	80	09	23	03.3	13.500N	90.100W	33	430MB 3.62
3090	ISC	18	07	80	22	34	21.1	12.700N	89.300W	33	440MB 3.79
3092	ISC	23	07	80	12	08	57.0	15.000N	93.500W	21	0.
3098	ISC	04	08	80	08	58	49.3	14.200N	93.000W	33	460MB 4.12
3099	ISC	04	08	80	15	09	09.3	14.100N	92.900W	33	480MB 4.45
3100	ISC	06	08	80	23	32	24.0	13.900N	92.900W	33	470MB 4.28
3103	ISC	10	08	80	07	30	02.0	11.200N	86.800W	33	430MB 3.62
3105	ISC	22	08	80	09	17	16.7	12.700N	89.600W	33	440MB 3.79
3106	ISC	23	08	80	00	35	58.5	14.900N	93.900W	33	440MB 3.79
3110	ISC	06	09	80	20	41	28.4	14.300N	93.800W	33	460MB 4.12
3114	ISC	22	09	80	16	03	57.6	13.800N	93.200W	33	470MB 4.28
3115	ISC	28	09	80	01	46	05.5	14.200N	93.200W	33	430MB 3.62
3117	ISC	02	10	80	03	50	17.0	12.400N	88.800W	33	0.
3120	ISC	09	10	80	18	59	48.4	12.100N	87.900W	33	430MB 3.62
3124	ISC	19	10	80	17	54	17.0	14.000N	93.200W	33	480MB 4.45
3127	ISC	29	10	80	02	59	08.6	11.400N	87.600W	33	450MB 3.95
3130	ISC	13	11	80	13	10	03.0	13.200N	89.000W	33	480MB 4.45
3132	ISC	22	11	80	00	18	44.0	14.900N	93.400W	33	470MB 4.28
3138	ISC	03	12	80	12	09	14.4	12.500N	87.900W	33	460MB 4.12
3141	ISC	11	12	80	07	35	56.2	13.100N	90.300W	33	450MB 3.95
3144	ISC	24	12	80	17	23	42.8	13.000N	87.900W	33	440MB 3.79
3146	ISC	09	01	81	10	53	31.4	12.800N	89.900W	33	440MB 3.79
3153	ISC	28	01	81	09	26	06.1	14.400N	92.900W	34	460MB 4.12
3154	ISC	29	01	81	06	20	32.4	13.000N	91.600W	33	460MB 4.12
3156	ISC	13	02	81	16	59	07.0	12.600N	87.800W	0	460MB 4.12
3157	ISC	14	02	81	05	01	12.3	12.400N	88.500W	33	500MB 4.78
3158	ISC	17	02	81	05	08	55.9	12.100N	88.700W	33	410MB 3.29
3163	ISC	21	02	81	16	13	58.7	12.900N	89.400W	33	400MB 3.13
3164	ISC	23	02	81	21	11	10.0	14.800N	93.200W	1	520MB 5.11
3166	ISC	07	03	81	21	58	43.0	11.900N	91.700W	33	400MB 3.13
3175	ISC	08	04	81	12	17	11.7	12.500N	88.200W	33	510MB 4.94
3180	ISC	21	04	81	18	34	43.8	13.500N	92.600W	33	430MB 3.62
3183	ISC	01	05	81	21	38	02.0	13.400N	91.600W	33	450MB 3.95
3186	ISC	09	05	81	06	50	55.0	11.700N	88.800W	33	450MB 3.95
3187	ISC	09	05	81	17	04	12.8	11.570N	88.060W	33	470MB 4.28
3188	ISC	11	05	81	10	44	35.0	12.200N	92.100W	33	410MB 3.29
3190	ISC	20	05	81	20	08	52.7	13.430N	90.500W	33	450MB 3.95
3198	ISC	14	06	81	05	28	44.0	14.300N	93.900W	33	450MB 3.95
3200	ISC	29	06	81	01	13	52.3	13.270N	89.500W	33	0.
3203	ISC	18	07	81	09	01	21.0	12.400N	92.000W	33	400MB 3.13
3206	ISC	11	08	81	06	00	34.5	11.790N	87.270W	33	510MB 4.94
3208	ISC	29	08	81	18	17	47.4	12.900N	87.900W	33	520MB 5.11
3213	ISC	15	09	81	20	50	50.9	14.200N	93.100W	33	460MB 4.12
3218	ISC	05	10	81	08	20	19.7	13.500N	90.230W	33	390MB 2.96
3220	ISC	07	10	81	01	05	15.0	14.300N	92.900W	33	440MB 3.79
3221	ISC	14	10	81	07	03	50.0	12.200N	87.000W	33	460MB 4.12
3228	ISC	12	11	81	03	37	43.5	12.100N	87.400W	33	480MB 4.45
3230	ISC	18	11	81	05	41	38.6	15.100N	93.700W	33	450MB 3.95
3237	ISC	25	12	81	00	06	07.6	12.300N	88.200W	33	470MB 4.28
3242	ISC	30	12	81	20	32	36.0	13.500N	90.600W	33	460MB 4.12
3252	ISC	12	01	82	09	59	08.0	12.800N	87.800W	33	480MB 4.45
3255	ISC	24	02	82	04	04	45.0	12.300N	89.200W	33	460MB 4.12
3256	ISC	24	02	82	06	15	50.8	12.800N	88.800W	33	480MB 4.45
3257	ISC	26	02	82	12	54	07.5	12.700N	89.000W	33	0.
3259	ISC	02	03	82	10	37	02.6	13.950N	91.640W	33	450MB 3.95
3262	ISC	07	03	82	03	27	38.5	12.800N	89.000W	33	450MB 3.95
3263	ISC	10	03	82	05	11	52.1	12.800N	88.900W	33	430MB 3.62
3264	ISC	10	03	82	05	27	36.4	13.000N	88.700W	33	440MB 3.79
3274	ISC	09	04	82	07	54	01.1	13.200N	92.000W	33	450MB 3.95
3278	ISC	12	04	82	14	02	28.4	13.500N	91.800W	33	450MB 3.95
3280	ISC	15	04	82	13	12	50.9	14.000N	93.100W	33	420MB 3.46
3289	ISC	05	05	82	05	44	38.0	14.300N	93.970W	33	360MB 2.47
3290	ISC	07	05	82	01	03	12.5	12.000N	89.400W	33	450MB 3.95
3292	ISC	11	05	82	10	16	45.4	13.400N	91.700W	33	0.
3293	ISC	12	05	82	12	23	59.5	12.700N	89.400W	33	450MB 3.95
3294	ISC	16	05	82	17	23	13.4	15.280N	93.750W	33	360MB 2.47
3296	ISC	14	05	82	07	52	03.5	14.370N	93.530W	33	0.
3298	ISC	01	06	82	09	07	00.2	11.600N	88.800W	33	410MB 3.29
3299	ISC	02	06	82	07	26	07.5	14.780N	93.570W	15	0.
3322	ISC	23	06	82	00	00	37.0	12.900N	89.800W	0	440MB 3.79
3335	ISC	27	06	82	08	58	07.3	12.900N	89.700W	33	450MB 3.95
3339	ISC	28	06	82	21	30	43.4	11.900N	87.400W	33	470MB 4.28
3347	ISC	23	07	82	02	37	31.0	11.900N	89.200W	33	450MB 3.95
3349	ISC	25	07	82	01	32	06.3	13.000N	90.000W	33	420MB 3.46
3354	ISC	10	08	82	12	25	23.9	14.100N	93.200W	33	430MB 3.62
3355	ISC	11	08	82	01	11	15.0	12.100N	88.600W	33	410MB 3.29
3358	ISC	13	08	82	16	06	22.7	13.300N	90.700W	33	450MB 3.95
3370	ISC	05	10	82	01	26	45.7	13.900N	92.100W	33	470MB 4.28
3371	ISC	07	10	82	01	17	14.7	13.500N	91.100W	33	450MB 3.95
3374	ISC	21	10	82	19	58	22.1	14.300N	93.800W	33	450MB 3.95
3376	ISC	26	10	82	22	28	51.4	14.500N	93.800W	33	470MB 4.28
3391	ISC	19	11	82	23	03	30.4	10.700N	86.100W	33	470MB 4.28
3395	ISC	24	11	82	10	23	00.0	12.800N	91.000W	29	550MB 5.60
3399	ISC	01	12	82	03	00	42.4	12.800N	87.600W	33	460MB 4.12
3403	ISC	13	12	82	15	12	11.5	14.100N	92.500W	33	370MB 2.63
3406	ISC	23	12	82	05	10	20.0	12.000N	89.800W	33	480MB 4.45
3413	ISC	14	01	83	07	24	45.8	14.000N	91.900W	33	440MB 3.79
3418	ISC	28	01	83	05	44	24.0	12.000N	89.200W	33	450MB 3.95
3421	ISC	03	03	83	09	43	34.4	13.090N	91.060W	33	460MB 4.12
3424	ISC	15	03	83	01	24	18.7	13.500N	90.600W	33	440MB 3.79
3425	ISC	15	03	83	09	41	38.6	11.200N	86.900W	33	450MB 3.95
3432	ISC	14	04	83	19	42	22.9	11.140N	85.950W	33	450MB 3.95
3438	ISC	11	05	83	11	39	21.9	13.800N	90.700W	33	0.
3440	ISC	05	06	83	16	18	10.8	13.500N	91.600W	33	470MB 4.28
3444	ISC	25	06	83	13	01	28.6	14.220N	92.350W	33	0.
3447	ISC	27	06	83	20	37	50.2	14.600N	93.940W	33	0.
3451	ISC	12	07	83	04	47	54.1	15.300N	93.800W	33	410MB 3.29
3452	ISC	12	07	83	22	52	07.1	11.500N	87.800W	33	460MB 4.12
3453	ISC	15	07	83	13	38	03.5	11.900N	88.300W	33	450MB 3.95
3459	ISC	30	07	83	20	29	26.7	14.320N	93.380W	2	0.
3468	ISC	19	08	83	10	04	21.1	13.900N	91.300W	33	440MB 3.79
3470	ISC	27	08	83	11	06	28.4	13.800N	91.000W	33	460MB 4.12
3473	ISC	08	09	83	22	21	57.0	12.200N	87.200W	33	440MB 3.79
3475	ISC	16	09	83	10	06	39.0	12.000N	88.300W	33	450MB 3.95
3476	ISC	18	09	83	09	19	18.7	14.500N	94.000W	33	420MB 3.46
3477	ISC	23	09	83	22	30	25.3	11.300N	89.000W	33	480MB 4.45
3487	ISC	24	10	83	01	11	35.2	12.300N	88.300W	33	460MB 4.12
3488	ISC	01	11	83	10	18	00.0	14.200N	92.200W	5	450MB 3.95
3494	ISC	20	11	83	19	15	14.7	14.400N	92.400W	33	500MB 4.78
3500	ISC	02	12	83	05	55	46.0	13.700N	91.600W	33	450MB 3.95
3501	ISC	02	12	83	08	54	02.5	14.100N	91.800W	33	450MB 3.95
3504	ISC	03	12	83	02	14	55.9	14.000N	92.400W	33	490MB 4.61
3506	ISC	05	12	83	11	30	36.8	13.200N	91.800W	33	440MB 3.79
3507	ISC	08	12	83	04	50	18.0	14.000N	92.200W	33	450MB 3.95
3511	ISC	15	12	83	11	25	17.5	12.000N	87.000W	33	500MB 4.78
3514	ISC	21	12	83	09	04	27.6	13.200N	91.300W	33	450MB 3.95
3516	ISC	03	01	84	01	21	20.6	13.950N	91.730W	15	0.
3517	ISC	03	01	84	01	55	41.2	13.350N	91.520W	33	0.
3520	ISC	07	01	84	10	43	47.6	13.640N	91.180W	33	0.
3523	ISC	08	01	84	11	33	05.3	13.490N	91.440W	33	0.
3524	ISC	08	01	84	13	51	58.0	13.400N	91.680W	33	0.
3525	ISC	09	01	84	04	02	38.0	13.700N	90.760W	33	0.
3526	ISC	09	01	84	19	39	40.1	13.800N	91.300W	33	480MB 4.45
3527	ISC	10	01	84	16	02	06.3	13.170N	89.000W	33	0.
3528	ISC	11	01	84	18	46	06.7	13.700N	91.610W	33	0.
3530	ISC	13	01	84	04	13	47.9	13.420N	91.930W	33	0.
3531	ISC	18	01	84	04	54	52.2	12.700N	89.200W	33	460MB 4.12
3535	ISC	31	01	84	04	47	53.0	11.300N	87.300W	33	470MB 4.28
3536	ISC	02	02	84	18	34	36.9	13.930N	91.870W	33	0.
3537	ISC	03	02	84	22	46	38.5	13.070N	91.590W	33	0.
3539	ISC	07	02	84	15	54	39.5	13.320N	90.970W	33	0.
3540	ISC	10	02	84	08	00	01.5	13.860N	91.950W	33	0.
3543	ISC	13	02	84	02	26	15.5	14.020N	91.960W	33	0.
3544	ISC	13	02	84	06	50	44.3	13.930N	91.830W	33	0.
3545	ISC	15	02	84	12	03	11.1	13.970N	91.620W	33	0.
3548	ISC	17	02	84	22	08	09.9	13.940N	91.400W	33	0.

3550	ISC	24	02	84	19	34	55.5	13.930N	91.880W	33		0.			
3553	ISC	27	02	84	12	15	37.7	13.140N	89.950W	33		0.			
3555	ISC	05	03	84	07	43	30.0	12.700N	90.650W	33		0.			
3555	ISC	05	03	84	07	43	30.0	12.700N	90.650W	33		0.			
3557	ISC	07	03	84	22	08	54.0	13.000N	90.480W	33	460MB	4.	12		
3559	ISC	11	03	84	00	01	11.2	13.600N	90.760W	33		0.			
3560	ISC	15	03	84	21	42	05.5	13.170N	91.720W	33	450MB	3.	95		
3561	ISC	16	03	84	07	33	29.0	11.000N	87.600W	15	460MB	4.	12		
3564	ISC	20	03	84	02	05	35.8	13.900N	91.660W	33		0.			
3566	ISC	23	03	84	12	22	17.6	13.470N	91.470W	33		0.			
3569	ISC	25	03	84	20	23	32.5	12.400N	88.400W	33	490MB	4.	61		
3570	ISC	03	04	84	23	12	27.1	12.300N	88.100W	33	480MB	4.	45		
3572	ISC	09	04	84	15	06	14.9	14.500N	93.800W	33	490MB	4.	61		
3582	ISC	12	05	84	08	46	42.8	13.900N	91.200W	33	430MB	3.	62		
3584	ISC	16	05	84	06	27	29.3	13.500N	90.600W	33	410MB	3.	29		
3588	ISC	27	05	84	01	52	33.0	11.500N	90.700W	0	450MB	3.	95		
3589	ISC	01	06	84	10	29	52.8	14.300N	92.500W	33	480MB	4.	45		
3590	ISC	02	06	84	15	46	45.0	11.500N	87.730W	33	490MB	4.	61		
3594	ISC	17	06	84	23	32	09.6	15.200N	93.700W	33	470MB	4.	28		
3597	ISC	01	07	84	07	50	36.0	13.000N	90.700W	33	410MB	3.	29		
3603	ISC	11	07	84	17	58	36.8	14.200N	92.100W	33	490MB	4.	61		
3605	ISC	17	07	84	00	00	07.9	13.800N	90.900W	33	470MB	4.	28		
3606	ISC	17	07	84	05	38	58.4	11.400N	86.700W	33	490MB	4.	61		
3607	ISC	20	07	84	12	29	02.3	14.500N	92.700W	33	460MB	4.	12		
3608	ISC	28	07	84	22	49	35.4	14.300N	92.500W	33	460MB	4.	12		
3609	ISC	29	07	84	13	58	51.0	13.900N	92.100W	33	420MB	3.	46		
3610	ISC	29	07	84	15	25	23.9	11.700N	87.100W	33	420MB	3.	46		
3613	ISC	05	08	84	04	28	19.9	11.800N	87.000W	33	450MB	3.	95		
3614	ISC	05	08	84	13	09	31.0	13.300N	91.880W	33	420MB	3.	46		
3615	ISC	07	08	84	05	35	44.8	14.400N	92.400W	33	440MB	3.	79		
3616	ISC	10	08	84	08	02	58.0	11.400N	87.000W	33	490MB	4.	61		
3626	ISC	01	09	84	09	07	06.8	11.300N	86.100W	33	400MB	3.	13		
3627	ISC	04	09	84	10	41	39.5	11.700N	86.600W	33	450MB	3.	95		
3628	ISC	04	09	84	11	04	03.0	11.600N	86.700W	33	440MB	3.	79		
3638	ISC	28	09	84	11	47	37.5	12.200N	91.200W	33	460MB	4.	12		
3641	ISC	17	10	84	10	46	49.3	13.400N	90.500W	33	480MB	4.	45		
3642	ISC	26	10	84	03	01	39.3	13.200N	90.500W	33	490MB	4.	61		
3644	ISC	26	10	84	09	35	55.4	13.500N	92.200W	33	430MB	3.	62		
3646	ISC	28	10	84	03	52	55.3	14.100N	93.800W	33	380MB	2.	80		
3647	ISC	28	10	84	18	35	54.5	14.400N	93.600W	33	470MB	4.	28		
3649	ISC	31	10	84	05	11	18.7	14.600N	94.500W	33	370MB	2.	63		
3654	ISC	02	11	84	04	13	52.0	12.500N	89.600W	33	430MB	3.	62		
3655	ISC	03	11	84	17	35	19.1	13.100N	88.100W	33	480MB	4.	45		
3657	ISC	05	11	84	10	08	55.0	14.600N	93.900W	33	420MB	3.	46		
3659	ISC	06	11	84	21	46	09.0	13.000N	90.310W	33	460MB	4.	12		
3662	ISC	09	11	84	21	04	18.0	11.800N	87.930W	33	490MB	4.	61		
3663	ISC	10	11	84	05	33	08.6	11.600N	87.900W	33	450MB	3.	95		
3666	ISC	13	11	84	14	30	54.8	11.200N	87.700W	33	480MB	4.	45		
3672	ISC	02	12	84	10	36	24.9	13.300N	91.800W	33	420MB	3.	46		
3673	ISC	09	12	84	22	40	50.2	14.100N	92.100W	33	470MB	4.	28		
3675	ISC	15	12	84	07	15	48.2	15.200N	94.500W	33	400MB	3.	13		
3676	ISC	15	12	84	18	56	48.6	12.400N	88.600W	33	490MB	4.	61		
3679	ISC	22	12	84	06	01	40.1	11.500N	87.300W	33	470MB	4.	28		
3682	ISC	26	12	84	14	38	42.7	11.020N	86.060W	19	380MB	2.	80		
3683	ISC	28	12	84	18	40	08.0	12.200N	88.100W	33	430MB	3.	62		
3686	PDE	06	01	85	00	18	46.2	13.996N	92.978W	33	440MB	3.	79		
3689	PDE	20	01	85	06	51	48.3	12.230N	90.370W	33		0.			
3691	PDE	16	02	85	06	35	34.7	11.890N	87.440W	33	460MB	4.	12		
3694	PDE	11	03	85	01	03	41.4	12.133N	88.783W	33	430MB	3.	62		
3699	PDE	04	05	85	04	08	25.1	11.860N	88.420W	33	430MB	3.	62		
3701	PDE	10	05	85	03	19	39.5	11.790N	89.490W	33	420MB	3.	46		
3707	PDE	23	05	85	11	21	36.1	11.787N	88.157W	33	460MB	4.	12		
3708	PDE	23	05	85	11	33	14.7	12.084N	88.260W	33	470MB	4.	28		
3709	PDE	23	05	85	11	42	34.2	11.930N	88.260W	33	480MB	4.	45		
3712	PDE	02	06	85	03	10	31.5	13.546N	91.892W	33	460MB	4.	12		
3714	PDE	02	06	85	08	41	36.0	12.767N	89.493W	33	450MB	3.	95		
3716	PDE	08	06	85	14	23	40.0	12.480N	88.580W	33	470MB	4.	28		
3718	PDE	10	06	85	23	13	13.0	13.221N	89.994W	33	460MB	4.	12		
3719	PDE	11	06	85	09	34	08.4	12.860N	90.530W	33	400MB	3.	13		

3722	PDE	20	06	85	15	25	33.3	13.654N	90.514W	33	470MB	4.	28		
3723	PDE	21	06	85	18	03	21.3	13.190N	92.850W	33	470MB	4.	28		
3724	PDE	22	06	85	03	49	23.3	13.449N	89.956W	33	480MB	4.	45		
3725	PDE	22	06	85	05	54	03.8	13.609N	89.963W	33	470MB	4.	28		
3727	PDE	25	06	85	20	31	30.8	13.500N	89.864W	33	460MB	4.	12		
3728	PDE	08	07	85	01	54	14.4	14.367N	93.099W	33	480MB	4.	45		
3729	PDE	08	07	85	05	30	54.6	13.622N	93.414W	33	370MB	2.	63		
3730	PDE	09	07	85	02	42	23.2	13.840N	92.510W	33	330MB	1.	97		
3731	PDE	13	07	85	01	49	48.3	13.180N	88.990W	33	400MB	3.	13		
3734	PDE	19	07	85	11	37	28.8	14.265N	92.090W	33	480MB	4.	45		
3736	PDE	31	07	85	01	34	34.9	11.270N	87.870W	33	440MB	3.	79		
3741	PDE	08	09	85	03	21	49.7	11.590N	90.270W	33	410MB	3.	29		
3744	PDE	17	09	85	10	39	29.7	13.720N	90.842W	33	460MB	4.	12		
3745	PDE	20	09	85	10	57	10.5	11.818N	87.900W	33	440MB	3.	79		
3746	PDE	02	10	85	02	21	06.7	14.076N	91.742W	33	480MB	4.	45		
3749	PDE	20	10	85	19	44	52.3	12.530N	91.320W	33	450MB	3.	95		
3753	PDE	01	11	85	23	56	38.9	12.935N	89.984W	33	450MB	3.	95		
3754	PDE	05	11	85	23	15	25.9	13.850N	93.210W	33	350MB	2.	30		
3759	PDE	16	11	85	18	16	06.7	13.281N	89.914W	33	420MB	3.	46		
3762	PDE	21	11	85	20	19	42.8	12.077N	88.768W	33		0.			
3766	PDE	12	12	85	16	18	27.0	14.474N	93.051W	33	470MB	4.	28		
3767	PDE	12	12	85	21	48	07.2	14.090N	93.120W	33	490MB	4.	61		
3772	PDE	19	12	85	05	14	12.8	13.957N	93.362W	33	420MB	3.	46		
3775	PDE	21	12	85	22	56	54.6	14.114N	92.382W	33	480MB	4.	45		
3778	PDE	31	01	86	05	47	16.6	13.430N	91.240W	33	480MB	4.	45		
3779	PDE	01	02	86	09	55	33.5	11.567N	86.887W	33	450MB	3.	95		
3782	PDE	10	02	86	05	53	16.1	11.012N	86.847W	33	430MB	3.	62		
3783	PDE	14	02	86	20	00	25.1	14.240N	92.050W	33	490MB	4.	61		
3784	PDE	14	02	86	20	05	29.0	13.987N	92.104W	33	490MB	4.	61		
3789	PDE	21	02	86	07	38	02.9	12.924N	87.785W	33	440MB	3.	79		
3791	PDE	26	02	86	04	30	14.3	12.073N	86.721W	33	470MB	4.	28		
3792	PDE	03	03	86	19	22	48.5	12.450N	88.460W	33	470MB	4.	28		
3794	PDE	04	03	86	11	34	58.7	13.195N	90.928W	33	390MB	2.	96		
3796	PDE	10	03	86	06	49	49.3	14.179N	92.568W	33	440MB	3.	79		
3799	PDE	23	03	86	16	55	52.1	12.120N	87.160W	33	480MB	4.	45		
3803	PDE	31	03	86	09	30	26.5	13.079N	91.085W	33	440MB	3.	79		
3806	PDE	01	04	86	22	15	32.6	13.048N	90.936W	33	430MB	3.	62		
3807	PDE	03	04	86	20	01	21.0	13.300N	91.750W	33	440MB	3.	79		
3808	PDE	05	04	86	04	33	07.4	11.987N	89.151W	33	440MB	3.	79		
3809	PDE	05	04	86	09	04	55.1	14.332N	93.823W	29	460MB	4.	12		
3812	PDE	21	04	86	05	54	56.1	11.505N	87.521W	33	400MB	3.	13		
3815	PDE	19	05	86	01	18	56.2	15.100N	93.990W	33	440MB	3.	79		
3816	PDE	23	05	86	08	26	48.6	13.690N	92.990W	33	420MB	3.	46		
3817	PDE	24	05	86	16	24	17.0	14.940N	93.800W	33	450MB	3.	95		
3818	PDE	03	06	86	06	53	17.3	12.577N	88.000W	33	450MB	3.	95		
3820	PDE	13	06	86	11	31	37.6	13.814N	92.413W	33	450MB	3.	95		
3822	PDE	21	06	86	18	09	22.9	14.478N	93.869W	17	480MB	4.	45		
3823	PDE	21	06	86	23	57	03.3	14.801N	93.706W	29	470MB	4.	28		
3824	PDE	23	06	86	23	54	31.4	14.539N	93.773W	27	450MB	3.	95		
3826	PDE	30	06	86	22	43	34.8	11.347N	86.090W	33	480MB	4.	45		
3828	PDE	30	06	86	23	59	45.3	11.339N	86.104W	33	460MB	4.	12		
3832	PDE	07	08	86	01	27	33.0	14.479N	93.091W	33	450MB	3.	95		
3833	PDE	09	08	86	12	13	07.5	13.600N	92.330W	33	380MB	2.	80		
3834	PDE	16	08	86	03	27	30.4	14.310N	92.990W	33	380MB	2.	80		
3836	PDE	18	09	86	09	39	24.5	13.180N	91.850W	33	410MB	3.	29		
3838	PDE	27	09	86	02	34	31.9	13.870N	92.780W	33	460MB	4.	12		
3840	PDE	07	10	86	11	46	01.2	13.155N	89.948W	33	460MB	4.	12		
3846	PDE	15	10	86	09	15	48.3	13.970N	93.790W	33	410MB	3.	29		
3848	PDE	22	10	86	09	25	52.8	13.631N	90.624W	33		0.			
3848	PDE	22	10	86	09	25	52.8	13.631N	90.624W	33		0.			
3851	PDE	12	11	86	05	05	02.4	14.514N	93.886W	32	480MB	4.	45		
3854	PDE	01	12	86	10	22	36.9	13.568N	92.020W	33	450MB	3.	95		
3856	PDE	01	12	86	16	05	38.2	14.626N	93.016W	33	480MB	4.	45		
3859	PDE	07	12	86	05	21	42.5	11.691N	87.929W	33	490MB	4.	61		
3861	PDE	19	12	86	01	15	19.9	11.940N	88.360W	33	440MB	3.	79		
3862	PDE	19	12	86	06	17	39.5	11.780N	88.550W	33	440MB	3.	79		
3863	PDE	19	12	86	10	39	11.4	12.547N	88.432W	33	510MB	4.	94		
3864	PDE	19	12	86	11	55	45.0	12.551N	88.531W	33	510MB	4.	94		
3868	PDE	21	12	86	07	30	21.0	12.456N	88.675W	33	500MB	4.	78		
3869	PDE	21	12	86	13	42	24.9	12.160N	87.800W	33	480MB	4.	45		

INTERMEDIATE BENIOFF ZONE

CHRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
3*WHITE1		711						13.300N	89.550W	45		7.00
4*WHITE114		12712						13.220N	88.900W	59		7.10
7*WHITE129		09717						13.750N	91.050W	40		7.40
8*WHITE103		10717						13.800N	90.710W	49		7.00
9*WHITE105		03719						13.300N	89.120W	59		7.40
10*WHITE1		720						13.900N	91.300W	40		7.00
14*WHITE1		05733						13.900N	91.300W	40		7.00
15*WHITE106		05736						13.250N	89.050W	59		7.20
17*WHITE1		742						13.550N	90.250W	49		7.10
18*WHITE1		742						13.260N	89.200W	55		7.20
19*WHITE110		08742						14.100N	91.650W	40		7.10
22*WHITE113		10747						14.150N	91.700W	45		7.10
23*WHITE113		03748						13.310N	89.200W	59		7.10
25*WHITE104		03751						13.850N	91.150W	40		7.30
26*WHITE104		10757						13.750N	91.050W	40		6.80
27*WHITE1		764						14.400N	92.000W	50		6.50
30*WHITE124		10765						14.400N	92.150W	50		7.60
31*WHITE115		06772						14.053N	91.700W	40		7.00
32*WHITE129		07773						13.950N	91.400W	45		7.50
33*WHITE107		09773						13.750N	91.050W	40		6.80
34*WHITE113		12773						14.100N	91.650W	40		7.10
35*WHITE130		03776						13.750N	90.450W	50		7.20
36*WHITE130		05776						13.500N	89.950W	50		7.50
37*WHITE106		07776						13.250N	89.150W	50		6.80
38*WHITE115		11776						13.250N	89.150W	50		7.00
51*WHITE117		12829						13.700N	90.420W	50		7.10
52*WHITE107		02831						13.400N	89.750W	49		7.10
55*WHITE109		02853						14.200N	91.750W	49		6.80
59*WHITE125		08859						12.850N	88.000W	59		7.10
60*WHITE108		12859						13.350N	89.150W	59		7.30
61*WHITE119		01860						13.900N	91.050W	49		7.10
62*WHITE103		12860						13.350N	89.450W	49		7.10
64*WHITE123		08861						13.700N	90.150W	59		6.70
65*WHITE101		04862						13.950N	90.750W	59		5.50
66*WHITE119		12862						13.400N	89.750W	49		8.10
67*WHITE130		06867						13.310N	89.200W	59		7.10
68*WHITE112		06870						13.750N	90.350W	50		7.20
70*WHITE119		03873						13.300N	89.300W	50		7.10
71*WHITE103		09874						13.900N	91.050W	45		7.10
72*WHITE109		09891						13.250N	89.300W	50		7.10
76*WHITE118		01902						14.200N	91.850W	40	0	7.00
77 WHITE118		04902						14.000N	91.000W	25	0	7.90
88*WHITE115		10 15						13.550N	89.950W	50	0	7.00
102*WHITE117		04 19						14.200N	91.900W	40	0	7.00
130 GUTE 17		03 26	11	53	36.0			12.500N	82.500W	50	0	6.90
131*WHITE114		12 35						14.780N	92.480W	00	0	7.40
246 KELLE 06		08 42	23	36	54			13.900N	90.930W	40		8.30
247*WHITE123		10 50						14.333N	91.683W	00		7.20
349 WHITE117		11 53						13.603N	92.167W	40	710MB	6.90
371 [illegible]		10 03	59	03	38	46		12.420N	86.480W	41		5.30
[illegible] SYKES		19 03	55	17	19	34		13.310N	90.560W	53		0.
373 SYKES		28 03	55	06	52	16		12.840N	88.750W	59		0.
407 SYKES		27 10	56	15	33	00		12.000N	86.470W	59	0	6.00
424 SYKES		08 04	58	17	17	06		13.040N	88.810W	57		0.
458 SYKES		04 07	59	03	04	22		13.540N	87.810W	37		0.
467 SYKES		17 09	59	21	24	28		13.260N	88.970W	51		5.60
504 GELL		15 12	60	23	24	35.8		12.300N	87.800W	39		0.
520 LEEDS		16 02	61	05	21	00		12.700N	86.500W	40		5.30
522 GELL		16 03	61	02	40	00.0		13.100N	89.667W	40		0.
530 SYKES		13 05	61	12	45	10		12.610N	88.500W	40		0.
543 SYKES		22 06	61	20	00	12		12.860N	90.110W	53		0.
555 GELL		24 07	61	23	17	57.0		12.750N	89.000W	50		0.
565 GELL		10 11	61	13	20	04.2		13.600N	86.700W	38		0.
571 CGS-B		30 01	62	08	34	23.9		12.700N	87.500W	49	0	4.88
573 SYKES		24 02	62	01	03	24		12.960N	88.760W	59		0.
580 SYKES		06 09	62	13	38	59		14.140N	90.660W	53		0.
584 GELL		29 10	62	10	53	29.9		13.000N	88.400W	43		0.
597 CGS-B		25 02	63	08	58	43.6		12.300N	88.200W	58	410MB	3.29
607 CGS-B		09 05	63	15	03	43.8		12.400N	87.000W	50	550MB	5.60
608 CGS-B		24 05	63	06	10	09.5		12.100N	88.500W	42	440MB	3.79
611 GELL		20 06	63	03	34	27.2		13.900N	89.500W	43		0.
613 CGS-B		04 07	63	01	43	20.8		12.800N	88.700W	55	410MB	3.29
617 CGS-B		24 07	63	14	06	04.4		12.300N	88.300W	47	380MB	2.80
631 CGS-B		06 11	63	21	49	57.7		12.200N	88.000W	37	410MB	3.29
632 CGS-B		10 11	63	07	18	07.6		12.900N	88.500W	45	420MB	3.46
635 CGS-B		16 12	63	10	49	52.5		13.900N	90.900W	59	430MB	3.62
644 ISC		18 01	64	07	23	00.7		13.770N	88.780W	50		0.
652 ISC		26 01	64	00	29	34.0		13.800N	91.200W	50		0.
653 ISC		26 01	64	13	50	16.0		12.800N	91.200W	50		0.
654 ISC		27 01	64	05	42	23.0		13.600N	90.700W	50		0.
660 ISC		03 02	64	15	11	00		13.170N	89.670W	50		0.
661 ISC		03 02	64	19	28	00		13.780N	88.780W	50		0.
664 ISC		05 02	64	10	12	00		13.000N	89.500W	50		0.
665 ISC		06 02	64	09	51	54.0		13.100N	89.680W	40		0.
666 ISC		06 02	64	17	42	38.0		13.800N	91.300W	50		0.
668 ISC		06 02	64	23	12	42.0		13.700N	90.900W	50		0.
669 ISC		07 02	64	05	40	00		14.200N	90.700W	50		0.
677 ISC		18 02	64	02	09	00.0		12.100N	89.600W	50		0.
684 ISC		19 02	64	12	37	58.0		12.780N	90.050W	50		0.
686 ISC		21 02	64	08	35	36.0		12.920N	89.500W	50		0.
688 ISC		22 02	64	21	54	00		13.780N	88.780W	50		0.
703 CGS-B		05 03	64	14	30	18.2		12.100N	88.100W	53	430MB	3.62
708 ISC		10 03	64	14	32	07.0		13.770N	88.780W	50		0.
711 ISC		12 03	64	05	33	34.0		14.300N	91.300W	50		0.
723 ISC		22 03	64	02	45	58.0		12.500N	88.170W	50		0.
725 ISC		22 03	64	19	07	17.0		13.600N	90.900W	50		0.
726 ISC		23 03	64	18	08	04.0		13.600N	90.900W	50		0.
728 ISC		29 03	64	12	35	37.0		12.200N	89.800W	50		0.
732 CGS-B		04 04	64	06	43	20.2		12.500N	87.700W	41	430MB	3.62
741 CGS-B		09 04	64	04	07	58.6		13.600N	90.200W	53	370MB	2.63
746 ISC		10 04	64	16	03	16.0		14.300N	91.400W	50		0.
756 ISC		21 04	64	04	45	15.0		13.000N	89.830W	50		0.
761 ISC		25 04	64	00	46	46.0		14.700N	92.000W	40		0.
769 ISC		29 04	64	20	25	00.0		12.300N	87.400W	50		0.
781 ISC		06 05	64	09	53	06.0		14.300N	91.300W	50		0.
786 ISC		14 05	64	16	54	38.0		11.800N	88.700W	50		0.
787 CGS-B		15 05	64	02	13	56.6		12.800N	87.500W	51	370MB	2.63
788 CGS-B		15 05	64	10	17	45.9		12.400N	89.000W	53	440MB	3.79
796 ISC		19 05	64	12	30	32.0		12.780N	90.050W	50		0.
798 ISC		21 05	64	13	46	20.0		12.780N	90.050W	50		0.
801 ISC		23 05	64	07	20	37.0		12.780N	90.050W	50		0.
805 ISC		26 05	64	09	21	13.0		13.000N	89.030W	50		0.
807 ISC		30 05	64	05	51	15.0		12.580N	88.580W	50		0.
812 CGS-B		10 06	64	16	25	09.1		12.000N	87.900W	55	420MB	3.46
814 CGS-B		15 06	64	09	41	24.2		12.600N	88.300W	56	410MB	3.29
820 CGS-B		19 06	64	17	31	56.2		12.400N	88.100W	53	400MB	3.13
835 CGS-B		09 07	64	10	48	21.5		13.000N	90.200W	56	360MB	2.47
836 ISC		11 07	64	11	16	32.8		14.100N	93.000W	51	370MB	2.63
848 ISC		29 07	64	09	46	42.2		14.900N	93.400W	56	410MB	3.29
849 ISC		30 07	64	05	16	03.3		11.100N	86.200W	42	570MB	5.93

860	CGS-B	15	08	64	14	43	03.1	12.000N	88.000W	39	400MB	3.13
874	CGS-B	30	08	64	15	20	50.7	12.600N	88.500W	54	460MB	4.12
879	CGS-B	12	09	64	21	19	38.7	12.500N	89.100W	55	420MB	3.46
880	CGS-B	13	09	64	07	27	28.8	12.400N	89.200W	51	430MB	3.62
905	ISC	23	10	64	15	21	56.8	13.200N	91.600W	45	400MB	3.13
918	CGS-B	17	11	64	16	17	03.0	13.200N	89.600W	54	450MB	3.95
919	ISC	25	11	64	20	48	15.1	11.700N	88.200W	41	420MB	3.46
924	CGS-B	03	12	64	02	00	28.6	13.800N	89.000W	41	420MB	3.46
926	ISC	08	12	64	04	11	53.7	11.500N	87.000W	48	500MB	4.78
935	ISC	08	01	65	20	27	00	13.800N	89.800W	50		0.
940	CGS-B	12	01	65	03	19	10.3	12.300N	88.900W	39	430MB	3.62
952	ISC	31	01	65	02	09	00	13.300N	89.800W	50		0.
957	ISC	03	02	65	18	28	51.7	13.900N	92.000W	56	470MB	4.28
961	CGS-B	10	02	65	19	30	43.2	13.000N	89.500W	55	400MB	3.13
963	ISC	15	02	65	15	03	14.2	14.200N	92.400W	41	390MB	2.96
967	ISC	24	02	65	08	09	17.2	14.000N	92.200W	56	500MB	4.78
971	ISC	02	03	65	18	40	00	13.900N	90.500W	50		0.
974	ISC	17	03	65	20	15	00	13.150N	89.370W	50		0.
975	ISC	21	03	65	09	42	41.3	11.700N	86.400W	36	520MB	5.11
984	ISC	05	04	65	02	41	00	12.830N	89.250W	50		0.
986	ISC	06	04	65	16	53	57.8	14.200N	92.600W	57	500MB	4.78
988	ISC	10	04	65	18	28	25.0	12.850N	88.830W	50		0.
1002	ISC	26	05	65	00	44	00.0	13.100N	85.080W	50		0.
1003	CGS-B	26	05	65	04	58	39.2	13.700N	90.600W	39	520MB	5.11
1004	ISC	30	05	65	12	30	44.7	12.100N	88.500W	50	400MB	3.13
1009	ISC	08	06	65	04	18	00	13.630N	90.870W	50		0.
1010	ISC	08	06	65	09	15	14.8	13.400N	91.800W	42	370MB	2.63
1014	ISC	12	06	65	21	00	00	13.200N	89.600W	50		0.
1016	ISC	18	06	65	14	51	00	13.280N	89.680W	50		0.
1019	ISC	23	06	65	18	52	00	13.200N	90.300W	50		0.
1021	ISC	29	06	65	08	41	00	13.500N	90.800W	50		0.
1024	ISC	10	07	65	02	11	00	13.200N	89.520W	50		0.
1028	CGS-B	17	07	65	13	59	46.2	12.200N	87.900W	56	440MB	3.79
1029	ISC	21	07	65	03	54	00	12.500N	90.000W	50		0.
1034	CELL	05	08	65	19	05	07.7	14.800N	91.000W	59	400MB	3.13
1040	ISC	29	08	65	15	01	00	12.800N	89.000W	50		0.
1041	ISC	04	09	65	11	46	00	13.670N	90.870W	50		0.
1045	ISC	11	09	65	22	07	00	13.500N	90.200W	50		0.
1046	ISC	24	09	65	11	04	00	12.850N	88.970W	50		0.
1052	ISC	19	10	65	11	16	00	13.000N	91.100W	50		0.
1063	CGS-B	06	12	65	13	19	13.3	12.400N	87.400W	44	390MB	2.96
1064	CGS-B	06	12	65	04	39	10.4	12.500N	87.300W	50	450MB	3.95
1067	CGS-B	11	12	65	23	52	59.3	13.400N	89.300W	57	410MB	3.29
1078	CGS-B	24	01	66	03	46	57.9	12.300N	88.400W	46	450MB	3.95
1084	CGS-B	18	03	66	21	55	56.4	13.300N	90.900W	40	430MB	3.62
1091	ISC	14	04	66	12	43	20.0	15.000N	93.300W	46	390MB	2.96
1094	CGS-B	24	04	66	06	03	50.8	12.900N	89.200W	47	430MB	3.62
1096	ISC	29	04	66	17	13	23.2	15.700N	93.800W	57	360MB	2.47
1103	CGS-B	04	06	66	14	12	53.3	13.200N	90.100W	55	440MB	3.79
1113	CGS-B	05	07	66	04	05	02.9	13.700N	90.800W	53	400MB	3.13
1115	CGS-B	08	07	66	13	22	13.9	12.400N	88.900W	43	430MB	3.62
1116	CGS-B	13	07	66	08	20	58.8	12.600N	87.800W	56	530MB	5.27
1117	ISC	14	07	66	23	28	08.6	13.400N	91.600W	36	400MB	3.13
1129	CGS-B	23	08	66	06	07	36.1	12.400N	88.200W	39	400MB	3.13
1140	ISC	12	10	66	20	20	06.6	11.200N	86.200W	45	510MB	4.94
1144	ISC	21	10	66	10	33	25.2	14.100N	91.100W	56	470MB	4.28
1148	ISC	26	10	66	21	07	42.5	13.800N	91.300W	40	430MB	3.62
1157	ISC	05	12	66	13	00	31.0	13.900N	91.400W	42	410MB	3.29
1159	CGS-B	05	12	66	16	11	27.2	14.400N	90.500W	53	420MB	3.46
1163	ISC	10	12	66	14	10	22.9	14.600N	92.300W	37	420MB	3.46
1166	CELL	12	12	66	12	35	30.6	14.300N	91.000W	52	390MB	2.96
1168	ISC	13	12	66	05	17	29.4	15.500N	93.200W	42	380MB	2.80
1176	CGS-B	03	01	67	17	11	20.3	13.546N	90.264W	51	430MB	3.62
1198	CGS-B	27	03	67	14	40	13.2	12.221N	87.712W	54	420MB	3.46
1217	ISC	01	05	67	02	56	00	12.900N	88.900W	50		0.
1217	ISC	05	05	67	03	08	10.0	13.120N	89.270W	50		0.
1220	ISC	06	05	67	08	26	07.0	13.050N	88.980W	50		0.
1221	ISC	07	05	67	10	18	10.0	12.900N	89.300W	50		0.
1228	ISC	14	05	67	10	33	00	12.720N	88.500W	50		0.
1229	ISC	15	05	67	20	47	07.0	13.330N	90.470W	50		0.

1239	ISC	21	05	67	16	41	22.0	13.200N	89.900W	50		0.
1240	ISC	21	05	67	21	31	00	13.100N	89.700W	50		0.
1242	ISC	23	05	67	07	14	28.0	12.850N	88.930W	50		0.
1246	ISC	23	05	67	12	15	21.0	12.800N	89.000W	50		0.
1249	ISC	25	05	67	10	14	11.0	13.200N	89.400W	50		0.
1250	ISC	25	05	67	19	16	00	12.800N	89.500W	50		0.
1251	ISC	26	05	67	00	05	00	13.200N	89.700W	50		0.
1252	ISC	26	05	67	06	57	00.0	13.770N	91.150W	50		0.
1261	ISC	24	06	67	15	55	02.9	14.400N	93.400W	55	380MB	2.80
1263	ISC	30	06	67	11	42	33.3	11.000N	86.600W	44	450MB	3.95
1265	ISC	04	07	67	07	39	20.4	11.800N	87.300W	38	400MB	3.13
1275	ISC	18	07	67	04	37	10.2	13.700N	91.400W	59	400MB	3.13
1276	ISC	20	07	67	10	06	56.0	13.600N	89.620W	50	440MB	3.79
1281	CGSPDE15		08	67	02	56	30.2	14.700N	90.700W	45	450MB	3.95
1293	ISC	02	10	67	15	59	43.4	11.700N	86.800W	39	470MB	4.28
1299	CGSPDE08		10	67	21	29	02.6	13.600N	90.800W	53	420MB	3.46
1321	CGSPDE18		11	67	12	53	00.8	12.900N	89.700W	50	450MB	3.95
1324	ISC	19	11	67	04	43	50.0	11.900N	89.100W	36	470MB	4.28
1328	CGSPDE26		11	67	15	14	54.3	13.100N	90.100W	58	440MB	3.79
1335	ISC	28	12	67	00	24	34.0	14.600N	93.200W	43	410MB	3.29
1356	CGSPDE18		04	68	04	40	38.7	12.500N	88.600W	54	490MB	4.61
1358	ISC	28	04	68	10	03	31.5	11.800N	88.800W	39	490MB	4.61
1361	CGSPDE06		05	68	21	23	11.0	13.021N	87.734W	56	460MB	4.12
1371	ISC	25	05	68	06	43	59.0	12.500N	89.200W	59	430MB	3.62
1390	CGSPDE07		08	68	05	17	08.3	12.665N	89.720W	37	420MB	3.46
1396	ISC	23	09	68	05	11	23.2	14.400N	93.100W	43	430MB	3.62
1397	CGS	7728	09	68	19	21	19.7	12.232N	89.061W	51	430MB	3.62
1413	CGS	9028	11	68	13	44	33.7	12.451N	88.006W	49	490MB	4.61
1436	ISC	13	03	69	19	04	28.0	12.400N	89.000W	51	410MB	3.29
1440	ISC	20	03	69	06	31	48.9	14.700N	91.700W	50	390MB	2.96
1456	ISC	24	04	69	22	29	46.6	11.500N	87.000W	50	440MB	3.79
1469	ISC	13	05	69	17	38	28.5	11.800N	86.200W	46	490MB	4.61
1475	CGS	4006	06	69	16	16	01.7	12.467N	88.000W	48	500MB	4.50
1495	CGS	5503	08	69	21	17	16.9	13.342N	88.342W	52	430MB	3.62
1497	ISC	24	08	69	10	33	16.0	12.600N	90.000W	40	390MB	2.96
1499	CGS	5904	09	69	06	25	28.1	13.216N	88.429W	53	460MB	4.12
1524	ISC	27	11	69	01	39	13.2	14.300N	93.200W	46	470MB	4.28
1533	ISC	22	12	69	22	10	44.0	14.000N	93.120W	53	410MB	3.29
1534	ISC	22	12	69	22	20	28.0	14.200N	93.220W	47	420MB	3.46
1545	ISC	20	01	70	08	27	48.0	11.500N	86.400W	46	540MB	5.44
1554	CGS	1212	02	70	17	22	11.1	12.139N	86.616W	44	440MB	3.79
1559	ISC	18	02	70	08	00	43.0	11.200N	87.100W	40	430MB	3.62
1572	ISC	18	03	70	23	17	57.4	11.000N	86.000W	56	490MB	4.61
1587	WHITE129		04	70				14.700N	92.600W	56	0	7.10
1614	ISC	26	06	70	01	47	39.0	15.800N	93.500W	38		0.
1616	ISC	27	06	70	22	53	27.0	14.700N	92.800W	41	530MB	5.27
1623	CGS	5407	08	70	13	03	14.5	12.325N	87.791W	59	450MB	3.95
1646	ISC	10	10	70	06	44	02.4	14.500N	92.700W	51	450MB	3.95
1652	ISC	24	10	70	11	45	58.9	14.600N	93.500W	54	440MB	3.79
1667	ISC	25	11	70	05	38	12.2	11.700N	87.900W	36	480MB	4.45
1677	ISC	18	12	70	18	19	11.0	13.700N	90.870W	58	450MB	3.95
1678	ISC	21	12	70	03	30	40.0	12.300N	89.700W	41	420MB	3.46
1684	ISC	31	12	70	13	36	35.0	13.900N	90.070W	46		0.
1685	ISC	31	12	70	13	43	19.0	14.000N	90.110W	46		0.
1704	ISC	20	02	71	12	01	02.0	13.800N	92.720W	45	420MB	3.46
1707	ISC	20	02	71	19	35	52.0	13.900N	92.900W	36	460MB	4.12
1709	NOS	2125	02	71	04	15	41.5	12.159N	87.489W	52	530MB	5.27
1715	ISC	11	03	71	18	52	39.0	14.500N	93.750W	50	430MB	3.62
1730	ISC	25	05	71	22	11	12.9	14.100N	92.100W	45	490MB	4.61
1739	ISC	07	06	71	10	44	02.0	14.900N	90.100W	57		0.
1767	ISC	23	09	71	06	28	34.8	14.500N	93.800W	43	450MB	3.95
1780	ERL	8526	11	71	04	06	38.8	12.148N	87.626W	47	440MB	3.79
1793	ISC	30	01	72	14	59	42.1	14.500N	92.700W	43	450MB	3.95
1794	ISC	30	01	72	19	10	07.4	11.300N	86.800W	48	460MB	4.12
1795	ISC	30	01	72	22	25	03.6	11.100N	86.700W	43	450MB	3.95
1797	ISC	04	02	72	01	07	43.7	11.200N	86.900W	52	480MB	4.45
1806	ISC	05	03	72	21	47	26.4	12.000N	87.900W	46	460MB	4.12
1835	ISC	07	06	72	23	09	04.4	14.500N	93.100W	54	460MB	4.12
1836	ISC	07	06	72	23	17	30.1	14.400N	93.600W	38	410MB	3.29
1837	ISC	08	06	72	01	12	20.0	15.400N	93.600W	45		0.

1838	ERL	3411	06	72	18	21	16.7	13.463N	90.584W	52	510MB	4.94
1851	ISC		01	07	72	00	32	48.5	14.000N	91.400W	47	440MB	3.79
1859	ISC		15	07	72	07	36	41.1	13.970N	93.030W	56		0.
1869	ISC		02	08	72	22	00	36.9	15.000N	94.100W	51	440MB	3.79
1885	ERL	5131	08	72	02	24	09.6	13.272N	88.513W	50	540MB	4.80
1891	ERL	5826	09	72	03	20	16.9	12.231N	87.412W	37	460MB	3.80
1892	ISC		30	09	72	02	28	50.2	14.700N	93.800W	51	440MB	3.79
1896	ISC		01	10	72	06	00	51.9	11.000N	86.300W	49	420MB	3.46
1922	ISC		19	11	72	18	20	49.0	14.900N	94.500W	42	430MB	3.62
1924	ISC		09	12	72	22	26	28.0	14.500N	93.500W	58	450MB	3.95
1927	ERL	7312	12	72	00	32	24.5	12.552N	89.048W	45	450MB	3.95
1935	ISC		29	12	72	04	51	45.0	14.800N	93.940W	59	430MB	3.62
1936	ISC		29	12	72	08	58	32.0	14.350N	92.300W	38	450MB	3.95
1946	ISC		30	03	73	07	06	38.0	12.200N	89.000W	55	440MB	3.79
1958	ERL	2930	04	73	07	15	39.1	12.322N	89.539W	50	440MB	3.79
1963	ISC		28	05	73	06	19	00.1	11.500N	87.300W	42	460MB	4.12
1976	ISC		21	06	73	21	42	27.0	14.500N	93.200W	42		0.
1977	ERL	4126	06	73	07	24	28.1	14.290N	90.706W	38	450MB	3.70
1980	ISC		05	07	73	08	08	07.0	11.900N	87.500W	48	430MB	3.62
1981	ISC		05	07	73	19	16	18.8	13.700N	91.200W	48	430MB	3.62
1982	ISC		06	07	73	05	21	49.1	12.000N	87.600W	51	480MB	4.45
1983	ISC		07	07	73	07	07	55.3	11.800N	87.800W	55	430MB	3.62
1984	ISC		14	07	73	07	55	08.1	11.600N	87.300W	46	490MB	4.61
1993	ISC		11	08	73	11	07	42.0	14.200N	93.300W	59	420MB	3.46
2002	ISC		14	09	73	18	53	05.0	13.800N	93.600W	52	460MB	4.12
2003	ISC		15	09	73	17	27	35.1	14.200N	93.500W	37	450MB	3.95
2005	PDE		19	09	73	23	42	48.6	12.700N	88.000W	55	500MB	4.78
2019	ISC		21	11	73	13	31	32.1	14.500N	92.700W	59	530MB	5.27
2023	ISC		25	11	73	15	11	00.3	13.900N	92.700W	51	440MB	3.79
2036	ISC		04	01	74	17	54	57.7	14.500N	93.800W	51	480MB	4.45
2052	ISC		02	03	74	16	54	26.2	13.700N	91.700W	43	460MB	4.12
2063	ISC		31	03	74	21	13	45.8	11.800N	87.900W	49	500MB	4.78
2077	ISC		03	05	74	07	56	37.0	14.000N	92.100W	53	470MB	4.28
2085	ISC		16	05	74	23	07	46.6	11.200N	86.000W	36	550MB	5.60
2098	ISC		21	06	74	12	07	44.0	14.300N	92.900W	55		0.
2104	ISC		19	07	74	20	40	29.6	14.300N	92.300W	59	450MB	3.95
2118	PDE		02	09	74	22	04	31.5	13.200N	90.800W	41	450MB	3.95
2141	PDE		17	12	74	15	31	16.4	13.200N	88.500W	50	500MB	4.78
2145	ISC		24	12	74	22	17	55.9	11.900N	88.500W	59	440MB	3.79
2148	ISC		31	12	74	20	21	09.0	14.100N	91.800W	39	570MB	5.93
2157	ISC		09	01	75	06	12	47.4	14.000N	92.000W	59	460MB	4.12
2181	PDE		24	03	75	06	59	56.5	13.600N	90.800W	59	490MB	4.61
2221	ISC		13	07	75	21	28	42.0	12.900N	88.700W	55	460MB	4.12
2230	ISC		22	08	75	23	08	16.9	14.600N	93.500W	38	520MB	5.11
2233	PDE		12	09	75	08	56	58.8	13.600N	90.900W	43	430MB	3.62
2254	ISC		24	10	75	07	52	59.3	11.100N	86.600W	59	400MB	3.13
2260	ISC		06	11	75	07	19	52.8	11.370N	87.130W	58		0.
2273	ISC		02	12	75	05	40	11.9	11.600N	86.800W	59	460MB	4.12
2276	ISC		03	12	75	04	33	12.0	11.400N	86.920W	48		0.
2278	ISC		07	12	75	08	37	16.8	11.690N	86.860W	55		0.
2285	ISC		31	12	75	08	28	51.0	12.400N	87.400W	42	440MB	3.79
2290	ISC		10	01	76	10	54	55.7	14.200N	93.000W	38	440MB	3.79
2296	PDE		26	01	76	09	31	53.4	14.146N	90.518W	50	460MB	4.12
2300	PDE		30	01	76	10	41	26.0	13.796N	88.418W	38	470MB	4.28
2312	ISC		05	02	76	02	42	00.1	12.010N	88.170W	59	420MB	3.46
2400	ISC		12	05	76	16	19	20.0	13.200N	91.500W	59		0.
2406	ISC		21	05	76	03	57	41.4	11.500N	87.300W	39	490MB	4.61
2413	ISC		28	05	76	18	47	39.0	13.400N	91.100W	56		0.
2414	ISC		31	05	76	03	40	06.0	11.500N	87.300W	47	490MB	4.61
2425	ISC		18	06	76	11	21	35.0	12.250N	88.200W	53		0.
2443	ISC		08	07	76	10	36	58.0	11.100N	85.900W	58	480MB	4.45
2451	ISC		19	07	76	13	42	27.0	14.400N	93.620W	46		0.
2478	ISC		04	09	76	19	32	37.8	12.300N	88.070W	55	440MB	3.79
2481	ISC		08	09	76	03	19	46.0	13.960N	90.960W	50		0.
2505	PDE		22	10	76	04	04	24.1	12.553N	87.852W	59	490MB	4.61
2518	ISC		07	11	76	05	03	50.4	11.700N	87.500W	54	490MB	4.61
2560	ISC		28	02	77	22	24	34.0	12.000N	87.740W	46	470MB	4.28
2570	ISC		31	03	77	07	39	01.8	13.700N	91.200W	55	490MB	4.61
2583	PDE		30	04	77	02	42	29.2	13.587N	90.592W	59	440MB	3.79
2634	PDE		17	07	77	05	10	19.6	13.225N	90.874W	39	390MB	2.96

2640	ISC		10	09	77	10	22	19.7	11.340N	87.340W	44	370MB	2.63
2667	ISC		13	10	77	05	24	23.3	11.500N	87.000W	51	420MB	3.46
2670	ISC		18	10	77	14	37	18.3	11.500N	87.100W	56	460MB	4.12
2677	ISC		25	10	77	07	58	29.8	14.600N	93.900W	45	480MB	4.45
2680	ISC		28	10	77	15	23	53.0	15.200N	93.140W	53	450MB	3.95
2691	PDE		20	11	77	03	17	32.2	13.361N	87.333W	36		0.
2693	ISC		26	11	77	17	17	17.0	14.800N	93.790W	45		0.
2713	ISC		12	02	78	12	16	45.2	14.300N	92.400W	53	490MB	4.61
2723	ISC		02	03	78	14	49	50.7	12.430N	90.470W	52	430MB	3.62
2727	ISC		10	03	78	01	01	38.5	14.300N	91.700W	49	410MB	3.29
2747	ISC		11	05	78	23	18	25.4	13.900N	92.200W	59	490MB	4.61
2755	ISC		31	05	78	03	07	23.8	12.900N	87.400W	52		0.
2769	ISC		31	07	78	20	18	48.5	13.700N	90.100W	54	500MB	4.78
2779	ISC		03	09	78	01	03	22.7	13.400N	89.700W	58	480MB	4.45
2792	ISC		13	09	78	17	56	48.9	13.740N	91.700W	52		0.
2794	ISC		16	09	78	08	10	38.0	15.400N	93.180W	50		0.
2826	ISC		30	10	78	18	36	03.9	13.600N	91.300W	56	450MB	3.95
2828	ISC		30	10	78	19	09	40.1	13.800N	91.200W	58	500MB	4.78
2829	ISC		30	10	78	19	18	17.0	13.600N	91.500W	54	440MB	3.79
2861	ISC		20	12	78	02	55	04.4	11.500N	87.500W	49	510MB	4.94
2865	ISC		02	01	79	14	19	58.0	14.260N	93.010W	46	470MB	4.28
2866	ISC		05	01	79	06	52	00.0	14.100N	93.240W	40	450MB	3.95
2872	ISC		16	01	79	23	33	48.0	14.300N	93.210W	51	470MB	4.28
2887	ISC		02	03	79	12	29	30.0	14.200N	92.940W	52	430MB	3.62
2898	ISC		29	03	79	20	14	32.6	11.200N	86.300W	59	430MB	3.62
2921	ISC		13	06	79	10	52	35.0	12.900N	90.600W	50	460MB	4.12
2933	ISC		28	07	79	07	54	48.7	12.400N	88.900W	51	470MB	4.28
2936	ISC		30	07	79	09	35	38.0	13.900N	93.160W	41	450MB	3.95
2957	ISC		04	10	79	00	45	10.5	12.300N	88.800W	59	470MB	4.28
2962	ISC		27	10	79	14	35	57.3	13.800N	90.900W	58	570MB	5.93
2985	ISC		12	12	79	21	39	55.5	11.900N	88.000W	57	500MB	4.78
2988	ISC		18	12	79	13	50	45.5	11.200N	86.500W	46	460MB	4.12
2993	ISC		01	01	80	13	48	04.2	13.800N	90.700W	59	460MB	4.12
2994	ISC		05	01	80	01	45	16.5	12.900N	87.500W	50	450MB	3.95
3040	ISC		31	03	80	11	52	34.2	13.900N	91.400W	39	480MB	4.45
3061	ISC		02	05	80	15	09	04.4	13.600N	92.400W	50	450MB	3.95
3066	ISC		13	05	80	17	20	27.1	14.200N	90.000W	47	480MB	4.45
3073	ISC		28	05	80	04	25	07.8	14.100N	92.500W	50	460MB	4.12
3074	ISC		31	05	80	12	09	19.6	14.470N	92.330W	45	420MB	3.46
3084	ISC		06	07	80	11	45	38.7	13.400N	90.900W	59	480MB	4.45
3085	ISC		06	07	80	18	33	06.3	14.100N	90.500W	56	480MB	4.45
3097	ISC		02	08	80	00	53	40.8	14.500N	92.900W	50	480MB	4.45
3104	ISC		12	08	80	02	20	14.4	13.100N	90.100W	39	460MB	4.12
3113	ISC		20	09	80	22	48	51.7	14.900N	93.100W	58	510MB	4.94
3123	ISC		16	10	80	14	51	27.6	14.500N	93.200W	52	450MB	3.95
3126	ISC		27	10	80	22	50	08.5	12.600N	88.900W	51	470MB	4.28
3128	ISC		03	11	80	12	00	57.0	14.800N	93.900W	48	460MB	4.12
3135	ISC		25	11	80	10	15	06.1	12.300N	88.700W	54	490MB	4.61
3161	ISC		21	02	81	02	47	52.9	12.700N	89.900W	56	410MB	3.29
3167	ISC		07	03	81	23	01	25.0	13.800N	92.100W	47	460MB	4.12
3168	ISC		08	03	81	03	28	21.0	14.900N	93.600W	42	460MB	4.12
3172	ISC		21	03	81	14	35	32.0	13.700N	91.690W	57	450MB	3.95
3179	ISC		20	04	81	09	46	09.6	14.090N	91.980W	58	350MB	2.30
3181	ISC		26	04	81	09	25	03.5	16.200N	91.600W	54		0.
3192	ISC		21	05	81	05	27	49.0	13.500N	91.300W	52	450MB	3.95
3202	ISC		17	07	81	03	17	47.0	13.300N	89.900W	54	480MB	4.45
3209	ISC		03	09	81	08	09	01.2	11.900N	87.500W	48	510MB	4.94
3231	ISC		28	11	81	10	56	26.8	12.800N	88.800W	43	480MB	4.45
3268	ISC		21	03	82	02	59	21.0	12.600N	88.300W	51	500MB	4.78
3279	ISC		13	04	82	01	14	19.8	12.600N	89.600W	59	430MB	3.62
3300	ISC		03	06	82	07	51	26.2	15.360N	93.870W	45		0.
3344	ISC		05	07	82	16	14	46.1	13.100N	91.100W	53	470MB	4.28
3365	ISC		11	09	82	12	38	32.2	13.300N	90.600W	53		0.
3380	ISC		28	10	82	12	29	01.5	14.200N	91.600W	44	500MB	4.78
3381	ISC		28	10	82	12	45	19.7	14.000N	91.800W	50	500MB	4.78
3388	ISC		14	11	82	15	02	48.4	14.200N	92.400W	51	410MB	3.29
3390	ISC		19	11	82	11	00	38.0	11.400N	86.700W	49	390MB	2.96
3393	ISC		21	11	82	16	54	50.6	13.000N	88.000W	55	440MB	3.79
3394	ISC		23	11	82	00	12	05.2	14.500N	92.600W	38	460MB	4.12
3401	ISC		07	12	82	02	02	03.0	13.800N	90.800W	54	380MB	2.80

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DEEP BENIOFF ZONE

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CRONOLOGICAL	ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
87	GUTE	07	09	15	01	20	48.0	14.000N	89.000W	80	0	7.90
105	GUTE	29	06	19	23	14	23.0	13.500N	86.500W	90	0	6.75
108	GUTE	22	07	19	22	01	35.0	12.000N	85.000W	150	0	6.50
114	GUTE	04	02	21	08	22	44	15.000N	91.000W	120	0	7.30
125	GUTE	05	10	25	04	09	07.0	12.250N	85.250W	135	0	6.75
134	GUTE	05	11	26	07	55	38.0	12.300N	85.800W	135	0	7.00
161	GUTE	07	02	31	03	30	35.0	13.000N	87.000W	100	0	5.75
171	GUTE	21	05	32	10	10	07.0	12.000N	87.500W	90	0	6.90
172	GUTE	22	05	32	22	40	02.0	14.250N	90.000W	80	0	6.00
173	GUTE	20	06	32	09	01	47.0	12.500N	89.000W	80	0	6.00
182	GUTE	24	02	34	05	33	30.0	12.750N	86.750W	200	0	6.00
205	GUTE	05	12	37	05	42	09	14.000N	91.000W	80		5.50
206	GUTE	06	12	37	21	43	09.0	14.000N	82.000W	60	0	6.00
222	GUTE	08	07	39	21	31	44.0	12.500N	88.000W	90	0	5.50
228	GUTE	26	12	39	11	55	11.0	13.250N	88.250W	75	0	6.00
231	GELL	28	03	40	17	48	36.0	12.200N	89.500W	75		0.
241	GUTE	16	11	41	09	39	46.0	13.250N	88.500W	80	0	5.75
265	GUTE	07	04	44	13	32	58.0	12.000N	85.500W	200	0	6.00
267	GUTE	02	10	44	17	22	00.0	14.500N	89.750W	160	0	6.30
272	LEEDS	05	10	45	23	17	00	13.000N	87.000W	100		5.30
276	SSA	27	10	45	11	24	30	15.000N	91.000W	100		0.
277	GUTE	05	01	46	01	15	11	15.000N	91.000W	210		6.00
278	GUTE	24	06	46	15	48	20.0	14.750N	89.000W	260	0	6.00
279	GUTE	26	06	46	07	53	40.0	14.750N	90.750W	90	0	6.50
281	WHITE1	24	01	47				12.500N	86.250W	170	0	7.20
288	SSA	05	06	47	22	58	12	13.800N	89.900W	100		0.
289	BSS37	05	06	47	22	58	02	14.000N	90.000W	100		0.
293	SSA	12	04	48	06	15	20	14.400N	90.700W	200		0.
294	BSS38	12	04	48	06	15	03	14.000N	90.500W	200		0.
297	BSS38	17	07	48	09	30	29	14.300N	90.700W	70		0.
301	GELL	09	06	49	10	49	10.0	14.500N	91.000W	100		0.
302	LEEDS	11	06	49	07	34	00	12.500N	87.000W	100		5.30
303	BSS39	08	07	49	12	40	30	13.000N	91.000W	200		6.00
305	BSS41	19	01	50	01	40	49	12.400N	87.900W	100		0.
307	ISS	17	02	50	03	47	16.0	13.900N	90.800W	100	0	6.38
312	GELL	18	12	50	08	04	45.0	14.500N	90.500W	160		0.
314	GELL	19	01	51	01	40	57.0	13.000N	87.800W	128		0.
316	GELL	22	01	51	04	25	08.0	14.250N	88.583W	100		0.
327	LEEDS	11	05	51	02	15	00	13.000N	87.500W	100		5.30
330	ISS	25	07	51	18	42	19.0	14.500N	90.500W	64	0	6.25
336	LEEDS	06	08	51	08	08	00	13.000N	87.500W	100		5.50
338	GELL	06	02	52	16	38	48.0	13.100N	88.400W	96		0.
340	GELL	02	08	52	09	00	31.0	12.100N	88.900W	100		0.
341	ISS	20	11	52	15	37	17.0	12.100N	87.900W	60	0	6.25
344	GELL	13	06	53	15	47	19.0	13.317N	90.183W	100		0.
345	GELL	28	07	53	05	42	50.0	13.067N	88.483W	100		0.
348	BSS44	24	08	53	13	21	00	14.500N	91.000W	100		6.75
351	TAC	13	01	54	00	26	30.0	14.000N	86.416W	100	0	5.75
354	SYKES	21	02	54	23	39	41	12.370N	86.310W	187		0.
355	SYKES	08	03	54	18	05	56	12.410N	88.750W	70		0.
356	CGS	11	03	54	10	30	10.0	14.500N	90.500W	100	0	5.75

3404	ISC	14	12	82	20	37	55.4	14.100N	92.000W	56	480MB	4.45
3409	ISC	30	12	82	13	02	34.4	11.700N	87.100W	55	460MB	4.12
3462	ISC	03	08	83	03	50	05.6	13.300N	90.100W	51	430MB	3.62
3463	ISC	03	08	83	06	35	49.1	12.500N	90.100W	59	460MB	4.12
3465	ISC	06	08	83	11	04	18.1	11.600N	86.500W	44	490MB	4.61
3469	ISC	24	08	83	00	05	43.0	14.000N	91.870W	45	480MB	4.45
3480	ISC	03	10	83	08	32	24.0	13.100N	90.010W	37	430MB	3.62
3483	ISC	13	10	83	12	19	34.1	13.700N	91.700W	48	430MB	3.62
3484	ISC	17	10	83	23	12	32.3	12.600N	90.000W	40	500MB	4.78
3493	ISC	17	11	83	05	31	14.5	14.200N	93.100W	45	440MB	3.79
3502	ISC	02	12	83	11	55	23.8	14.100N	91.900W	59	520MB	5.11
3505	ISC	03	12	83	07	33	42.2	12.600N	88.100W	50	500MB	4.78
3512	ISC	12	12	83	16	48	50.9	14.300N	93.100W	38	490MB	4.61
3513	ISC	13	12	83	06	37	00.7	14.300N	93.000W	39	550MB	5.60
3519	ISC	06	01	84	06	00	35.6	14.100N	90.700W	59	450MB	3.95
3565	ISC	21	03	84	04	28	29.9	14.300N	93.000W	45	450MB	3.95
3568	ISC	24	03	84	21	54	43.4	15.100N	92.900W	57	500MB	4.78
3571	ISC	08	04	84	23	54	48.8	14.000N	92.600W	48	460MB	4.12
3576	ISC	17	04	84	08	05	16.7	14.000N	92.200W	41	470MB	4.28
3578	ISC	24	04	84	22	38	44.9	11.000N	86.400W	56	480MB	4.45
3580	ISC	03	05	84	20	31	21.2	11.200N	86.000W	58	450MB	3.95
3604	ISC	15	07	84	20	13	32.8	12.800N	88.100W	55	500MB	4.78
3612	ISC	03	08	84	14	30	58.3	14.400N	92.200W	36	540MB	5.44
3622	ISC	23	08	84	00	30	15.6	11.500N	86.500W	59	500MB	4.78
3623	ISC	23	08	84	19	49	17.4	11.600N	86.500W	57	530MB	5.27
3625	ISC	31	08	84	04	42	59.7	12.900N	87.100W	42	560MB	5.77
3632	ISC	13	09	84	07	36	57.1	11.400N	86.700W	54	500MB	4.78
3633	ISC	13	09	84	07	57	20.3	11.400N	86.700W	48	480MB	4.45
3634	ISC	13	09	84	08	07	17.5	11.400N	86.700W	50	450MB	3.95
3635	ISC	13	09	84	10	25	28.2	11.300N	86.900W	51	460MB	4.12
3643	ISC	26	10	84	04	02	13.6	13.100N	88.600W	56	500MB	4.78
3664	ISC	10	11	84	23	08	21.8	14.000N	91.200W	54	470MB	4.28
3667	ISC	15	11	84	08	00	25.5	13.800N	92.000W	48	470MB	4.28
3685	PDE	06	01	85	00	09	40.1	14.442N	93.115W	51	440MB	3.79
3700	PDE	09	05	85	22	57	14.0	14.036N	91.802W	53	490MB	4.61
3748	PDE	12	10	85	20	29	20.8	13.154N	89.720W	42	540MB	5.44
3751	PDE	26	10	85	09	19	09.3	13.250N	89.693W	57	440MB	3.79
3765	PDE	04	12	85	09	05	02.8	13.629N	90.778W	57	430MB	3.62
3804	PDE	01	04	86	21	50	18.4	13.349N	90.945W	52	420MB	3.46
3805	PDE	01	04	86	22	08	51.8	13.381N	90.962W	48	470MB	4.28
3819	PDE	11	06	86	23	14	30.6	14.994N	93.206W	51	480MB	4.45
3825	PDE	29	06	86	06	23	21.2	14.879N	93.474W	54	450MB	3.95
3835	PDE	09	09	86	00	03	43.8	13.846N	92.076W	58	450MB	3.95
3839	PDE	29	09	86	05	48	06.2	13.820N	92.030W	39	430MB	3.62
3847	PDE	21	10	86	21	09	36.2	13.326N	90.119W	45	520MB	5.11
3850	PDE	03	11	86	14	13	31.2	13.366N	90.433W	48	380MB	2.80
3852	PDE	20	11	86	04	57	11.3	15.069N	93.938W	59	460MB	4.12
3866	PDE	21	12	86	03	35	35.8	12.823N	88.041W	49	500MB	4.78

358	CGS	03	05	54	17	13	32.0	12.000N	86.000W	150	0	6.00
364	ISS	21	10	54	06	51	44.0	13.900N	90.600W	60	0	6.50
366	LEEDS	02	12	54	23	13	00	12.000N	86.500W	100		5.30
367	SYKES	07	01	55	05	30	59	14.300N	90.030W	151		0.
368	SYKES	11	01	55	23	03	38	12.710N	87.220W	128		0.
369	SYKES	05	03	55	03	29	55	13.750N	90.850W	101		0.
376	CGS	26	04	55	03	03	34.0	13.500N	89.500W	60	0	6.50
377	GELL	26	04	55	21	43	33.0	13.500N	89.500W	60		0.
386	SYKES	28	08	55	20	13	37	13.830N	90.710W	77		6.75
388	ISS	03	09	55	12	36	21.0	13.800N	90.800W	64	0	6.63
391	SYKES	23	11	55	03	14	33	13.540N	90.120W	66		0.
392	LEEDS	24	01	56				12.200N	86.700W	100		7.30
393	SYKES	25	03	56	05	44	30	13.700N	90.730W	82		0.
395	SYKES	07	05	56	08	17	03	14.020N	90.550W	189		5.60
396	ISS	03	07	56	15	46	40.0	13.500N	90.700W	100	0	5.80
397	BSS46	29	07	56	13	44	11	14.500N	90.500W	100		0.
398	SYKES	29	07	56	13	28	52	13.870N	89.970W	61		0.
401	SYKES	04	09	56	07	31	38	14.010N	89.780W	110		0.
404	BSS47	11	09	56	09	54	40	14.000N	91.000W	100		6.25
409	SYKES	25	03	57	02	28	39	12.980N	90.980W	60		0.
410	SYKES	05	04	57	16	12	22	12.610N	87.800W	76		5.60
412	GELL	08	07	57	15	30	33.0	14.500N	91.000W	150		6.00
418	SYKES	02	12	57	17	41	12	13.000N	88.600W	67		0.
420	SYKES	23	12	57	13	19	29	12.140N	86.730W	120		5.30
422	SYKES	01	03	58	17	21	33	13.640N	89.510W	60		0.
423	SYKES	11	03	58	08	47	28	14.760N	90.340W	192		0.
431	SYKES	16	06	58	14	32	01	12.870N	88.440W	78		0.
433	CGS	27	06	58	05	44	28.0	13.000N	88.500W	60	0	6.00
434	SYKES	03	07	58	19	00	49	13.410N	89.610W	96		0.
439	GELL	02	09	58	19	41	11.0	12.500N	88.500W	100		0.
441	SYKES	14	11	58	15	22	08	12.480N	86.440W	72		6.50
448	SYKES	09	01	59	20	52	07	14.390N	90.460W	72		0.
449	SYKES	11	01	59	07	22	42	14.510N	90.360W	206		6.20
451	ISS	20	02	59	18	16	20.0	15.940N	90.590W	150	0	6.50
452	ISS	09	03	59	22	03	03.0	15.090N	90.970W	171	0	6.30
453	GELL	09	03	59	22	08	58.0	15.500N	91.000W	150		0.
456	SYKES	03	05	59	04	41	25.0	12.300N	87.300W	73	0	5.60
465	SYKES	15	08	59	22	56	41	12.700N	86.680W	200		0.
470	LEEDS	19	11	59	14	08	00	12.000N	87.000W	60		5.30
475	SYKES	26	01	60	18	19	59	12.800N	87.800W	76		5.60
482	GELL	19	02	60	01	01	52.0	13.000N	89.667W	100		0.
486	SYKES	18	03	60	01	14	55	14.580N	90.290W	162		0.
489	SYKES	25	04	60	18	53	12	12.490N	88.280W	67		0.
490	GELL	05	06	60	09	34	58.0	14.500N	91.000W	200		0.
492	SYKES	10	07	60	13	39	56	12.390N	86.640W	119		6.00
494	GELL	13	09	60	17	51	08.9	13.800N	90.500W	104		4.25
495	CGS	13	09	60	17	51	08.9	13.800N	90.500W	104	0	4.25
496	SYKES	21	09	60	03	44	54	13.570N	89.750W	82		0.
497	SYKES	29	09	60	18	54	27.2	15.250N	89.780W	61	0	4.88
498	GELL	29	09	60	18	54	27.2	15.300N	90.000W	86		4.88
499	SYKES	16	10	60	09	34	47	13.980N	91.000W	114		0.
501	GELL	18	11	60	18	51	05.1	14.800N	91.000W	168		0.
503	SYKES	04	12	60	18	30	24	13.260N	88.090W	62		0.
519	GELL	07	02	61	03	21	15.1	13.600N	89.900W	128		0.
521	SYKES	04	03	61	21	09	11	12.810N	87.990W	62		5.80
523	SYKES	12	04	61	22	20	33.6	13.330N	88.800W	87	0	5.88
524	GELL	19	04	61	01	39	21.8	14.100N	90.500W	98		0.
525	SYKES	25	04	61	01	09	29	14.700N	90.020W	250		0.
531	SYKES	16	05	61	17	57	21	13.440N	88.120W	249		0.
535	CGS-B	19	05	61	09	25	41.3	12.800N	88.200W	68	0	4.63
536	CGS-B	23	05	61	16	44	59.4	12.700N	87.300W	138	0	6.50
537	GELL	27	05	61	04	41	01.0	13.167N	89.083W	80		0.
541	GELL	21	06	61	15	10	32.1	13.600N	90.100W	100		0.
546	CGS-B	24	06	61	05	07	55.6	13.400N	89.900W	81	0	4.88
553	GELL	14	07	61	14	57	51.0	13.600N	90.500W	100		0.
556	ISS	24	08	61	06	30	35.0	13.500N	89.600W	80	0	4.50
561	SYKES	03	09	61	04	48	25	12.270N	86.740W	116		5.30
563	SYKES	30	09	61	18	50	15	14.110N	90.980W	140		0.
564	GELL	19	10	61	03	48	07.0	13.000N	89.500W	60		0.

566	SYKES	11	11	61	12	27	08	13.870N	90.800W	89		0.
568	GELL	20	12	61	23	00	28.3	14.300N	90.800W	98		0.
569	LEEDS	08	01	62	22	09	00	12.200N	85.400W	103		5.30
570	SYKES	17	01	62	23	34	19	12.470N	87.110W	145		0.
574	SYKES	01	06	62	06	48	31	13.070N	88.100W	100		0.
578	SYKES	12	08	62	05	13	42	12.870N	87.920W	78		0.
581	GELL	09	09	62	14	45	44.5	14.000N	89.500W	89		0.
582	SYKES	10	09	62	21	52	29	12.560N	86.720W	191		5.30
583	GELL	27	10	62	08	10	23.4	14.000N	90.600W	93		0.
585	SYKES	30	10	62	08	31	50	12.610N	87.910W	66		0.
587	GELL	11	01	63	14	36	15.2	12.500N	88.100W	79		0.
594	GELL	13	02	63	00	22	51.3	13.900N	91.000W	81	520MB	5.11
595	GELL	15	02	63	18	15	30.5	12.400N	89.500W	76		0.
599	GELL	05	03	63	02	48	49.7	12.600N	90.900W	98		0.
601	GELL	29	03	63	07	47	52.0	12.300N	90.400W	97		0.
602	GELL	10	04	63	14	11	53.4	14.000N	91.000W	161		0.
603	LEEDS	25	04	63	07	20	00	12.200N	87.300W	75		5.30
605	CGS-B	04	05	63	16	19	27.4	13.600N	90.900W	123	470MB	4.28
609	CGS-B	25	05	63	14	52	27.8	13.100N	89.800W	91	420MB	3.46
610	GELL	02	06	63	22	22	02.2	13.700N	90.700W	100		0.
612	CGS-B	02	07	63	22	00	48.9	13.700N	88.900W	173	410MB	3.29
614	CGS-B	05	07	63	14	40	54.7	12.800N	88.900W	85	410MB	3.29
618	CGS-B	07	08	63	18	36	46.6	13.600N	90.900W	67	470MB	4.28
619	LEEDS	09	08	63	22	48	00	12.900N	87.400W	80		5.30
620	CGS-B	28	08	63	05	55	51.3	12.600N	87.200W	115	420MB	3.46
622	GELL	14	09	63	09	43	52.0	15.000N	91.000W	130	410MB	3.29
623	CGS-B	17	09	63	03	48	09.7	12.600N	87.100W	144	390MB	2.96
626	CGS-B	30	09	63	14	01	20.9	12.900N	89.000W	65	370MB	2.63
630	CGS-B	01	11	63	11	34	55.9	13.600N	90.100W	128	440MB	3.79
636	CGS-B	20	12	63	22	28	31.2	13.200N	88.000W	64	430MB	3.62
639	CGS-B	31	12	63	14	22	07.1	12.400N	87.900W	77	430MB	3.62
640	ISC	02	01	64	01	44	36.0	13.170N	89.170W	80		0.
646	ISC	20	01	64	06	37	44.0	13.400N	90.800W	100		0.
649	ISC	25	01	64	17	20	00	13.300N	90.800W	100		0.
657	ISC	01	02	64	03	44	47.0	13.580N	90.250W	80		0.
658	ISC	01	02	64	03	52	42.0	13.670N	90.370W	80		0.
659	CGS-B	03	02	64	01	46	27.9	13.000N	88.000W	61	410MB	3.29
667	ISC	06	02	64	17	47	00	13.580N	90.250W	80		0.
671	ISC	07	02	64	12	11	43.0	12.100N	88.900W	90		0.
672	ISC	08	02	64	00	19	13.0	11.800N	88.700W	60		0.
673	ISC	08	02	64	09	59	21.2	14.050N	90.900W	124	410MB	3.29
674	ISC	09	02	64	05	41	02.0	11.800N	88.700W	60		0.
675	ISC	09	02	64	09	13	00	13.380N	89.720W	80		0.
681	ISC	15	02	64	03	06	00	13.280N	89.500W	80		0.
683	ISC	16	02	64	15	25	00	13.280N	89.500W	80		0.
685	CGS-B	21	02	64	07	24	08.0	12.800N	87.900W	62	390MB	2.96
687	ISC	21	02	64	09	09	00	14.200N	90.900W	150		0.
689	CGS-B	24	02	64	02	29	12.3	13.000N	87.200W	83	390MB	2.96
690	ISC	25	02	64	16	02	24.0	12.620N	87.920W	80		0.
691	ISC	27	02	64	14	06	50.4	13.700N	90.900W	60	410MB	3.29
692	ISC	27	02	64	17	36	21.0	13.130N	89.030W	80		0.
693	ISC	27	02	64	17	55	13.0	13.250N	89.330W	80		0.
697	ISC	02	03	64	07	31	56.0	13.130N	89.080W	90		0.
698	ISC	02	03	64	12	39	18.0	14.260N	91.140W	113	460MB	4.12
699	CGS-B	02	03	64	18	13	58.5	13.500N	90.500W	73	360MB	2.47
700	CGS-B	02	03	64	16	09	46.1	12.500N	88.000W	63	440MB	3.79
702	ISC	03	03	64	17	31	21.5	12.900N	88.370W	80		0.
704	CGS-B	06	03	64	02	55	11.9	12.400N	87.600W	100	390MB	2.96
706	ISC	09	03	64	04	00	54.0	14.200N	90.900W	150		0.
707	ISC	09	03	64	07	24	07.0	13.600N	91.400W	60		0.
710	ISC	12	03	64	00	35	19.0	12.920N	88.630W	80		0.
712	CGS-B	13	03	64	11	54	06.1	12.900N	90.400W	128	490MB	4.61
714	CGS-B	13	03	64	18	51	15.0	13.700N	90.700W	64	440MB	3.79
715	CGS-B	16	03	64	06	06	51.3	13.500N	88.300W	92	390MB	2.96
717	ISC	16	03	64	17	50	23.0	13.570N	90.250W	80		0.
718	ISC	17	03	64	01	54	29.0	12.830N	88.070W	100		0.
719	ISC	18	03	64	13	44	45.0	12.920N	88.630W	80		0.
720	CGS-B	20	03	64	06	35	51.6	12.900N	89.900W	125	420MB	3.46
721	ISC	20	03	64	13	08	30.0	13.330N	89.580W	100		0.
722	ISC	21	03	64	22	28	26.0	12.200N	89.800W	60		0.

724	ISC	22	03	64	18	03	45.0	13.580N	90.250W	80			0.	
729	ISC	30	03	64	04	52	00.3	13.400N	89.950W	96	460MB	4.12		
730	ISC	31	03	64	10	06	15.0	13.520N	89.850W	80			0.	
733	ISC	05	04	64	05	30	12.6	14.200N	91.600W	111	400MB	3.13		
735	ISC	05	04	64	21	54	00	13.580N	90.250W	80			0.	
739	ISC	08	04	64	01	55	00	13.300N	89.780W	80			0.	
740	CGS-B	09	04	64	04	15	23.0	13.500N	89.900W	89	500MB	4.78		
749	ISC	14	04	64	02	42	04.9	14.100N	91.300W	126	390MB	2.96		
751	CGS-B	16	04	64	11	20	25.2	14.000N	90.000W	209	370MB	2.63		
755	ISC	20	04	64	15	04	42.0	13.000N	88.670W	80			0.	
759	ISC	24	04	64	02	37	17.0	13.330N	89.580W	100			0.	
760	CGS-B	24	04	64	14	40	28.3	13.300N	88.800W	158	510MB	4.94		
762	ISC	25	04	64	15	04	00	14.200N	90.800W	120			0.	
765	ISC	27	04	64	10	58	28.0	13.080N	89.000W	80			0.	
766	ISC	29	04	64	08	06	23.0	13.300N	89.120W	100			0.	
771	ISC	29	04	64	23	09	45.0	13.080N	89.000W	80			0.	
774	ISC	03	05	64	02	55	01.0	13.120N	89.800W	60			0.	
776	ISC	03	05	64	09	49	00.0	15.100N	90.600W	80			0.	
777	ISC	03	05	64	23	48	00.0	13.600N	91.300W	100			0.	
778	ISC	05	05	64	23	07	00	13.300N	89.780W	80			0.	
779	ISC	06	05	64	01	48	29.0	15.100N	90.800W	150			0.	
780	ISC	06	05	64	01	26	32.1	13.400N	91.400W	69	400MB	3.13		
789	ISC	16	05	64	01	00	18.0	13.080N	89.000W	80			0.	
791	ISC	16	05	64	21	56	22.0	13.250N	89.330W	80			0.	
793	ISC	17	05	64	11	15	27.0	13.330N	90.000W	70			0.	
794	ISC	18	05	64	00	12	00	13.600N	89.030W	106			0.	
797	ISC	20	05	64	06	38	08.0	15.100N	90.800W	150			0.	
800	ISC	23	05	64	06	45	21.0	11.700N	86.600W	93	460MB	4.12		
803	ISC	24	05	64	14	16	00	13.050N	88.850W	80			0.	
817	ISC	15	06	64	21	46	55.0	12.300N	89.400W	88	430MB	3.62		
819	ISC	19	06	64	13	45	13.2	14.100N	91.400W	85	390MB	2.96		
822	ISC	25	06	64	05	58	47.1	14.500N	93.400W	69	480MB	4.45		
824	ISC	28	06	64	07	19	18.6	14.100N	92.000W	98	370MB	2.63		
825	CGS-B	01	07	64	00	42	55.4	12.000N	86.700W	108	430MB	3.62		
827	CGS-B	03	07	64	11	03	50.4	15.000N	88.200W	60	380MB	2.80		
829	ISC	04	07	64	02	36	54.7	11.300N	86.500W	90	410MB	3.29		
830	ISC	06	07	64	05	53	43.7	14.100N	91.200W	119	370MB	2.63		
834	ISC	07	07	64	22	13	01.8	15.200N	93.200W	90	410MB	3.29		
839	CGS-B	20	07	64	08	27	26.6	13.600N	87.900W	87	380MB	2.80		
841	CGS-B	21	07	64	07	01	59.3	13.100N	88.400W	68	470MB	4.28		
843	ISC	24	07	64	01	39	39.0	14.200N	91.600W	65	490MB	4.61		
844	CGS-B	26	07	64	03	58	29.6	12.700N	89.600W	65	480MB	4.45		
847	ISC	28	07	64	02	53	26.6	11.500N	86.400W	111	420MB	3.46		
850	CGS-B	31	07	64	12	44	52.0	14.400N	88.900W	68	380MB	2.80		
853	ISC	07	08	64	08	21	03.4	11.800N	86.900W	130	470MB	4.28		
854	ISC	07	08	64	15	31	18.0	14.000N	91.900W	89	500MB	4.78		
855	CGS-B	08	08	64	15	45	10.9	12.500N	87.800W	63	580MB	6.10		
856	CGS-B	10	08	64	14	00	51.1	12.400N	88.300W	71	400MB	3.13		
858	ISC	12	08	64	12	47	46.9	11.400N	86.100W	135	410MB	3.29		
861	CGS-B	16	08	64	07	30	12.4	13.300N	87.600W	60	390MB	2.96		
863	CGS-B	17	08	64	19	05	44.0	12.400N	86.800W	116	450MB	3.95		
867	ISC	23	08	64	22	03	26.5	15.600N	93.900W	144	360MB	2.47		
869	CGS-B	25	08	64	05	03	18.5	12.100N	87.700W	72	400MB	3.13		
876	CGS-B	03	09	64	01	55	32.3	12.200N	87.000W	108	400MB	3.13		
882	ISC	14	09	64	13	33	33.7	15.000N	93.200W	64	490MB	4.61		
884	CGS-B	15	09	64	21	56	07.2	15.300N	90.800W	74	440MB	3.79		
888	CGS-B	22	09	64	13	27	29.7	13.300N	89.700W	78	480MB	4.45		
889	CGS-B	25	09	64	01	54	17.6	13.300N	89.400W	94	400MB	3.13		
892	CGS-B	28	09	64	03	20	59.4	13.300N	90.100W	72	380MB	2.80		
894	ISC	01	10	64	07	46	02.0	14.900N	94.000W	94	380MB	2.80		
895	CGS-B	01	10	64	18	19	43.8	13.600N	90.100W	62	440MB	3.79		
909	ISC	02	11	64	07	07	57.8	11.800N	86.900W	117	460MB	4.12		
911	CGS-B	07	11	64	20	21	12.1	13.000N	90.100W	73	410MB	3.29		
912	CGS-B	07	11	64	20	07	04.4	13.100N	89.900W	82	430MB	3.62		
914	ISC	09	11	64	09	56	10.5	14.600N	92.200W	61	380MB	2.80		
916	CGS-B	13	11	64	08	02	30.5	13.000N	88.600W	86	490MB	4.61		
917	ISC	13	11	64	08	13	03.0	13.000N	88.000W	71	370MB	2.63		
9[illegible]	CGS-B	09	12	64	14	22	00.1	13.200N	87.200W	200	390MB	2.96		
9[illegible]	ISC	15	12	64	12	13	25.8	14.700N	91.700W	118	540MB	5.44		
9[illegible]	CGS-B	11	01	65	04	10	04.4	14.000N	89.500W	144	500MB	4.78		

945	ISC	19	01	65	09	14	36.8	14.500N	91.700W	121	430MB	3.62		
947	ISC	21	01	65	06	52	00	13.300N	90.000W	70			0.	
948	CGS-B	21	01	65	20	43	55.0	12.300N	86.700W	138	440MB	3.79		
953	CGS-B	01	02	65	15	43	52.8	13.100N	89.600W	62	420MB	3.46		
955	CGS-B	02	02	65	03	46	36.2	14.300N	90.400W	94	460MB	4.12		
964	ISC	16	02	65	10	54	39.7	13.400N	91.200W	97	410MB	3.29		
966	ISC	24	02	65	00	26	45.8	13.700N	92.100W	87	450MB	3.95		
969	CGS-B	28	02	65	06	56	51.7	12.800N	89.700W	97	400MB	3.13		
970	ISC	01	03	65	15	17	49.3	11.200N	86.700W	66	450MB	3.95		
972	ISC	07	03	65	23	00	00	12.200N	90.500W	100			0.	
973	ISC	08	03	65	18	26	59.0	13.480N	90.270W	70			0.	
977	ISC	22	03	65	07	53	07.4	13.900N	90.900W	60	450MB	3.95		
991	ISC	16	04	65	04	53	02.8	14.000N	91.600W	75	420MB	3.46		
992	ISC	16	04	65	11	01	52.4	14.000N	91.500W	65	450MB	3.95		
993	ISC	16	04	65	13	38	59.8	13.700N	91.700W	78	420MB	3.46		
997	ISC	20	04	65	12	44	58.1	14.500N	91.800W	96	390MB	2.96		
998	ISC	20	04	65	13	12	46.4	14.300N	92.200W	84	440MB	3.79		
1022	CGS-B	01	07	65	16	57	30.4	12.100N	87.500W	176	430MB	3.62		
1025	ISC	13	07	65	15	18	00	14.000N	89.670W	60			0.	
1030	CGS-B	26	07	65	13	06	10.3	14.900N	90.900W	133	380MB	2.80		
1031	CGS-B	28	07	65	13	20	14.5	14.500N	90.300W	220	430MB	3.62		
1035	ISC	11	08	65	02	54	48.4	14.700N	92.900W	111	440MB	3.79		
1036	ISC	15	08	65	04	12	56.0	14.600N	92.300W	168	410MB	3.29		
1039	CGS-B	29	08	65	01	45	54.4	14.000N	90.600W	85	510MB	4.94		
1042	ISC	06	09	65	08	35	05.3	13.500N	91.100W	88	400MB	3.13		
1043	ISC	08	09	65	08	00	00	13.100N	89.000W	60			0.	
1044	ISC	11	09	65	18	43	00	14.000N	89.670W	60			0.	
1049	CGS-B	02	10	65	23	03	06.1	13.700N	90.700W	69	390MB	2.96		
1050	CGS-B	14	10	65	10	17	23.9	12.500N	88.300W	96	380MB	2.80		
1051	CGS-B	14	10	65	08	30	03.3	13.200N	90.800W	106	370MB	2.63		
1053	CGS-B	20	10	65	23	54	51.3	12.700N	87.000W	91	560MB	5.77		
1054	CGS-B	20	10	65	23	54	30.4	12.500N	87.300W	72	540MB	5.44		
1055	ISC	26	10	65	14	58	55.1	13.900N	91.400W	155	430MB	3.62		
1056	ISC	30	10	65	12	47	10.0	14.700N	92.500W	65	410MB	3.29		
1060	ISC	26	11	65	10	45	29.0	14.530N	92.320W	100			0.	
1062	ISC	01	12	65	05	48	03.4	14.600N	92.600W	84	360MB	2.47		
1069	ISC	13	12	65	16	45	20.0	14.530N	92.320W	100			0.	
1070	CGS-B	14	12	65	14	21	05.9	14.500N	89.700W	273	490MB	4.61		
1071	CGS-B	16	12	65	05	23	06.3	12.600N	88.800W	152	440MB	3.79		
1072	ISC	23	12	65	02	44	54.8	14.700N	92.600W	65	420MB	3.46		
1073	ISC	23	12	65	07	56	11.0	14.500N	92.500W	94	390MB	2.96		
1074	ISC	23	12	65	11	11	46.0	14.150N	93.380W	100			0.	
1075	ISC	23	12	65	11	43	03.8	14.700N	92.500W	74	440MB	3.79		
1076	CGS-B	24	12	65	22	57	16.3	12.600N	89.000W	118	450MB	3.95		
1079	CGS-B	09	02	66	06	22	44.6	12.700N	87.800W	98	440MB	3.79		
1080	ISC	15	02	66	00	16	53.7	14.500N	91.500W	71	440MB	3.79		
1081	ISC	15	02	66	14	54	42.9	14.500N	91.100W	137	390MB	2.96		
1082	ISC	27	02	66	05	39	38.6	14.100N	91.200W	129	400MB	3.13		
1087	CGS-B	04	04	66	19	50	07.1	13.800N	89.700W	102	510MB	4.94		
1088	CGS-B	12	04	66	03	34	22.4	12.600N	87.600W	104	390MB	2.96		
1093	CGS-B	21	04	66	06	09	39.8	14.000N	90.800W	66	400MB	3.13		
1097	CGS-B	04	05	66	18	13	55.7	12.500N	87.700W	68	510MB	4.94		
1104	ISC	11	06	66	09	43	41.0	14.500N	94.000W	82	410MB	3.29		
1105	ISC	22	06	66	07	11	01.7	14.700N	92.000W	93	480MB	4.45		
1108	ISC	25	06	66	17	24	39.2	13.900N	91.100W	103	510MB	4.94		
1111	ISC	30	06	66	10	39	00.8	11.900N	85.900W	187	400MB	3.13		
1112	CGS-B	01	07	66	20	17	49.2	13.700N	88.400W	201	460MB	4.12		
1120	CGS-B	24	07	66	06	11	55.2	12.200N	88.300W	61	410MB	3.29		
1121	CGS-B	25	07	66	00	42	58.9	13.200N	87.800W	210	400MB	3.13		
1122	CGS-B	31	07	66	19	10	46.8	12.400N	88.100W	63	420MB	3.46		
1123	ISC	07	08	66	04	11	30.4	11.000N	86.200W	125	410MB	3.29		
1124	CGS-B	07	08	66	05	33	40.6	13.400N	89.900W	74	440MB	3.79		
1126	CGS-B	12	08	66	14	40	56.0	14.300N	89.900W	77	380MB	2.80		
1127	ISC	18	08	66	10	33	17.7	14.600N	91.700W	85	560MB	5.77		
1130	CGS-B	25	08	66	12	04	20.3	12.600N	89.300W	73	440MB	3.79		
1133	ISC	03	09	66	06	38	07.2	13.800N	91.200W	62	440MB	3.79		
1134	ISC	08	09	66	06	43	14.3	14.700N	91.500W	62	350MB	2.30		
1135	ISC	16	09	66	14	52	50.3	14.100N	91.400W	61	440MB	3.79		
1136	CGS-B	18	09	66	10	51	08.9	13.200N	89.600W	66	410MB	3.29		
1137	CGS-B	20	09	66	03	53	34.1	13.100N	88.200W	81	400MB	3.13		

1139	CGS-B	23	09	66	19	01	54.5	12.	900N	89.	500W	65	440MB	3.	79
1141	ISC	19	10	66	06	13	06.8	14.	000N	91.	600W	35	410MB	3.	29
1142	CGS-B	20	10	66	03	40	07.2	13.	100N	89.	700W	67	410MB	3.	29
1145	ISC	21	10	66	10	36	16.0	13.	700N	91.	200W	69	480MB	4.	45
1149	CGS-B	29	10	66	14	21	50.7	12.	900N	89.	300W	68	410MB	3.	29
1154	CGS-B	13	11	66	06	04	09.0	13.	500N	89.	600W	69	460MB	4.	12
1156	ISC	03	12	66	04	33	41.7	15.	900N	93.	300W	89	380MB	2.	80
1160	ISC	10	12	66	13	06	32.0	14.	300N	92.	000W	60	560MB	5.	77
1171	CGS-B	23	12	66	02	02	19.8	12.	900N	88.	600W	88	450MB	3.	95
1173	CGS-B	25	12	66	02	20	05.7	13.	500N	90.	800W	63	370MB	2.	63
1175	CGS-B	27	12	66	21	22	16.5	13.	300N	88.	800W	78	540MB	5.	44
1177	CGS-B	04	01	67	00	28	07.5	13.	100N	88.	625W	72	410MB	3.	29
1179	CGS-B	09	01	67	23	31	22.1	13.	138N	88.	981W	78	410MB	3.	29
1181	CGS-B	19	01	67	02	19	23.1	12.	561N	86.	613W	200	450MB	3.	95
1185	CGS-B	24	02	67	09	16	41.8	13.	437N	90.	117W	135	430MB	3.	62
1186	CGS-B	03	03	67	19	39	46.3	13.	078N	90.	392W	65	400MB	3.	13
1188	CGS-B	06	03	67	23	31	25.6	12.	389N	87.	127W	159	410MB	3.	29
1189	CGS-B	08	03	67	15	52	15.8	13.	049N	88.	127W	75	390MB	2.	96
1191	ISC	09	03	67	14	08	44.8	14.	500N	91.	500W	102	470MB	4.	28
1193	CGS-B	13	03	67	08	37	11.7	13.	726N	88.	069W	82	380MB	2.	80
1195	CGS-B	21	03	67	09	55	19.9	13.	924N	90.	955W	112	400MB	3.	13
1196	CGS-B	22	03	67	09	15	29.2	12.	653N	87.	823W	70	440MB	3.	79
1197	CGS-B	25	03	67	07	26	37.5	12.	406N	87.	876W	76	400MB	3.	13
1201	ISC	30	03	67	08	49	45.0	14.	500N	87.	900W	103	400MB	3.	13
1203	CGS-B	09	04	67	05	28	16.1	13.	059N	89.	243W	69	410MB	3.	29
1206	CGS-B	13	04	67	06	10	00.9	12.	778N	89.	141W	84	440MB	3.	79
1208	ISC	17	04	67	00	33	40.8	14.	400N	91.	590W	75		0.	
1209	CGS-B	17	04	67	04	27	48.6	15.	196N	90.	023W	205	450MB	3.	95
1211	ISC	18	04	67	08	29	17.1	11.	700N	87.	200W	113	470MB	4.	28
1212	CGS-B	18	04	67	13	05	15.6	12.	765N	87.	943W	84	390MB	2.	96
1214	ISC	23	04	67	14	44	09.8	11.	500N	86.	500W	76	430MB	3.	62
1215	CGS-B	30	04	67	03	10	49.4	12.	632N	86.	852W	115	420MB	3.	46
1222	ISC	08	05	67	00	59	50.9	13.	600N	91.	300W	101	370MB	2.	63
1225	ISC	09	05	67	19	13	22.0	13.	600N	91.	300W	103		0.	
1227	ISC	14	05	67	03	43	07.0	13.	600N	91.	000W	93		0.	
1230	CGS-B	16	05	67	12	58	09.2	13.	480N	90.	639W	92	480MB	5.	70
1231	CGS-B	16	05	67	15	11	26.3	13.	400N	91.	200W	75	410MB	3.	29
1232	CGS-B	19	05	67	07	52	03.9	13.	241N	89.	518W	89	510MB	4.	94
1233	CGS-B	20	05	67	07	58	15.3	14.	001N	90.	420W	94	410MB	3.	29
1234	CGS-B	20	05	67	07	48	53.0	13.	640N	90.	555W	89	470MB	4.	28
1237	CGS-B	21	05	67	05	42	06.2	13.	844N	89.	614W	62	430MB	3.	62
1238	CGS-B	21	05	67	03	12	01.0	13.	283N	89.	694W	71	450MB	3.	95
1243	CGS-B	23	05	67	19	12	20.3	13.	340N	90.	721W	68	450MB	3.	95
1244	CGS-B	23	05	67	11	37	16.8	13.	889N	90.	528W	76	380MB	2.	80
1245	ISC	23	05	67	12	42	41.0	13.	800N	90.	500W	93	370MB	2.	63
1247	ISC	23	05	67	19	12	19.6	13.	400N	90.	700W	60	440MB	3.	79
1254	CGS-B	29	05	67	01	43	54.7	13.	791N	89.	686W	123	420MB	3.	46
1255	ISC	29	05	67	05	25	59.0	14.	900N	91.	400W	107		0.	
1257	CGSPDE17		06	67	17	43	55.2	14.	100N	90.	000W	103	480MB	4.	45
1260	ISC	24	06	67	07	51	46.5	14.	300N	92.	600W	91	460MB	4.	12
1270	CGSPDE14		07	67	18	02	08.1	13.	500N	88.	800W	147	460MB	4.	12
1278	ISC	07	08	67	09	53	23.5	11.	080N	85.	050W	172	430MB	3.	62
1282	ISC	18	08	67	08	01	07.0	13.	900N	90.	400W	63		0.	
1284	ISC	23	08	67	19	02	27.8	13.	500N	92.	000W	109	440MB	3.	79
1285	CGSPDE27		08	67	13	08	55.9	12.	300N	86.	200W	183	520MB	5.	11
1286	CGSPDE27		08	67	06	32	13.2	14.	200N	89.	600W	65	430MB	3.	62
1288	CGSPDE10		09	67	15	51	42.3	13.	200N	89.	500W	69	380MB	2.	80
1291	ISC	26	09	67	11	32	11.5	14.	300N	91.	700W	68	440MB	3.	79
1300	CGSPDE12		10	67	03	17	27.9	14.	400N	90.	400W	190	390MB	2.	96
1302	ISC	15	10	67	08	00	50.3	11.	900N	86.	000W	162	620MB	6.	76
1304	ISC	24	10	67	01	25	54.2	16.	100N	93.	700W	61	370MB	2.	63
1305	ISC	25	10	67	15	36	20.7	14.	500N	93.	100W	61	450MB	3.	95
1306	ISC	25	10	67	16	11	14.8	14.	500N	92.	900W	60	420MB	3.	46
1309	ISC	26	10	67	15	42	14.9	15.	300N	93.	640W	97	410MB	3.	29
1322	CGSPDE18		11	67	12	26	09.4	13.	300N	89.	300W	70	470MB	4.	28
1323	CGSPDE18		11	67	12	16	55.4	13.	400N	89.	100W	78	510MB	4.	94
1326	CGSPDE25		11	67	04	13	42.8	14.	100N	90.	500W	96	420MB	3.	46
1327	ISC	25	11	67	13	54	24.5	14.	500N	92.	100W	108	420MB	3.	46
1329	CGSPDE06		12	67	02	53	06.9	12.	500N	87.	200W	87	530MB	5.	27
1330	ISC	06	12	67	03	33	46.4	15.	100N	92.	500W	77	440MB	3.	79

1332	ISC	18	12	67	22	04	21.0	14.	500N	93.	200W	83	440MB	3.	79
1338	CGSPDE11		01	68	20	48	59.1	14.	300N	89.	900W	197	440MB	3.	79
1339	ISC	14	01	68	01	07	35.0	12.	640N	87.	540W	213	440MB	3.	79
1340	CGSPDE26		01	68	10	37	56.8	12.	700N	88.	800W	60	390MB	2.	96
1341	CGSPDE28		01	68	08	47	20.3	12.	600N	87.	900W	75	440MB	3.	79
1342	CGSPDE28		01	68	18	20	49.7	12.	100N	86.	900W	152	440MB	3.	79
1344	ISC	01	03	68	16	34	44.4	11.	700N	85.	500W	190	480MB	4.	45
1347	CGSPDE24		03	68	17	13	20.0	12.	500N	86.	500W	79	510MB	4.	94
1348	ISC	25	03	68	16	32	05.2	15.	200N	92.	000W	60	510MB	4.	94
1352	ISC	06	04	68	03	32	29.2	14.	100N	91.	500W	93	410MB	3.	29
1359	ISC	01	05	68	10	28	58.2	15.	000N	93.	500W	61	460MB	4.	12
1362	CGSPDE06		05	68	14	37	49.8	14.	641N	90.	821W	123	510MB	4.	94
1363	CGSPDE06		05	68	05	41	24.0	13.	218N	88.	605W	78	380MB	2.	80
1364	CGSPDE07		05	68	23	39	14.4	13.	043N	89.	703W	91	460MB	4.	12
1365	ISC	08	05	68	00	56	24.0	14.	700N	93.	900W	100	410MB	3.	29
1366	ISC	08	05	67	01	44	04.0	15.	000N	93.	700W	99	440MB	3.	79
1368	ISC	13	05	68	11	37	46.8	13.	150N	87.	520W	279	420MB	3.	46
1369	ISC	14	05	68	20	44	38.0	15.	400N	92.	800W	160	460MB	4.	12
1370	LEEDS	24	05	68	17	13	00	12.	500N	86.	500W	79		5.	10
1372	ISC	28	05	68	16	13	52.0	13.	100N	89.	700W	100	390MB	2.	96
1373	ISC	02	06	68	19	29	14.0	15.	900N	93.	300W	100	450MB	3.	95
1374	ISC	09	06	68	03	01	49.0	14.	400N	91.	800W	94	390MB	2.	96
1375	ISC	09	06	68	10	21	35.9	14.	600N	92.	000W	60	500MB	4.	78
1377	CGSPDE11		06	68	05	52	33.5	13.	941N	88.	761W	199	530MB	5.	27
1386	ISC	23	06	68	06	24	52.0	14.	300N	92.	300W	157	380MB	2.	80
1387	CGSPDE29		06	68	06	21	48.1	13.	607N	90.	220W	97	470MB	4.	28
1388	CGSPDE07		07	68	19	49	36.0	14.	678N	88.	939W	134	450MB	3.	95
1391	CGSPDE20		08	68	00	34	04.0	13.	105N	87.	833W	157	430MB	3.	62
1393	CGSPDE10		09	68	14	35	21.0	12.	432N	89.	174W	63	410MB	3.	29
1394	CGS	7415	09	68	04	32	04.2	13.	466N	87.	243W	164	390MB	2.	96
1398	CGS	7530	09	68	11	26	15.7	13.	632N	89.	626W	94	440MB	3.	79
1399	CGS	7502	10	68	02	45	58.1	14.	207N	90.	989W	99	450MB	3.	95
1402	CGS	7914	10	68	21	12	23.6	13.	903N	89.	719W	90	420MB	3.	46
1404	CGS	8022	10	68	06	42	01.5	13.	208N	88.	247W	64	470MB	4.	28
1405	ISC	28	10	68	21	51	10.1	14.	500N	92.	700W	67	460MB	4.	12
1406	ISC	30	10	68	10	51	50.8	13.	400N	91.	100W	64	410MB	3.	29
1407	CGS	8531	10	68	00	18	11.7	14.	007N	90.	762W	81	400MB	3.	13
1410	ISC	21	11	68	01	15	17.5	15.	600N	93.	400W	61	390MB	2.	96
1412	ISC	23	11	68	11	41	00.2	14.	400N	92.	200W	115	420MB	3.	46
1414	CGS	9608	12	68	03	12	29.1	13.	924N	90.	594W	116	410MB	3.	29
1415	CGS	9510	12	68	18	07	33.7	13.	214N	89.	597W	69	430MB	3.	62
1416	ISC	15	12	68	06	59	27.8	15.	400N	93.	000W	75	360MB	2.	47
1417	CGS	9516	12	68	09	18	51.1	13.	317N	90.	077W	156	450MB	3.	95
1418	ISC	29	12	68	17	36	29.9	14.	500N	92.	400W	60	540MB	5.	44
1419	ISC	03	01	69	11	19	13.6	14.	500N	91.	700W	89	500MB	4.	78
1423	ISC	07	01	69	09	41	04.0	14.	600N	93.	590W	82	400MB	3.	13
1424	CGS	511	01	69	06	04	23.4	13.	586N	90.	780W	73	380MB	2.	80
1425	ISC	14	01	69	20	08	09.3	14.	900N	91.	200W	113	410MB	3.	29
1426	ISC	15	01	69	06	57	22.5	11.	300N	86.	800W	72	450MB	3.	95
1427	CGS	821	01	69	14	48	47.2	13.	526N	90.	186W	79	410MB	3.	29
1428	ISC	22	01	69	05	15	41.0	14.	800N	92.	570W	108	410MB	3.	29
1429	ISC	30	01	69	05	06	52.0	14.	700N	92.	300W	122	370MB	2.	63
1434	CGS	1909	03	69	07	12	39.0	13.	101N	88.	528W	75	440MB	3.	79
1435	CGS	2010	03	69	08	15	08.4	12.	349N	87.	455W	62	530MB	6.	00
1437	CGS	2114	03	69	08	47	16.3	12.	916N	86.	755W	178	560MB	5.	80
1442	CGS	2501	04	69	21	19	53.6	12.	677N	88.	233W	71	490MB	4.	61
1443	CGS	3104	04	69	08	43	06.4	13.	534N	88.	981W	105	430MB	3.	62
1445	CGS	2608	04	69	19	41	58.6	12.	670N	88.	340W	76	480MB	4.	45
1447	ISC	14	04	69	10	24	37.0	14.	000N	93.	800W	143		0.	
1450	BS559	21	04	69	02	19	07.1	14.	100N	91.	000W	82		6.	25
1451	CGS	2922	04	69	00	29	25.0	14.	078N	90.	964W	89	480MB	4.	45
1453	ISC	22	04	69	12	51	09.1	14.	900N	91.	700W	79	410MB	3.	29
1457	CGS	3125	04	69	16	46	31.5	13.	311N	89.	174W	70	430MB	3.	62
1459	CGS	3303	05	69	03	19	06.3	12.	987N	88.	449W	77	450MB	3.	95
1461	CGS	3709	05	69	10	47	56.8	12.	889N	89.	190W	68	410MB	3.	29
1465	ISC	13	05	69	14	15	52.0	11.	400N	86.	400W	71	480MB	4.	45
1466	ISC	13	05	69	14	16	52.8	11.	500N	86.	400W	79	560MB	5.	77
1470	ISC	13	05	69	18	11	39.5	11.	500N	86.	500W	72	460MB	4.	12
1471	ISC	14	05	69	13	49	03.1	11.	500N	86.	200W	62	480MB	4.	45
1472	CGS	4023	05	69	09	18	05.1	13.	685N	89.	808W	94	420MB	3.	46

1473	CGS	3829	05	69	20	25	56.2	14.722N	90.595W	218	480MB	4.45
1476	CGS	4115	06	69	19	29	45.9	12.865N	90.135W	128	430MB	3.62
1478	ISC	23	06	69	02	38	57.3	15.200N	92.400W	112	400MB	3.13
1480	ISC	24	06	69	00	35	05.5	11.700N	85.700W	100	530MB	5.27
1481	CGS	4327	06	69	13	20	09.6	13.321N	89.529W	63	430MB	3.62
1482	CGS	4528	06	69	04	34	42.6	12.818N	89.217W	69	520MB	5.13
1485	ISC	02	07	69	05	18	20.6	14.000N	91.200W	61	420MB	3.46
1486	CGS	4307	07	69	04	20	29.6	13.082N	89.014W	64	440MB	3.79
1487	ISC	13	07	69	20	38	57.0	11.400N	86.600W	65	410MB	3.29
1488	CGS	5117	07	69	13	24	22.9	12.590N	87.006W	175	440MB	3.79
1491	ISC	22	07	69	15	51	46.5	14.200N	91.500W	151	470MB	4.28
1493	CGS	4826	07	69	07	21	00.2	12.625N	87.798W	84	480MB	4.45
1494	ISC	27	07	69	13	36	54.0	13.260N	91.360W	35	450MB	3.95
1498	CGS	6029	08	69	13	53	08.5	14.465N	90.989W	118	430MB	3.62
1500	ISC	06	09	69	06	44	02.0	12.930N	87.940W	238	460MB	4.12
1503	CGS	6424	09	69	11	40	53.3	13.184N	90.934W	63	430MB	3.62
1508	CGS	6809	10	69	09	06	02.7	13.301N	89.778W	67	430MB	3.62
1509	CGS	6510	10	69	04	06	24.1	13.199N	89.717W	71	460MB	4.12
1510	CGS	6810	10	69	02	32	56.6	13.467N	89.751W	65	410MB	3.29
1512	CGS	6612	10	69	22	48	15.2	13.211N	90.587W	68	400MB	3.13
1514	CGS	6615	10	69	11	54	13.9	14.320N	90.994W	105	440MB	3.79
1520	CGS	7312	11	69	03	48	28.2	13.888N	89.984W	111	400MB	3.13
1521	CGS	7715	11	69	16	40	21.3	14.575N	90.405W	121	390MB	2.96
1522	CGS	7416	11	69	10	30	01.7	13.351N	89.650W	79	490MB	4.88
1525	ISC	27	11	69	16	25	08.0	15.000N	93.200W	60	440MB	3.79
1526	ISC	27	11	69	16	49	02.0	15.300N	93.300W	66		0.
1528	ISC	03	12	69	02	52	39.0	14.200N	92.000W	86	410MB	3.29
1538	ISC	15	01	70	16	52	42.9	11.500N	86.700W	70	510MB	4.94
1542	ISC	18	01	70	02	12	27.0	13.100N	89.870W	63	430MB	3.62
1543	CGS	1218	01	70	23	43	10.5	14.165N	90.929W	106	430MB	3.62
1544	ISC	19	01	70	02	52	29.0	14.000N	91.500W	100	390MB	2.96
1546	ISC	28	01	70	04	47	05.2	14.200N	91.600W	92	500MB	4.78
1547	ISC	29	01	70	23	06	38.8	11.500N	86.100W	215	480MB	4.45
1555	ISC	14	02	70	23	17	43.0	13.300N	89.900W	78	420MB	3.46
1556	CGS	1315	02	70	07	00	54.0	12.861N	90.219W	70	450MB	3.95
1561	ISC	19	02	70	10	29	19.4	13.810N	90.370W	100	490MB	4.61
1571	ISC	14	03	70	05	10	34.0	12.000N	86.100W	35	400MB	3.13
1574	CGS	2524	03	70	08	24	45.9	14.443N	90.324W	197	420MB	3.46
1576	CGS	2227	03	70	18	39	18.9	12.631N	86.823W	182	510MB	4.94
1582	ISC	08	04	70	08	56	31.0	12.900N	89.850W	67	430MB	3.62
1585	CGS	3421	04	70	05	37	08.8	12.947N	87.880W	79	520MB	5.11
1594	ISC	05	06	70	09	25	42.9	14.200N	92.200W	102	460MB	4.12
1598	ISC	07	06	70	04	53	39.6	13.700N	91.200W	62	420MB	3.46
1607	CGS	4416	06	70	01	56	34.9	13.641N	90.678W	87	460MB	4.12
1608	ISC	17	06	70	15	42	06.0	13.600N	90.870W	35		0.
1617	ISC	28	06	70	23	23	04.3	14.690N	92.020W	111	470MB	4.28
1621	ISC	21	07	70	11	02	37.0	13.400N	91.400W	73	460MB	4.12
1630	CGS	6301	09	70	01	03	41.2	13.077N	89.350W	80	420MB	3.46
1633	CGS	6206	09	70	20	44	49.7	12.783N	88.595W	75	450MB	3.95
1636	ISC	13	09	70	13	42	52.7	14.100N	91.500W	70	420MB	3.46
1638	CGS	7123	09	70	22	48	33.8	13.514N	90.086W	80	470MB	4.28
1639	CGS	7123	09	70	23	57	45.2	12.021N	87.446W	70	450MB	3.95
1640	CGS	7023	09	70	22	56	00.1	13.521N	90.078W	83	460MB	4.12
1641	ISC	29	09	70	04	42	46.6	11.500N	85.500W	192	540MB	5.44
1642	ISC	01	10	70	18	46	50.0	12.300N	88.100W	117	420MB	3.46
1644	CGS	6806	10	70	15	18	54.9	13.561N	88.312W	192	460MB	4.12
1647	CGS	7013	10	70	23	21	42.5	13.764N	90.046W	100	480MB	4.45
1653	ISC	26	10	70	15	23	47.3	14.130N	93.470W	190		0.
1654	ISC	03	11	70	08	39	12.6	11.600N	86.100W	100	460MB	4.12
1655	ISC	05	11	70	06	52	58.0	13.600N	90.910W	71	380MB	2.80
1659	NOS	7508	11	70	11	49	36.0	13.553N	90.665W	96	450MB	3.95
1664	NOS	8116	11	70	06	17	54.1	14.277N	90.188W	204	460MB	4.12
1665	ISC	18	11	70	06	58	34.1	13.800N	91.400W	77	490MB	4.61
1666	ISC	19	11	70	04	27	37.0	15.600N	93.900W	120		0.
1671	ISC	06	12	70	18	56	30.6	14.800N	92.000W	128	430MB	3.62
1672	ISC	15	12	70	03	41	27.0	12.700N	87.900W	62	420MB	3.46
1679	ISC	23	12	70	15	23	39.1	15.900N	93.800W	90	530MB	5.27
1680	ISC	24	12	70	08	00	37.6	16.100N	93.600W	116	560MB	5.77
1686	ISC	02	01	71	10	43	53.0	14.430N	89.800W	100		0.
1696	ISC	03	02	71	14	48	41.8	14.400N	91.400W	95	490MB	4.61

1700	ISC	16	02	71	17	36	14.0	14.260N	91.530W	100	470MB	4.28
1701	ISC	18	02	71	09	20	20.1	14.500N	92.200W	79	490MB	4.61
1702	ISC	19	02	71	06	27	58.2	14.200N	91.700W	68	500MB	4.78
1703	NOS	1619	02	71	16	59	40.3	13.562N	88.795W	176	520MB	5.11
1708	ISC	23	02	71	21	58	10.0	14.600N	92.850W	68		0.
1710	NOS	2326	02	71	02	00	10.0	12.555N	89.925W	71	400MB	3.13
1716	ISC	14	03	71	03	59	49.7	14.100N	92.600W	68	400MB	3.13
1718	ISC	24	03	71	16	18	29.6	14.100N	92.300W	64	500MB	4.78
1720	ISC	25	03	71	05	14	52.9	14.100N	92.200W	63	420MB	3.46
1723	NOS	2914	04	71	03	09	09.1	14.125N	90.133W	124	480MB	4.45
1724	NOS	3019	04	71	05	07	48.5	13.907N	90.540W	92	500MB	4.78
1725	ISC	20	04	71	22	35	32.8	13.500N	89.880W	88	420MB	3.46
1727	NOS	3101	05	71	14	32	12.8	13.259N	88.499W	93	540MB	5.44
1728	ISC	19	05	71	13	15	43.1	14.300N	92.000W	86	470MB	4.28
1731	ISC	26	04	71	18	02	20.3	11.400N	86.800W	69	470MB	4.28
1732	NOS	3728	05	71	03	09	04.1	13.049N	89.963W	86	430MB	3.62
1734	ISC	28	05	71	14	12	07.9	14.800N	91.400W	124	540MB	5.44
1735	NOS	3928	05	71	20	19	25.7	13.732N	89.753W	84	440MB	3.79
1736	NOS	4129	05	71	00	00	53.5	13.663N	90.016W	72	450MB	3.95
1743	ISC	10	06	71	11	20	31.7	11.100N	86.800W	60	490MB	4.61
1745	NOS	4111	06	71	11	51	40.1	12.647N	86.967W	148	450MB	3.95
1747	ISC	13	06	71	03	54	26.8	14.300N	91.300W	104	430MB	3.62
1750	ISC	17	06	71	02	08	59.0	13.700N	90.100W	119	370MB	2.63
1752	ISC	26	06	71	19	26	41.0	15.300N	93.900W	76	420MB	3.46
1753	ISC	28	06	71	02	44	07.7	14.400N	91.600W	97	500MB	4.78
1754	ERL	5606	08	71	19	52	47.6	14.298N	90.834W	87	460MB	4.12
1755	ERL	6012	08	71	05	59	00.1	12.877N	87.341W	211	470MB	4.28
1757	ISC	22	08	71	11	01	59.0	13.800N	91.400W	69	480MB	4.45
1758	ISC	24	08	71	08	09	12.4	11.400N	86.400W	87	500MB	4.78
1761	ISC	06	09	71	09	58	48.2	13.900N	92.500W	60	510MB	4.94
1762	ISC	07	09	71	08	02	33.5	13.800N	91.200W	74	380MB	2.80
1764	ERL	7018	09	71	17	11	54.7	13.526N	90.026W	82	480MB	4.45
1765	ISC	20	09	71	17	05	01.0	14.950N	93.860W	67	460MB	4.12
1773	ISC	21	10	71	15	55	03.0	15.800N	93.360W	70		0.
1774	ISC	07	11	71	05	15	56.1	14.200N	91.900W	86	500MB	4.78
1775	ERL	8108	11	71	04	26	16.8	12.472N	88.165W	68	490MB	4.61
1776	ERL	8416	11	71	00	26	51.3	13.412N	90.729W	115	460MB	4.12
1777	ISC	23	11	71	05	08	19.1	14.100N	92.500W	63	410MB	3.29
1778	ERL	8623	11	71	10	24	31.9	14.412N	90.171W	190	460MB	4.12
1779	ERL	8525	11	71	22	06	26.1	12.759N	87.458W	62	490MB	4.61
1781	ERL	8626	11	71	14	01	37.5	13.305N	89.140W	79	440MB	3.79
1787	ISC	16	01	72	23	55	10.1	11.500N	87.600W	62	460MB	4.12
1788	BSS62	22	01	72	13	08	50.3	14.000N	91.000W	102		6.00
1789	ISC	22	01	72	22	52	14.1	13.900N	91.100W	106	450MB	3.95
1790	ISC	23	01	72	11	11	43.1	15.800N	93.400W	87	460MB	4.12
1791	ISC	27	01	72	14	45	32.3	12.200N	86.600W	104	460MB	4.12
1796	ISC	31	01	72	23	09	10.2	13.800N	91.300W	78	440MB	3.79
1798	ERL	1117	02	72	09	19	06.4	13.269N	88.691W	80	470MB	4.28
1799	ISC	19	02	72	20	18	23.0	14.600N	92.620W	137	430MB	3.62
1805	ERL	1404	03	72	22	04	23.4	12.933N	88.743W	64	470MB	4.28
1809	ISC	07	03	72	14	06	21.0	14.700N	93.600W	35	450MB	3.95
1813	ERL	1711	03	72	01	41	33.1	13.203N	89.825W	157	390MB	2.96
1814	ERL	1511	03	72	03	50	45.9	13.368N	90.042W	85	510MB	5.60
1818	ERL	2629	03	72	15	08	20.0	14.417N	90.777W	82	420MB	3.46
1821	ERL	2209	04	72	15	26	59.9	13.528N	90.464W	85	480MB	4.45
1822	ERL	2411	04	72	07	33	52.8	13.523N	89.135W	93	450MB	3.95
1826	ERL	2717	04	72	19	25	59.7	13.614N	89.590W	88	430MB	3.62
1828	ERL	3230	04	72	10	55	19.5	12.896N	88.668W	77	440MB	3.79
1829	ISC	04	05	72	06	26	40.5	16.000N	93.100W	115	510MB	4.94
1831	ISC	23	05	72	00	37	45.2	15.100N	93.000W	96	460MB	4.12
1839	ERL	3511	06	72	19	09	11.6	13.511N	90.521W	79	440MB	3.79
1843	ISC	13	06	72	19	44	35.3	14.400N	92.800W	127	440MB	3.79
1844	ISC	22	06	72	13	13	13.0	13.900N	91.800W	84	450MB	3.95
1846	ERL	3825	06	72	01	52	25.9	12.668N	89.062W	65	440MB	3.79
1847	ERL	4027	06	72	14	45	32.3	12.182N	86.588W	104	460MB	4.12
1848	ISC	27	06	72	19	39	36.1	14.000N	91.800W	74	510MB	4.94
1853	ERL	3905	07	72	13	00	18.6	13.951N	90.526W	109	480MB	4.45
1861	ISC	17	07	72	05	16	12.0	13.310N	90.690W	100		0.
1864	ERL	4427	07	72	20	03	52.9	13.317N	90.131W	78	450MB	3.95
1865	ERL	4227	07	72	21	16	44.6	13.210N	90.004W	91	450MB	3.95

1866	ERL	4227	07	72	20	44	20.4	13.276N	90.049W	77	450MB	3.95
1867	ERL	4528	07	72	13	53	40.1	13.151N	87.753W	209	440MB	3.79
1870	ERL	4306	08	72	23	06	20.6	13.478N	90.590W	83	460MB	4.12
1872	ISC	11	08	72	10	54	49.8	16.200N	93.500W	98	450MB	3.95
1874	ISC	12	08	72	17	07	26.5	15.500N	93.800W	75	460MB	4.12
1878	ERL	5021	08	72	23	33	50.0	13.957N	90.816W	119	480MB	4.45
1893	ISC	30	09	72	11	15	23.0	14.400N	91.400W	119	440MB	3.79
1897	ISC	01	10	72	06	28	11.0	11.100N	84.030W	60	410MB	3.29
1901	ISC	05	10	72	10	48	19.1	13.800N	91.100W	89	540MB	5.44
1903	ISC	08	10	72	06	14	47.0	13.500N	91.600W	60	410MB	3.29
1907	ISC	25	10	72	20	21	15.0	12.440N	88.700W	126	450MB	3.95
1915	ISC	04	11	72	16	20	02.0	14.200N	92.940W	65	410MB	3.29
1921	ERL	6619	11	72	04	35	24.1	12.973N	88.524W	73	560MB	5.77
1929	ISC	14	12	72	03	55	41.9	11.900N	86.600W	104	460MB	4.12
1937	ERL	625	01	73	22	25	59.5	13.700N	89.324W	100	440MB	3.79
1939	ISC	22	02	73	00	30	20.3	14.500N	91.600W	107	520MB	5.11
1940	ERL	1222	02	73	07	38	01.1	14.504N	90.977W	100	460MB	4.12
1941	ERL	1507	03	73	13	00	45.2	12.705N	88.027W	64	460MB	4.12
1943	ISC	23	03	73	05	07	27.5	14.200N	91.100W	100	420MB	3.46
1945	ERL	2329	03	73	06	47	08.0	14.028N	90.226W	96	420MB	3.46
1948	ERL	2209	04	73	03	17	48.9	12.267N	86.553W	167	470MB	4.28
1949	ISC	10	04	73	21	05	58.7	15.300N	91.500W	88	410MB	3.29
1954	ERL	2720	04	73	09	19	23.4	13.482N	90.028W	88	480MB	4.45
1956	ISC	27	04	73	04	58	06.0	15.400N	92.700W	126	470MB	4.28
1959	ISC	05	04	73	00	30	30.2	14.900N	91.200W	131	410MB	3.29
1961	ISC	24	05	73	19	34	13.5	14.700N	91.200W	100	520MB	5.11
1964	ERL	3531	05	73	05	39	18.8	13.941N	90.877W	99	540MB	5.20
1965	ISC	07	06	73	18	32	42.9	14.300N	92.000W	78	550MB	5.60
1966	ISC	07	06	73	18	34	46.3	14.200N	91.600W	70	570MB	5.93
1967	ISC	07	06	72	19	45	43.0	14.400N	92.000W	97	510MB	4.94
1968	ISC	08	06	72	05	37	15.5	14.100N	92.200W	77	420MB	3.46
1969	ISC	08	06	73	07	47	38.7	14.100N	91.900W	73	420MB	3.46
1970	ISC	08	06	73	10	32	04.3	14.500N	92.100W	89	460MB	4.12
1971	ISC	09	06	73	00	58	04.0	14.100N	91.900W	76	470MB	4.28
1972	ISC	10	06	73	17	35	53.9	14.200N	91.400W	92	460MB	4.12
1973	ISC	15	06	73	08	02	23.6	15.000N	93.400W	75	450MB	3.95
1978	ERL	4030	06	73	08	08	57.6	13.763N	90.935W	78	510MB	4.94
1979	ISC	30	06	73	11	45	56.9	14.900N	93.200W	109	420MB	3.46
1988	ERL	4927	07	73	19	42	47.9	12.813N	86.674W	199	530MB	5.27
1989	ERL	4728	07	73	20	48	24.7	12.333N	87.084W	79	540MB	5.44
1994	ISC	15	08	73	04	48	48.0	13.910N	91.810W	77	410MB	3.29
1996	ERL	4919	08	73	22	17	49.4	12.651N	88.507W	68	510MB	4.94
1997	GS	5421	08	73	12	42	32.5	13.252N	90.564W	70	390MB	2.96
2000	PDE	08	09	73	15	59	59.6	12.800N	89.800W	63	410MB	3.29
2006	PDE	11	10	73	08	40	06.5	13.300N	89.800W	68	450MB	3.95
2010	PDE	02	11	73	03	06	56.8	13.200N	88.000W	118	450MB	3.95
2011	ISC	06	11	73	01	02	40.3	14.400N	91.400W	111	470MB	4.28
2013	PDE	09	11	73	02	36	55.5	14.000N	89.600W	149	490MB	4.61
2014	PDE	10	11	73	19	46	26.8	14.600N	90.200W	243	460MB	4.12
2015	GELL	10	11	73	19	46	26.8	14.636N	90.219W	243	460MB	4.12
2017	ISC	11	11	73	07	46	31.0	14.880N	93.900W	72	430MB	3.62
2025	PDE	28	11	73	06	45	06.3	14.500N	90.000W	230	500MB	4.78
2028	ISC	04	12	73	08	45	00.5	14.200N	91.900W	61	430MB	3.62
2029	ISC	05	12	73	04	01	50.3	14.700N	91.800W	115	490MB	4.61
2031	PDE	08	12	73	00	55	11.6	13.300N	89.900W	88	490MB	4.61
2037	ISC	09	01	74	22	27	24.1	11.000N	85.800W	144	490MB	4.61
2038	GELL	12	01	74	04	47	59.8	13.653N	90.958W	64	440MB	3.79
2039	PDE	17	01	74	11	16	02.8	13.200N	88.300W	103	460MB	4.12
2042	ISC	02	02	74	07	07	40.8	14.100N	92.000W	75	510MB	4.94
2046	ISC	08	02	74	21	29	55.7	15.830N	93.820W	60		0.
2047	ISC	09	02	74	18	36	06.0	14.700N	91.900W	109	480MB	4.45
2053	PDE	04	03	74	14	54	36.1	13.600N	90.600W	89	450MB	3.95
2054	PDE	04	03	74	14	56	52.1	13.600N	90.600W	79	460MB	4.12
2055	PDE	05	03	74	15	10	24.1	13.200N	90.800W	84	430MB	3.62
2056	PDE	06	03	74	01	40	26.4	12.300N	86.400W	110	580MB	6.10
2057	ISC	07	03	74	20	11	50.3	14.900N	91.500W	121	450MB	3.95
2058	GELL	13	03	74	11	35	50.8	13.150N	90.010W	85	490MB	4.61
2061	PDE	21	03	74	22	01	13.3	13.900N	90.100W	99	430MB	3.62
2064	PDE	01	04	74	02	40	33.3	12.200N	87.900W	156	430MB	3.62
2066	PDE	02	04	74	20	12	21.1	13.600N	90.300W	91	460MB	4.12
2067	ISC	05	04	74	23	00	34.8	11.240N	87.050W	88	420MB	3.46
2068	ISC	10	04	74	22	43	00.6	14.500N	91.600W	108	540MB	5.44
2069	ISC	14	04	74	06	55	01.8	14.700N	91.300W	138	530MB	5.27
2070	ISC	16	04	74	05	09	14.2	16.000N	93.900W	122	430MB	3.62
2072	ISC	23	04	74	11	41	40.9	15.000N	91.700W	180	480MB	4.45
2074	PDE	02	05	74	03	12	54.0	13.900N	90.700W	76	470MB	4.28
2075	PDE	02	05	74	03	51	50.4	13.800N	90.500W	65	460MB	4.12
2076	ISC	02	05	74	16	01	54.2	11.200N	86.100W	180	450MB	3.95
2080	PDE	04	05	74	17	49	28.8	13.900N	90.500W	115	450MB	3.95
2099	PDE	21	06	74	15	29	15.9	14.200N	90.000W	65	420MB	3.46
2102	ISC	14	07	74	20	51	41.0	13.600N	90.900W	68	420MB	3.46
2105	ISC	21	07	74	08	28	35.3	14.300N	92.100W	70	530MB	5.27
2107	ISC	21	07	74	21	41	58.1	11.100N	86.100W	78	500MB	4.78
2108	ISC	21	07	74	22	33	38.2	11.300N	86.100W	87	520MB	5.11
2109	ISC	12	08	74	13	30	14.2	11.700N	86.900W	83	490MB	4.61
2111	ISC	19	08	74	15	11	23.8	14.700N	93.500W	67	440MB	3.79
2112	PDE	19	08	74	19	54	44.8	12.300N	88.900W	67	520MB	5.11
2115	PDE	30	08	74	07	45	20.9	12.800N	87.400W	62	490MB	4.61
2117	PDE	01	09	74	13	49	38.5	13.300N	88.900W	111	490MB	4.61
2120	PDE	12	09	74	20	14	37.3	13.600N	89.900W	85	500MB	4.78
2121	ISC	18	09	74	21	43	23.1	11.500N	85.700W	198	450MB	3.95
2122	ISC	18	09	74	23	53	08.8	11.400N	86.200W	117	440MB	3.79
2124	ISC	07	10	74	17	10	36.2	11.600N	85.400W	225	510MB	4.94
2125	ISC	17	10	74	19	54	50.3	14.400N	91.000W	160	440MB	3.79
2127	PDE	20	10	74	13	22	48.8	12.000N	86.700W	307	420MB	3.46
2129	PDE	23	10	74	13	36	51.8	14.700N	90.600W	231	460MB	4.12
2130	ISC	25	10	74	00	05	34.1	15.800N	93.100W	120	550MB	5.60
2132	ISC	28	10	74	14	55	50.9	11.800N	86.700W	110	440MB	3.79
2136	ISC	14	11	74	09	45	02.1	11.900N	86.500W	102	490MB	4.61
2139	ISC	02	12	74	12	36	44.5	14.600N	91.500W	97	520MB	5.11
2144	PDE	24	12	74	02	10	25.4	14.300N	90.100W	155	540MB	5.44
2146	ISC	28	12	74	23	49	51.0	15.000N	91.100W	186	460MB	4.12
2147	ISC	31	12	74	20	15	32.7	14.100N	91.900W	75	540MB	5.44
2149	ISC	31	12	74	21	56	10.0	14.200N	91.900W	75	490MB	4.61
2152	ISC	01	01	75	22	52	36.4	14.100N	91.900W	80	500MB	4.78
2153	ISC	01	01	75	23	41	22.0	14.200N	91.800W	108	440MB	3.79
2155	ISC	03	01	75	10	04	18.0	12.030N	86.650W	141	410MB	3.29
2156	ISC	07	01	75	21	10	14.8	15.400N	93.500W	139	450MB	3.95
2158	ISC	11	01	75	18	07	44.0	14.500N	91.400W	104	460MB	4.12
2159	ISC	21	01	75	00	36	11.3	14.400N	92.100W	106	440MB	3.79
2160	ISC	27	01	75	00	41	15.0	13.000N	90.000W	116	430MB	3.62
2163	PDE	10	02	75	03	59	06.9	13.100N	88.600W	179	460MB	4.12
2164	ISC	12	02	75	20	36	37.0	14.300N	92.200W	78	430MB	3.62
2167	ISC	14	02	75	23	57	08.1	11.700N	86.100W	146	500MB	4.78
2169	ISC	20	02	75	03	23	54.6	14.500N	91.100W	143	460MB	4.12
2172	ISC	03	03	75	02	00	57.8	11.700N	86.900W	187	450MB	3.95
2173	PDE	05	03	75	17	25	43.6	12.300N	87.900W	104	480MB	4.45
2174	ISC	06	03	75	02	53	05.5	11.900N	87.800W	130	420MB	3.46
2175	ISC	13	03	75	17	54	21.4	11.100N	86.900W	61	490MB	4.61
2177	ISC	14	03	75	09	36	06.0	11.400N	86.480W	86		0.
2178	ISC	16	03	75	03	16	47.0	11.700N	86.500W	169	430MB	3.62
2182	PDE	24	03	75	11	51	03.9	13.000N	89.300W	93	460MB	4.12
2186	ISC	04	04	75	14	36	57.4	14.400N	91.400W	143	420MB	3.46
2187	PDE	04	04	75	16	54	54.0	12.400N	88.600W	113	450MB	3.95
2189	PDE	14	04	75	23	17	43.1	13.600N	90.200W	107	430MB	3.62
2192	ISC	04	05	75	15	23	26.0	15.600N	93.600W	72	450MB	3.95
2193	ISC	05	05	75	06	30	38.2	12.730N	89.030W	118		0.
2210	ISC	16	06	75	13	36	59.0	15.400N	93.200W	189	420MB	3.46
2212	ISC	18	06	75	18	33	36.0	11.000N	85.100W	182	470MB	4.28
2213	PDE	19	06	75	16	12	42.2	13.400N	89.300W	93	500MB	4.78
2214	GELL	19	06	75	16	12	42.2	13.369N	89.335W	93	500MB	4.78
2216	PDE	24	06	75	03	31	24.5	12.000N	86.200W	157	470MB	4.28
2217	PDE	26	06	75	06	45	17.6	14.000N	90.800W	76	480MB	4.45
2223	ISC	18	07	75	02	28	06.0	11.540N	87.300W	97	460MB	4.12
2224	ISC	18	07	75	02	30	41.0	11.940N	86.940W	125	470MB	4.28
2225	ISC	18	07	75	22	24	45.0	17.800N	93.790W	315		0.
2227	ISC	29	07	75	16	51	42.0	13.790N	91.260W	68	460MB	4.12
2228	PDE	13	08	75	23	07	43.5	14.500N	89.900W	256	470MB	4.28
2231	PDE	31	08	75	13	19	03.[illegible]	14.100N	90.600W	88	450MB	3.95
2237	ISC	21	09	75	15	55	27.2	14.100N	91.000W	102	480MB	4.45

2241	ISC	30	09	75	15	35	24.4	14. 300N	91. 000W	107	480MB	4. 45
2242	ISC	30	09	75	19	01	25.7	16. 200N	91. 500W	298	430MB	3. 62
2243	ISC	05	10	75	16	36	03.0	14. 900N	92. 070W	190	440MB	3. 79
2251	PDE	21	10	75	21	19	13.6	12. 200N	88. 000W	65	390MB	2. 96
2258	ISC	04	11	75	13	46	06.0	11. 100N	86. 660W	64		0.
2261	ISC	06	11	75	07	37	24.9	11. 400N	87. 100W	76		0.
2262	ISC	06	11	75	09	04	32.4	13. 000N	89. 800W	201		0.
2263	ISC	07	11	75	04	14	18.0	12. 500N	87. 900W	167		0.
2264	ISC	16	11	75	21	13	47.1	11. 500N	87. 600W	70		0.
2267	ISC	20	11	75	16	00	09.0	11. 630N	87. 550W	89		0.
2269	PDE	27	11	75	08	43	52.9	12. 897N	87. 368W	191	430MB	3. 62
2275	ISC	02	12	75	21	08	16.9	11. 460N	86. 840W	67		0.
2281	ISC	10	12	75	02	55	33.3	11. 960N	87. 030W	70		0.
2282	ISC	15	12	75	14	27	57.8	14. 400N	92. 600W	77	500MB	4. 78
2283	ISC	15	12	75	17	36	29.7	14. 400N	92. 700W	65	520MB	5. 11
2284	ISC	22	12	75	14	41	58.0	17. 300N	93. 700W	246	450MB	3. 95
2286	ISC	03	01	76	12	33	32.7	15. 000N	93. 600W	73	460MB	4. 12
2289	ISC	08	01	76	23	10	03.3	11. 820N	87. 990W	95	430MB	3. 62
2293	ISC	18	01	76	08	08	50.3	14. 600N	91. 200W	131	450MB	3. 95
2294	ISC	25	01	76	03	37	29.4	14. 800N	91. 900W	139	490MB	4. 61
2295	PDE	25	01	76	10	59	48.4	13. 932N	90. 883W	103	500MB	4. 78
2298	ISC	27	01	76	21	06	59.5	11. 300N	86. 600W	101	460MB	4. 12
2301	PDE	31	01	76	04	55	56.1	13. 703N	88. 354W	123	450MB	3. 95
2302	ISC	04	02	76	05	16	16.0	12. 020N	88. 300W	67		0.
2333	ISC	16	02	76	07	53	05.0	12. 000N	88. 400W	96	460MB	4. 12
2334	PDE	19	02	76	22	56	07.3	14. 300N	90. 335W	61	490MB	4. 61
2337	ISC	24	02	76	20	28	50.0	14. 900N	91. 600W	345	390MB	2. 96
2339	ISC	05	03	76	06	28	06.0	13. 510N	88. 700W	186	430MB	3. 62
2343	ISC	09	03	76	13	05	11.0	13. 500N	91. 200W	124	430MB	3. 62
2349	ISC	29	03	76	16	14	32.3	13. 050N	88. 830W	101		0.
2352	PDE	03	04	76	10	02	26.5	12. 991N	89. 772W	68	430MB	3. 62
2356	ISC	10	04	76	08	09	46.4	14. 650N	92. 230W	100		0.
2366	ISC	18	04	76	22	40	38.0	14. 370N	93. 140W	60		0.
2370	ISC	21	04	76	04	55	34.5	11. 290N	87. 140W	69		0.
2372	ISC	21	04	76	07	45	34.2	11. 290N	87. 120W	78		0.
2375	ISC	23	04	76	17	56	51.4	11. 380N	85. 870W	125		0.
2376	ISC	24	04	76	11	03	15.9	11. 250N	87. 120W	74		0.
2378	ISC	24	04	76	11	43	09.0	11. 210N	87. 090W	76		0.
2379	ISC	24	04	76	12	22	15.0	11. 280N	87. 080W	68		0.
2382	PDE	25	04	76	14	00	03.1	13. 182N	89. 812W	90	430MB	3. 62
2387	PDE	28	04	76	04	39	34.7	13. 931N	90. 654W	69	480MB	4. 45
2388	ISC	28	04	76	21	50	43.6	14. 410N	92. 000W	100		0.
2390	ISC	29	04	76	21	58	43.0	15. 800N	93. 820W	94	470MB	4. 28
2391	ISC	05	05	76	16	46	55.4	11. 640N	85. 860W	82		0.
2394	ISC	04	05	76	11	09	40.1	12. 700N	87. 900W	66	440MB	3. 79
2395	ISC	08	05	76	08	41	19.3	12. 400N	87. 360W	99		0.
2402	PDE	15	05	76	12	56	42.7	14. 273N	90. 859W	83	440MB	3. 79
2404	ISC	19	05	76	05	15	33.7	11. 310N	85. 730W	157		0.
2407	ISC	22	05	76	04	36	54.6	14. 280N	92. 270W	81	470MB	4. 28
2408	PDE	22	05	76	09	00	55.2	12. 637N	88. 454W	77	440MB	3. 79
2409	PDE	23	05	76	09	04	07.6	12. 428N	88. 315W	96	380MB	2. 80
2410	PDE	23	05	76	02	50	12.4	12. 574N	88. 607W	61	440MB	3. 79
2412	ISC	28	05	76	05	32	06.8	11. 970N	86. 450W	208	440MB	3. 79
2417	ISC	02	06	76	19	48	39.0	11. 030N	87. 840W	104		0.
2421	PDE	12	06	76	03	29	46.1	13. 407N	89. 941W	94	460MB	4. 12
2422	PDE	15	06	76	15	19	41.0	13. 318N	89. 425W	71	450MB	3. 95
2426	ISC	19	06	76	04	13	58.0	14. 400N	92. 900W	75	450MB	3. 95
2428	PDE	21	06	76	01	51	47.9	13. 132N	89. 480W	77	420MB	3. 46
2429	PDE	22	06	76	11	58	23.1	13. 944N	90. 777W	81	490MB	4. 61
2431	PDE	24	06	76	21	15	03.4	12. 712N	88. 459W	65	460MB	4. 12
2432	PDE	27	06	76	07	41	47.9	13. 117N	89. 432W	95	430MB	3. 62
2433	ISC	28	06	76	10	57	07.0	14. 500N	92. 590W	100		0.
2435	PDE	28	06	76	14	33	06.4	13. 929N	90. 705W	100	480MB	4. 45
2437	ISC	30	06	76	02	19	51.1	11. 500N	86. 500W	66	460MB	4. 12
2439	PDE	02	07	76	05	35	25.8	12. 143N	86. 645W	148	490MB	4. 61
2447	ISC	13	07	76	18	21	22.6	14. 650N	93. 220W	60		0.
2452	ISC	20	07	76	18	06	14.3	15. 750N	93. 730W	60		0.
2454	ISC	22	07	76	01	56	17.0	15. 660N	93. 320W	60		0.
2455	ISC	22	07	76	07	59	18.0	14. 500N	92. 680W	60		0.
2456	ISC	22	07	76	22	00	32.6	14. 900N	92. 000W	112	460MB	4. 12

2457	ISC	25	07	76	05	06	56.9	14. 320N	92. 080W	60		0.
2458	ISC	26	07	76	22	54	04.3	14. 820N	93. 690W	60		0.
2460	ISC	29	07	76	14	13	13.0	14. 670N	92. 400W	60		0.
2464	ISC	03	08	76	10	36	12.3	14. 300N	91. 000W	106	420MB	3. 46
2465	PDE	05	08	76	18	48	11.4	12. 745N	88. 201W	70	520MB	5. 11
2466	ISC	08	08	76	11	02	45.7	14. 000N	91. 400W	84	480MB	4. 45
2467	PDE	09	08	76	17	01	51.0	12. 671N	88. 175W	82	520MB	5. 11
2469	PDE	15	08	76	18	21	37.9	13. 580N	89. 472W	69	440MB	3. 79
2471	ISC	18	08	76	09	04	59.9	11. 310N	86. 090W	60		0.
2472	PDE	23	08	76	03	41	30.8	14. 775N	89. 649W	88	450MB	3. 95
2475	PDE	01	09	76	22	34	37.9	13. 512N	88. 111W	73	460MB	4. 12
2477	PDE	02	09	76	10	20	25.9	13. 259N	89. 989W	81	500MB	4. 78
2480	ISC	08	09	76	21	51	13.0	15. 970N	93. 640W	100		0.
2483	ISC	11	09	76	02	41	51.0	13. 000N	89. 000W	65		0.
2486	PDE	14	09	76	23	47	35.1	13. 990N	90. 990W	103	460MB	4. 12
2488	PDE	15	09	76	20	52	56.8	12. 544N	87. 797W	86	490MB	4. 61
2498	ISC	23	09	76	21	56	06.8	11. 300N	86. 800W	71	460MB	4. 12
2504	ISC	09	10	76	23	47	49.0	12. 150N	86. 290W	226	480MB	4. 45
2506	PDE	22	10	76	05	53	49.4	13. 075N	88. 397W	83	480MB	4. 45
2516	PDE	06	11	76	12	37	42.7	13. 619N	90. 568W	86	490MB	4. 61
2519	PDE	07	11	76	06	41	42.8	13. 672N	90. 421W	85	460MB	4. 12
2523	ISC	13	11	76	07	58	14.0	11. 300N	87. 000W	82		0.
2524	ISC	16	11	76	02	19	07.1	14. 200N	91. 400W	94	460MB	4. 12
2525	PDE	01	12	76	17	44	48.6	13. 531N	89. 251W	85	490MB	4. 61
2528	ISC	07	12	76	19	10	44.5	13. 840N	91. 380W	79		0.
2529	PDE	08	12	76	05	20	49.7	15. 054N	89. 328W	101		0.
2530	PDE	09	12	76	04	24	30.6	14. 356N	90. 214W	199	470MB	4. 28
2531	PDE	09	12	76	12	50	55.9	12. 338N	87. 866W	77	480MB	4. 45
2532	PDE	11	12	76	17	20	39.1	13. 596N	88. 895W	79	500MB	4. 78
2543	ISC	16	01	77	16	41	08.6	13. 900N	91. 000W	100	470MB	4. 28
2544	ISC	16	01	77	20	49	15.8	14. 500N	91. 700W	88	470MB	4. 28
2548	PDE	22	01	77	05	14	44.8	13. 055N	89. 133W	85	450MB	3. 95
2549	ISC	23	01	77	17	00	32.3	13. 900N	91. 700W	85	510MB	4. 94
2557	ISC	23	02	77	19	36	05.0	15. 900N	93. 300W	118	490MB	4. 61
2558	PDE	28	02	77	00	44	11.1	13. 931N	90. 892W	61	470MB	4. 28
2566	ISC	13	03	77	07	36	12.7	14. 400N	91. 300W	183	450MB	3. 95
2567	PDE	15	03	77	21	28	23.6	13. 353N	89. 668W	95	470MB	4. 28
2568	PDE	22	03	77	19	29	30.2	12. 972N	88. 536W	76	500MB	4. 78
2571	ISC	31	03	77	07	41	20.8	13. 700N	91. 000W	174	470MB	4. 28
2576	PDE	17	04	77	14	41	27.3	13. 629N	88. 241W	208	480MB	4. 45
2577	ISC	18	04	77	13	03	24.8	11. 400N	85. 600W	201	480MB	4. 45
2579	ISC	21	04	77	15	08	54.9	14. 700N	91. 500W	109	490MB	4. 61
2586	ISC	12	05	77	23	25	19.0	14. 800N	93. 580W	87	430MB	3. 62
2587	ISC	13	05	77	03	02	07.7	14. 200N	91. 600W	82	480MB	4. 45
2588	ISC	13	05	77	13	44	47.4	14. 600N	92. 000W	101	460MB	4. 12
2598	ISC	03	06	77	15	33	00.6	14. 790N	92. 490W	100		0.
2602	PDE	13	06	77	05	28	39.1	13. 787N	90. 418W	111	440MB	3. 79
2606	PDE	16	06	77	15	50	31.0	13. 245N	89. 957W	62	410MB	3. 29
2608	ISC	19	06	77	17	05	36.0	15. 400N	93. 700W	108	440MB	3. 79
2610	ISC	21	06	77	16	55	27.8	15. 030N	90. 840W	100		0.
2612	ISC	27	06	77	04	54	55.3	15. 270N	90. 210W	100		0.
2615	ISC	01	07	77	12	50	36.0	12. 600N	88. 500W	95		0.
2621	ISC	04	07	77	23	11	35.5	14. 700N	93. 600W	73	480MB	4. 45
2622	ISC	04	07	77	23	18	27.5	14. 500N	93. 600W	67	470MB	4. 28
2624	ISC	05	07	77	10	40	56.0	14. 710N	92. 230W	80		0.
2627	ISC	06	07	77	10	38	37.0	14. 620N	91. 510W	100		0.
2628	ISC	07	07	77	10	56	13.6	14. 000N	91. 500W	85	450MB	3. 95
2643	PDE	30	07	77	07	56	36.3	12. 978N	88. 771W	81	480MB	4. 45
2647	PDE	12	08	77	14	10	35.0	13. 214N	89. 849W	98	430MB	3. 62
2648	PDE	15	08	77	05	54	28.1	14. 399N	90. 963W	121	430MB	3. 62
2652	ISC	21	08	77	08	21	29.9	11. 170N	85. 900W	64		0.
2653	PDE	21	08	77	11	33	50.8	13. 788N	90. 057W	84	480MB	4. 45
2654	ISC	21	08	77	13	50	54.8	14. 900N	91. 900W	190	430MB	3. 62
2656	ISC	02	09	77	09	15	28.0	11. 100N	85. 680W	116		0.
2657	PDE	03	09	77	22	23	07.0	12. 540N	87. 532W	79	530MB	5. 27
2658	ISC	06	09	77	21	30	44.2	13. 200N	88. 800W	93		0.
2659	ISC	10	09	77	10	21	11.5	13. 900N	91. 700W	78	560MB	5. 77
2661	PDE	12	09	77	21	35	02.9	12. 400N	87. 854W	118	430MB	3. 62
2663	ISC	15	09	77	05	30	42.3	13. 310N	88. 250W	158		0.
2664	PDE	18	09	77	05	44	09.3	13. 558N	89. 954W	108	500MB	4. 78

2665	ISC	30	09	77	07	10	25.3	11.200N	85.800W	66	520MB	5.11
2666	ISC	05	10	77	07	49	20.4	12.800N	88.600W	65	430MB	3.62
2669	ISC	16	10	77	06	00	31.0	15.200N	93.700W	72	460MB	4.12
2671	ISC	20	10	77	09	20	34.8	11.700N	87.000W	69	520MB	5.11
2674	PDE	23	10	77	13	44	57.7	13.231N	87.761W	193	490MB	4.61
2676	ISC	25	10	77	06	33	58.5	15.000N	91.200W	117	480MB	4.45
2678	ISC	26	10	77	19	39	40.2	11.700N	87.000W	71	470MB	4.28
2679	ISC	28	10	77	09	30	30.9	11.500N	86.900W	65	470MB	4.28
2683	PDE	30	10	77	22	28	39.5	13.653N	90.117W	96	400MB	3.13
2684	PDE	31	10	77	00	53	16.6	12.983N	89.040W	84	510MB	4.94
2687	PDE	04	11	77	12	49	47.5	13.862N	90.588W	104	500MB	4.78
2694	ISC	27	11	77	03	23	21.8	13.170N	87.670W	60		0.
2695	ISC	28	11	77	04	36	52.5	15.300N	91.400W	225	510MB	4.94
2696	ISC	03	12	77	22	19	09.5	14.900N	92.400W	67	470MB	4.28
2697	NMNH	04	12	78	61	51	11.9	12.590N	87.790W	100	470MB	4.28
2703	ISC	13	01	78	15	01	58.1	12.810N	88.640W	83		0.
2704	ISC	20	01	78	02	12	41.3	14.300N	92.100W	84	500MB	4.78
2705	ISC	28	01	78	17	48	51.3	12.600N	87.400W	87	450MB	3.95
2707	ISC	02	02	78	21	01	52.0	13.200N	90.900W	147		0.
2708	ISC	02	02	78	23	04	36.3	13.100N	88.400W	76		0.
2709	ISC	03	02	78	10	00	58.9	14.900N	92.200W	108	430MB	3.62
2712	ISC	11	02	78	12	20	48.8	12.800N	88.500W	75	490MB	4.61
2715	ISC	19	02	78	14	10	07.0	12.800N	88.400W	80	420MB	3.46
2716	ISC	19	02	78	19	42	43.3	13.700N	90.700W	74	510MB	4.94
2718	ISC	22	02	78	06	07	37.0	14.200N	91.400W	100	570MB	5.93
2719	ISC	22	02	78	07	34	40.0	14.300N	91.500W	90	420MB	3.46
2720	ISC	22	02	78	19	31	41.4	14.100N	90.600W	102	510MB	4.94
2722	ISC	02	03	78	11	35	10.6	13.200N	89.600W	102	460MB	4.12
2724	ISC	04	03	78	17	35	09.4	14.300N	91.300W	101	520MB	5.11
2726	ISC	08	03	78	23	42	36.8	13.500N	91.100W	194	440MB	3.79
2728	ISC	14	03	78	07	49	49.6	14.100N	91.000W	153	470MB	4.28
2731	ISC	25	03	78	23	02	50.9	14.110N	88.470W	89		0.
2732	ISC	28	03	78	09	01	56.3	14.000N	92.200W	82	450MB	3.95
2736	ISC	11	04	78	16	51	11.5	12.690N	87.590W	89		0.
2738	ISC	12	04	78	16	51	08.2	12.600N	87.900W	64	510MB	4.94
2739	ISC	15	04	78	17	18	39.0	14.200N	91.400W	107	520MB	5.11
2740	ISC	21	04	78	19	33	07.0	12.200N	89.200W	92		0.
2745	ISC	11	05	78	17	35	59.6	14.100N	92.100W	90	460MB	4.12
2746	ISC	11	05	78	21	05	22.2	14.200N	92.100W	86	490MB	4.61
2748	ISC	12	05	78	05	08	00.4	14.000N	92.000W	73	480MB	4.45
2749	ISC	13	05	78	03	36	09.5	14.100N	92.000W	68	480MB	4.45
2750	ISC	14	05	78	08	32	19.1	15.270N	92.160W	146	470MB	4.28
2751	ISC	15	05	78	21	16	47.6	11.400N	86.500W	95	460MB	4.12
2754	ISC	31	05	78	01	07	22.4	12.800N	87.200W	76	540MB	5.44
2756	ISC	05	06	78	05	10	27.7	11.900N	86.900W	163	450MB	3.95
2758	ISC	15	06	78	19	17	08.0	14.600N	92.100W	78	450MB	3.95
2759	ISC	19	06	78	09	35	12.3	13.000N	88.700W	83	470MB	4.28
2761	ISC	28	06	78	10	21	38.3	12.400N	86.700W	80	460MB	4.12
2762	ISC	06	07	78	05	04	36.1	13.600N	91.100W	113	460MB	4.12
2763	ISC	07	07	78	08	37	24.2	11.100N	86.600W	79	450MB	3.95
2764	ISC	13	07	78	17	16	14.2	11.600N	86.800W	65	470MB	4.28
2766	ISC	20	07	78	09	34	36.0	12.000N	87.000W	121	530MB	5.27
2770	ISC	02	08	78	02	33	08.1	14.400N	91.500W	90	430MB	3.62
2771	ISC	04	08	78	10	37	40.5	13.000N	89.800W	80	470MB	4.28
2772	ISC	06	08	78	17	45	04.5	12.900N	88.700W	84	470MB	4.28
2773	ISC	13	08	78	04	19	12.1	13.900N	92.100W	75		0.
2774	ISC	13	08	78	10	52	30.5	11.200N	86.100W	71	470MB	4.28
2775	ISC	14	08	78	00	46	11.7	11.260N	85.730W	162		0.
2776	ISC	18	08	78	15	35	17.8	14.400N	91.500W	96	550MB	5.60
2778	ISC	01	09	78	17	28	00.0	13.100N	89.800W	79	450MB	3.95
2783	ISC	06	09	78	02	18	28.8	13.500N	90.700W	71	470MB	4.28
2787	ISC	10	09	78	23	24	15.6	14.300N	91.500W	94	560MB	5.77
2788	ISC	12	09	78	03	18	20.0	14.120N	92.080W	120		0.
2791	ISC	13	09	78	01	56	58.0	13.900N	91.700W	76	440MB	3.79
2793	ISC	14	09	78	18	38	05.0	15.700N	93.200W	92		0.
2805	ISC	05	10	78	19	28	51.5	13.670N	91.400W	96		0.
2806	ISC	06	10	78	12	45	43.2	12.700N	88.100W	65	500MB	4.78
2808	ISC	06	10	78	19	46	46.0	14.100N	91.500W	92	450MB	3.95
2809	ISC	10	10	78	02	37	57.5	15.750N	93.250W	100		0.
2813	ISC	17	10	78	20	16	49.5	13.800N	89.700W	116	510MB	4.94
2816	ISC	22	10	78	08	29	53.2	13.700N	90.630W	83	410MB	3.29
2821	ISC	26	10	78	09	55	49.3	14.800N	93.600W	62	400MB	3.13
2825	ISC	30	10	78	18	23	35.2	13.840N	91.130W	69	490MB	4.61
2827	ISC	30	10	78	19	02	43.0	14.600N	92.100W	145	420MB	3.46
2833	ISC	31	10	78	06	30	33.6	13.800N	91.100W	60	500MB	4.78
2834	ISC	01	11	78	02	49	23.4	13.540N	91.310W	84	380MB	2.80
2835	ISC	04	11	78	16	35	55.0	13.000N	90.900W	63	440MB	3.79
2837	ISC	07	11	78	04	42	06.8	13.500N	89.300W	98	440MB	3.79
2843	ISC	22	11	78	12	09	57.0	14.100N	92.300W	74	380MB	2.80
2851	ISC	09	12	78	11	20	38.9	13.200N	89.400W	93	470MB	4.28
2852	ISC	09	12	78	20	52	04.0	13.200N	92.000W	92	450MB	3.95
2853	ISC	10	12	78	07	03	05.8	13.300N	89.500W	88	470MB	4.28
2856	ISC	18	12	78	02	31	27.1	13.000N	88.300W	85	530MB	5.27
2860	ISC	19	12	78	16	34	03.9	11.500N	87.300W	79	490MB	4.61
2864	ISC	24	12	78	10	32	14.7	12.900N	87.700W	169	440MB	3.79
2867	ISC	06	01	79	09	21	55.0	15.300N	93.880W	122	460MB	4.12
2868	ISC	06	01	79	16	33	19.0	14.800N	92.700W	96	440MB	3.79
2869	ISC	12	01	79	03	59	01.9	14.300N	91.500W	95	540MB	5.44
2871	ISC	15	01	79	12	41	59.9	13.160N	89.730W	85	440MB	3.79
2874	ISC	22	01	79	03	51	47.6	11.400N	86.500W	81	440MB	3.79
2875	ISC	03	02	79	21	50	00.7	14.670N	89.500W	100		0.
2878	ISC	07	02	79	13	28	37.0	14.500N	92.400W	64		0.
2881	ISC	15	02	79	11	45	57.0	14.700N	93.200W	85		0.
2883	ISC	18	02	79	10	12	10.0	14.200N	92.200W	70	380MB	2.80
2885	ISC	20	02	79	09	39	15.5	12.700N	88.500W	85	480MB	4.45
2886	ISC	21	02	79	15	57	27.0	13.600N	90.900W	69		0.
2888	ISC	07	03	79	16	58	49.8	14.600N	88.800W	66	490MB	4.61
2889	ISC	08	03	79	04	08	54.4	11.570N	88.940W	107	410MB	3.29
2890	ISC	08	03	79	13	18	49.1	14.400N	91.400W	139	430MB	3.62
2891	ISC	13	03	79	14	50	06.8	13.600N	89.200W	98	470MB	4.28
2895	ISC	20	03	79	02	52	06.5	11.700N	86.000W	109	410MB	3.29
2896	ISC	23	03	79	20	31	25.0	11.100N	86.500W	71	460MB	4.12
2899	ISC	31	03	79	00	28	37.0	14.700N	91.520W	197	460MB	4.12
2901	ISC	01	04	79	17	04	49.0	14.400N	91.600W	69	480MB	4.45
2902	ISC	02	04	79	04	27	22.2	11.490N	86.350W	77	410MB	3.29
2903	ISC	07	04	79	13	34	33.0	14.700N	90.600W	92	450MB	3.95
2904	ISC	09	04	79	07	30	51.5	13.700N	89.000W	140	490MB	4.61
2905	ISC	09	04	79	14	29	06.3	11.200N	86.300W	78	500MB	4.78
2906	ISC	24	04	79	11	13	08.3	11.800N	87.300W	62	480MB	4.45
2908	ISC	30	04	79	22	20	18.5	13.500N	89.400W	98	450MB	3.95
2910	ISC	06	05	79	05	04	14.3	13.300N	88.400W	86	460MB	4.12
2911	ISC	13	05	79	22	43	16.3	12.100N	86.400W	209	490MB	4.61
2914	ISC	27	05	79	01	00	09.4	13.400N	90.500W	75	490MB	4.61
2915	ISC	27	05	79	01	59	40.0	13.300N	90.400W	93	470MB	4.28
2916	ISC	28	05	79	11	19	42.5	14.000N	89.800W	107	440MB	3.79
2918	ISC	04	06	79	06	26	42.7	15.700N	93.600W	80	570MB	5.93
2922	ISC	19	06	79	06	54	22.6	11.330N	86.650W	77	470MB	4.28
2925	ISC	07	07	79	09	33	02.4	14.000N	91.000W	93	510MB	4.94
2926	ISC	11	07	79	09	48	46.2	13.300N	89.500W	96	460MB	4.12
2927	ISC	21	07	79	10	46	28.9	14.200N	92.200W	73	490MB	4.61
2929	ISC	23	07	79	04	37	23.1	12.800N	89.500W	62	430MB	3.62
2930	ISC	23	07	79	07	22	11.7	13.700N	89.900W	72	430MB	3.62
2931	ISC	26	07	79	15	04	01.7	16.500N	93.660W	139	440MB	3.79
2932	ISC	27	07	79	18	40	59.4	14.100N	92.100W	78	460MB	4.12
2934	ISC	28	07	79	12	44	18.0	12.900N	88.600W	94	490MB	4.61
2937	ISC	06	08	79	12	51	12.7	14.200N	91.900W	75	480MB	4.45
2941	ISC	17	08	79	02	12	56.1	11.700N	86.900W	60	450MB	3.95
2944	ISC	27	08	79	10	34	14.1	13.500N	91.300W	100	470MB	4.28
2945	ISC	28	08	79	16	49	29.0	13.200N	89.900W	80	470MB	4.28
2947	ISC	02	09	79	01	10	57.6	13.100N	88.700W	81	490MB	4.61
2948	ISC	08	09	79	04	17	27.4	13.700N	91.500W	70	480MB	4.45
2949	ISC	09	09	79	06	59	08.5	16.300N	92.500W	162	430MB	3.62
2950	ISC	10	09	79	10	06	19.2	13.900N	91.600W	100	480MB	4.45
2951	ISC	10	09	79	16	45	59.0	13.500N	91.000W	61	470MB	4.28
2953	ISC	17	09	79	09	53	27.1	14.200N	91.900W	70	480MB	4.45
2956	ISC	01	10	79	14	14	10.3	15.800N	92.200W	161	540MB	5.44
2960	ISC	10	10	79	03	45	46.2	13.900N	91.800W	64	500MB	4.78
2961	ISC	15	10	79	00	49	56.0	14.700N	88.400W	156	410MB	3.29
2963	ISC	27	10	79	15	02	28.4	14.200N	90.400W	69	490MB	4.61
2964	ISC	27	10	79	16	10	58.5	13.700N	90.900W	84	490MB	4.61

2965	ISC	27	10	79	21	43	24.9	13.800N	90.700W	65	560MB	5.77
2966	ISC	28	10	79	12	54	01.0	13.800N	90.700W	90	400MB	3.13
2967	ISC	28	10	79	14	58	31.0	15.200N	91.230W	206	380MB	2.80
2968	ISC	29	10	79	06	22	40.0	17.600N	93.800W	177	430MB	3.62
2970	ISC	03	11	79	04	37	51.7	14.900N	91.800W	121	480MB	4.45
2971	ISC	05	11	79	16	00	04.4	13.700N	91.400W	63	500MB	4.78
2972	ISC	06	11	79	08	58	18.9	13.600N	91.300W	64	480MB	4.45
2973	ISC	07	11	79	05	12	41.0	15.800N	93.100W	73	370MB	2.63
2975	ISC	12	11	79	01	40	25.1	13.700N	90.900W	92	470MB	4.28
2976	ISC	13	11	79	03	17	19.2	15.000N	93.600W	80	460MB	4.12
2977	ISC	13	11	79	04	19	01.3	14.600N	91.200W	130	490MB	4.61
2978	ISC	13	11	79	09	35	36.0	13.800N	90.500W	85	460MB	4.12
2979	ISC	13	11	79	09	50	43.3	13.800N	90.590W	68	420MB	3.46
2980	ISC	16	11	79	17	23	15.9	14.800N	91.800W	148	500MB	4.78
2984	ISC	10	12	79	06	13	43.1	15.200N	91.400W	185	490MB	4.61
2986	ISC	16	12	79	12	50	00.9	15.300N	92.100W	133	490MB	4.61
2987	ISC	18	12	79	10	37	57.8	11.400N	86.500W	68	550MB	5.60
2989	ISC	20	12	79	12	08	34.3	14.300N	90.200W	238	460MB	4.12
2991	ISC	27	12	79	02	08	12.2	15.200N	92.900W	126	470MB	4.28
2992	ISC	01	01	80	12	02	40.2	13.800N	91.100W	82	440MB	3.79
2995	ISC	06	01	80	08	22	15.4	12.100N	87.580W	155	460MB	4.12
2997	ISC	08	01	80	16	43	50.9	14.300N	91.400W	89	450MB	3.95
2998	ISC	25	01	80	02	47	05.2	13.600N	90.100W	150	470MB	4.28
3000	ISC	26	01	80	22	40	30.4	11.900N	87.540W	207	400MB	3.13
3002	ISC	01	02	80	02	58	24.2	14.300N	91.800W	108	450MB	3.95
3004	ISC	03	02	80	09	43	10.0	14.010N	91.070W	90		0.
3005	ISC	06	02	80	18	29	08.0	13.790N	89.950W	70		0.
3006	ISC	07	02	80	04	57	59.0	11.220N	86.890W	66	390MB	2.96
3008	ISC	10	02	80	19	26	45.4	14.300N	91.100W	92	440MB	3.79
3013	ISC	12	02	80	20	37	36.0	13.670N	89.340W	110		0.
3016	ISC	17	02	80	01	59	16.5	14.930N	91.610W	130		0.
3019	ISC	04	03	80	03	44	21.7	13.680N	91.170W	70		0.
3020	ISC	04	03	80	06	25	39.7	13.000N	88.400W	73	520MB	5.11
3021	ISC	04	03	80	07	50	36.1	13.100N	88.200W	78	430MB	3.62
3022	ISC	05	03	80	23	21	30.1	12.230N	87.900W	94	440MB	3.79
3023	ISC	07	03	80	06	00	49.7	13.600N	90.500W	103	470MB	4.28
3024	ISC	10	03	80	07	22	25.3	11.900N	87.800W	146	440MB	3.79
3026	ISC	13	03	80	06	27	14.9	11.800N	85.700W	217	460MB	4.12
3027	ISC	14	03	80	04	24	23.1	12.900N	88.400W	74	470MB	4.28
3034	ISC	25	03	80	03	23	09.6	11.300N	86.600W	66	490MB	4.61
3036	ISC	25	03	80	11	53	51.9	12.900N	89.600W	154	430MB	3.62
3037	ISC	27	03	80	04	09	36.2	11.900N	87.400W	79	390MB	2.96
3044	ISC	08	04	80	03	50	11.3	14.000N	92.100W	68	470MB	4.28
3045	ISC	09	04	80	23	14	39.1	11.600N	86.500W	85	490MB	4.61
3048	ISC	12	04	80	13	12	48.5	15.710N	93.550W	60		0.
3057	ISC	28	04	80	15	44	02.0	11.900N	87.800W	176	430MB	3.62
3058	ISC	28	04	80	21	39	28.0	12.600N	88.000W	170	440MB	3.79
3059	ISC	29	04	80	19	07	59.7	13.700N	90.900W	128	470MB	4.28
3062	ISC	04	05	80	02	00	07.3	13.100N	88.100W	77	490MB	4.61
3064	ISC	05	05	80	09	10	29.6	13.500N	89.900W	87		0.
3065	ISC	08	05	80	08	55	12.6	13.600N	89.200W	179	470MB	4.28
3067	ISC	17	05	80	05	47	39.4	13.600N	91.100W	71	490MB	4.61
3068	ISC	17	05	80	20	25	51.3	14.500N	91.010W	149	410MB	3.29
3069	ISC	18	05	80	07	09	39.0	14.700N	91.300W	105	530MB	5.27
3070	ISC	20	05	80	06	26	43.9	13.800N	91.800W	87	390MB	2.96
3072	ISC	26	05	80	19	40	43.5	14.870N	92.050W	120		0.
3075	ISC	04	06	80	07	07	16.7	13.400N	89.300W	65	440MB	3.79
3076	ISC	06	06	80	20	35	36.6	12.600N	87.900W	65	490MB	4.61
3078	ISC	11	06	80	02	38	31.9	14.100N	91.000W	95	500MB	4.78
3080	ISC	27	06	80	06	34	49.5	15.700N	93.900W	82	430MB	3.62
3082	ISC	30	06	80	02	28	58.0	12.500N	91.500W	124	380MB	2.80
3083	ISC	30	06	80	10	06	44.7	11.300N	87.000W	70	460MB	4.12
3087	ISC	13	07	80	23	03	04.0	15.400N	93.290W	85		0.
3088	ISC	14	07	80	10	03	23.0	11.100N	85.500W	96	480MB	4.45
3091	ISC	21	07	80	15	30	30.7	11.500N	86.800W	62	440MB	3.79
3096	ISC	01	08	80	08	16	17.5	12.700N	87.500W	78	520MB	5.11
3102	ISC	09	08	80	14	44	02.0	14.700N	92.800W	129	440MB	3.79
3108	ISC	02	09	80	16	26	36.3	13.600N	91.400W	60	500MB	4.78
3109	ISC	05	09	80	00	27	34.0	15.000N	93.560W	69	430MB	3.62
3112	ISC	19	09	80	22	36	08.8	12.700N	88.500W	105	460MB	4.12

3118	ISC	07	10	80	13	55	16.0	12.300N	89.400W	71	460MB	4.12
3119	ISC	09	10	80	13	46	44.8	14.000N	91.700W	79	460MB	4.12
3121	ISC	16	10	80	09	16	41.3	14.500N	93.100W	70	420MB	3.46
3122	ISC	16	10	80	14	06	37.3	14.400N	93.000W	65	440MB	3.79
3125	ISC	21	10	80	05	40	51.8	14.600N	91.200W	104	420MB	3.46
3129	ISC	04	11	80	16	21	15.3	13.900N	90.900W	83	540MB	5.44
3131	ISC	18	11	80	10	50	45.9	14.000N	91.200W	98	460MB	4.12
3133	ISC	22	11	80	03	00	51.8	14.700N	92.700W	99	470MB	4.28
3136	ISC	26	11	80	18	10	20.9	13.400N	91.100W	68	460MB	4.12
3137	ISC	01	12	80	00	51	01.6	12.700N	86.400W	153	420MB	3.46
3139	ISC	03	12	80	14	52	49.8	13.500N	90.700W	68	480MB	4.45
3142	ISC	15	12	80	10	09	33.0	11.500N	86.200W	136	510MB	4.94
3143	ISC	22	12	80	06	31	08.0	11.300N	86.200W	107	410MB	3.29
3145	ISC	25	12	80	21	14	48.6	14.090N	92.010W	67	390MB	2.96
3148	ISC	12	01	81	10	17	26.9	12.400N	89.400W	88		0.
3149	ISC	15	01	81	10	09	58.1	13.400N	89.000W	148	460MB	4.12
3150	ISC	19	01	81	07	18	26.8	13.600N	90.000W	83	470MB	4.28
3151	ISC	25	01	81	21	21	01.3	12.500N	87.520W	100	440MB	3.79
3152	ISC	27	01	81	01	53	14.3	11.400N	86.300W	74	510MB	4.94
3155	ISC	12	02	81	01	19	51.0	13.900N	90.620W	75		0.
3159	ISC	17	02	81	05	38	24.2	12.300N	88.400W	63	460MB	4.12
3160	ISC	19	02	81	16	41	38.2	12.100N	87.900W	67	480MB	4.45
3165	ISC	01	03	81	17	42	17.3	13.300N	90.860W	103	470MB	4.28
3169	ISC	08	03	81	10	55	42.5	15.270N	92.630W	110	440MB	3.79
3170	ISC	10	03	81	13	27	22.3	13.200N	89.100W	90	500MB	4.78
3173	ISC	30	03	81	11	36	30.2	14.300N	91.700W	82	450MB	3.95
3174	ISC	03	04	81	16	12	13.7	14.000N	90.200W	116	490MB	4.61
3176	ISC	17	04	81	22	23	06.5	15.290N	91.390W	222	410MB	3.29
3177	ISC	20	04	81	05	50	17.4	14.300N	91.500W	63	510MB	4.94
3178	ISC	20	04	81	08	50	43.6	14.200N	91.800W	82	460MB	4.12
3182	ISC	01	05	81	05	50	27.2	12.100N	87.800W	60	500MB	4.78
3185	ISC	07	05	81	23	43	00.0	13.600N	92.360W	70	430MB	3.62
3189	ISC	18	05	81	08	57	05.4	13.900N	90.460W	76	370MB	2.63
3191	ISC	20	05	81	01	50	04.0	13.400N	92.800W	70	440MB	3.79
3195	ISC	03	06	81	11	50	23.6	12.600N	88.200W	178	420MB	3.46
3196	ISC	08	06	81	05	47	55.7	12.600N	88.300W	99	510MB	4.94
3197	ISC	09	06	81	23	00	17.0	13.200N	89.420W	68	470MB	4.28
3199	ISC	17	06	81	06	32	16.0	14.000N	91.200W	97	440MB	3.79
3205	ISC	10	08	81	08	23	05.5	13.900N	90.400W	89	490MB	4.61
3207	ISC	20	08	81	14	20	11.8	13.300N	89.700W	65	460MB	4.12
3211	ISC	07	09	81	16	14	26.0	11.900N	87.300W	129	450MB	3.95
3215	ISC	25	09	81	13	24	14.0	13.200N	88.400W	87	470MB	4.28
3216	ISC	27	09	81	13	32	33.2	14.400N	91.600W	89	510MB	4.94
3217	ISC	27	09	81	14	11	07.5	14.500N	91.700W	73	430MB	3.62
3219	ISC	05	10	81	23	49	40.0	13.900N	90.730W	219	480MB	4.45
3222	ISC	14	10	81	08	09	29.9	12.600N	87.800W	79	490MB	4.61
3223	ISC	14	10	81	11	30	06.6	12.600N	87.800W	70	480MB	4.45
3226	ISC	27	10	81	23	22	13.0	14.570N	93.770W	77		0.
3227	ISC	07	11	81	22	02	49.0	14.600N	90.400W	200	530MB	5.27
3229	ISC	17	11	81	08	12	57.7	13.960N	90.360W	83	440MB	3.79
3232	ISC	08	12	81	23	17	43.1	12.300N	88.100W	145	470MB	4.28
3233	ISC	10	12	81	06	45	05.9	13.230N	88.850W	71	450MB	3.95
3234	ISC	14	12	81	10	17	21.8	11.500N	86.100W	133	450MB	3.95
3235	ISC	18	12	81	14	09	56.1	14.500N	93.500W	62	470MB	4.28
3236	ISC	21	12	81	10	32	11.8	14.800N	92.300W	73	530MB	5.27
3239	ISC	25	12	81	12	58	37.3	11.400N	86.660W	73	430MB	3.62
3240	ISC	28	12	81	16	11	01.1	14.200N	92.200W	76	450MB	3.95
3244	ISC	01	01	82	21	20	41.0	13.200N	90.000W	115	360MB	2.47
3245	ISC	03	01	82	16	43	04.6	13.500N	90.600W	69	460MB	4.12
3246	ISC	07	01	82	07	38	29.0	14.600N	90.740W	105	450MB	3.95
3247	ISC	08	01	82	02	44	33.0	14.600N	92.000W	137	400MB	3.13
[illegible]	ISC	09	01	82	01	55	12.3	13.100N	88.600W	88	470MB	4.28
[illegible]	ISC	09	01	82	12	49	04.3	13.000N	88.900W	80	430MB	3.62
[illegible]	[illegible]	28	02	82	16	22	54.4	12.300N	87.500W	82	420MB	3.46
3260	[illegible]	04	03	82	11	41	03.1	13.300N	89.000W	76	520MB	5.11
3261	[illegible]	06	03	82	21	24	41.5	12.800N	88.000W	65	490MB	4.61
3265	[illegible]	11	03	82	05	16	57.6	14.860N	91.190W	194	440MB	3.79
3266	[illegible]	17	03	82	13	56	15.0	11.600N	86.700W	60	520MB	5.11
3267	[illegible]	17	03	82	14	02	46.6	11.500N	86.800W	211	460MB	4.12
3269	ISC	24	03	82	06	15	51.2	14.800N	92.000W	96	470MB	4.28

3270	ISC	28	03	82	11	47	53.8	11.100N	85.400W	83	450MB	3.95
3272	ISC	06	04	82	16	08	01.8	14.200N	91.900W	62	480MB	4.45
3273	ISC	06	04	82	19	56	53.4	14.300N	92.100W	65	600MB	6.43
3275	ISC	10	04	82	18	16	22.0	13.200N	91.700W	105	430MB	3.62
3276	ISC	11	04	82	19	13	21.1	13.700N	91.900W	64	450MB	3.95
3281	ISC	18	04	82	10	42	10.9	14.300N	91.600W	85	530MB	5.27
3282	ISC	25	04	82	01	35	04.1	12.100N	88.500W	71	440MB	3.79
3288	ISC	04	05	82	01	09	32.7	13.100N	88.400W	75	490MB	4.61
3291	ISC	07	05	82	06	56	12.3	13.800N	90.600W	66	440MB	3.79
3295	ISC	22	05	82	12	19	56.9	12.000N	88.000W	63	490MB	4.61
3297	ISC	25	05	82	02	50	43.7	12.400N	88.300W	178	440MB	3.79
3301	ISC	10	06	82	11	41	57.9	15.100N	93.300W	79	440MB	3.79
3302	ISC	14	06	82	22	54	51.3	14.300N	90.300W	91	470MB	4.28
3303	ISC	19	06	82	06	21	58.0	13.300N	89.300W	82	620MB	6.76
3304	IGN	19	06	82	09	58	11.4	13.050N	90.383W	80		4.00
3305	IGN	19	06	82	14	10	58.1	13.383N	89.700W	60		4.60
3306	IGN	19	06	82	15	05	35.7	13.367N	89.550W	60		3.80
3307	IGN	19	06	82	16	28	10.0	13.367N	89.550W	60		4.50
3308	IGN	20	06	82	00	26	34.7	13.367N	89.550W	60		3.90
3309	IGN	20	06	82	01	11	06.0	13.417N	89.650W	60		3.70
3310	IGN	20	06	82	02	03	40.7	13.367N	89.550W	60		3.90
3311	IGN	20	06	82	11	20	28.1	13.367N	89.550W	60		4.20
3312	IGN	20	06	82	14	23	30.5	13.367N	89.550W	60		5.40
3313	IGN	20	06	82	19	33	03.4	13.350N	89.633W	60		3.80
3314	ISC	21	06	82	05	30	28.7	13.100N	89.300W	61	440MB	3.79
3315	IGN	21	06	82	09	03	45.8	13.367N	89.550W	60		3.70
3316	IGN	21	06	82	18	58	54.0	13.383N	89.700W	60		4.30
3317	ISC	21	06	82	19	49	18.2	13.300N	89.300W	92	510MB	4.94
3318	IGN	21	06	82	20	26	12.7	13.350N	89.633W	60		4.20
3319	IGN	21	06	82	21	14	31.6	13.217N	89.683W	60		4.20
3320	IGN	22	06	82	06	28	41.8	13.317N	89.783W	60		3.80
3321	IGN	22	06	82	20	55	15.8	13.383N	89.700W	60		3.90
3324	IGN	23	06	82	10	56	56.8	13.367N	89.550W	60		5.50
3325	IGN	23	06	82	23	01	18.0	13.383N	89.700W	60		4.00
3326	IGN	23	06	82	23	36	54.4	13.300N	89.583W	60		4.10
3327	IGN	24	06	82	05	04	01.0	13.383N	89.700W	60		3.80
3328	IGN	24	06	82	05	15	05.6	13.300N	89.583W	60		4.20
3329	IGN	24	06	82	11	09	36.0	13.367N	89.883W	60		3.70
3330	IGN	24	06	82	15	56	21.2	13.300N	89.583W	60		5.70
3331	IGN	24	06	82	19	25	36.6	13.300N	89.583W	60		4.80
3332	IGN	25	06	82	10	48	17.5	13.417N	89.750W	60		3.90
3333	IGN	26	06	82	06	55	07.3	13.217N	89.683W	60		4.00
3334	IGN	26	06	82	09	45	56.7	12.883N	89.483W	60		4.10
3336	IGN	27	06	82	21	01	38.9	13.300N	89.583W	60		5.00
3337	IGN	28	06	82	05	11	41.0	13.317N	89.867W	60		3.80
3338	IGN	28	06	82	16	28	35.0	13.300N	89.583W	60		5.00
3340	IGN	01	07	82	04	50	02.5	13.150N	89.717W	60		3.80
3341	IGN	01	07	82	23	52	51.0	13.383N	89.700W	60		3.80
3342	IGN	02	07	82	11	59	50.8	13.050N	89.383W	80		5.50
3343	ISC	02	07	82	21	59	35.6	13.100N	89.300W	64	500MB	4.78
3345	ISC	07	07	82	01	52	41.2	11.500N	86.400W	68	530MB	5.27
3346	ISC	21	07	82	15	59	18.1	12.800N	88.100W	67	480MB	4.45
3348	ISC	24	07	82	18	57	38.7	15.300N	93.900W	61	450MB	3.95
3350	ISC	26	07	82	10	34	58.6	13.400N	89.100W	67	510MB	4.94
3352	ISC	29	07	82	06	13	27.0	14.880N	93.410W	70		0.
3353	ISC	31	07	82	21	55	36.0	14.000N	90.900W	92	450MB	3.95
3359	ISC	13	08	82	22	35	09.0	14.980N	93.800W	60		0.
3360	ISC	16	08	82	06	32	58.8	14.400N	91.600W	76	500MB	4.78
3361	ISC	20	08	82	21	28	05.0	13.900N	90.900W	81	530MB	5.27
3362	ISC	22	08	82	06	22	52.0	13.400N	90.900W	60	430MB	3.62
3364	ISC	05	09	82	02	36	34.9	14.100N	91.800W	62	540MB	5.44
3373	ISC	18	10	82	12	56	58.4	13.800N	90.800W	78	530MB	5.27
3375	ISC	25	10	82	10	19	37.2	14.400N	90.500W	192	460MB	4.12
3377	ISC	27	10	82	07	41	03.3	13.500N	89.300W	72	510MB	4.94
3378	ISC	27	10	82	10	09	03.3	13.500N	89.500W	72	470MB	4.28
3379	ISC	27	10	82	11	51	09.2	13.000N	89.600W	76	460MB	4.12
3382	ISC	30	10	82	16	07	01.8	14.000N	90.600W	86	430MB	3.62
3383	ISC	31	10	82	06	03	04.5	14.100N	90.300W	98	530MB	5.27
3384	ISC	09	11	82	11	46	42.7	14.300N	91.300W	101	470MB	4.28
3385	ISC	11	11	82	03	12	16.6	14.700N	91.600W	106	480MB	4.45
3386	ISC	14	11	82	01	19	35.1	14.500N	92.300W	64	530MB	5.27
3387	ISC	14	11	82	01	53	36.9	13.700N	89.300W	43	430MB	3.62
3389	ISC	18	11	82	13	55	03.2	11.500N	86.600W	60	480MB	4.45
3396	ISC	29	11	82	11	04	59.1	13.600N	90.700W	62	490MB	4.61
3397	ISC	29	11	82	14	58	02.8	13.600N	90.800W	66	420MB	3.46
3400	ISC	02	12	82	10	00	24.0	12.400N	86.800W	87	470MB	4.28
3402	ISC	12	12	82	22	39	40.0	13.900N	89.000W	88		0.
3405	ISC	17	12	82	07	37	54.1	13.200N	89.600W	77	460MB	4.12
3407	ISC	27	12	82	05	52	47.8	13.200N	89.700W	85	440MB	3.79
3408	ISC	29	12	82	11	06	25.8	14.400N	91.600W	85	470MB	4.28
3410	ISC	04	01	83	20	45	34.5	14.100N	91.100W	101		0.
3411	ISC	10	01	83	08	56	53.8	14.000N	88.700W	35		0.
3412	ISC	13	01	83	23	15	59.4	12.000N	86.300W	158	490MB	4.61
3414	ISC	15	01	83	05	42	46.8	13.900N	90.400W	100	480MB	4.45
3415	ISC	17	01	83	17	52	15.7	14.200N	91.100W	83	500MB	4.78
3416	ISC	18	01	83	07	44	28.6	12.900N	88.800W	70	490MB	4.61
3417	ISC	21	01	83	14	40	24.7	12.800N	87.400W	140	470MB	4.28
3419	ISC	18	02	83	07	41	49.7	14.700N	91.000W	150	460MB	4.12
3420	ISC	02	03	83	15	37	22.8	13.100N	89.200W	90	480MB	4.45
3422	ISC	13	03	83	03	08	22.4	12.200N	87.200W	167	450MB	3.95
3423	ISC	14	03	83	09	23	30.7	13.700N	90.900W	96	440MB	3.79
3427	ISC	06	04	83	23	15	47.9	13.200N	89.900W	72	480MB	4.45
3431	ISC	14	04	83	07	19	29.8	14.200N	91.400W	88	540MB	5.44
3434	ISC	22	04	83	07	44	15.1	14.000N	91.600W	79	440MB	3.79
3435	ISC	29	04	83	01	02	19.2	13.400N	89.200W	82	490MB	4.61
3439	ISC	22	05	83	22	14	42.9	13.600N	89.300W	77	420MB	3.46
3441	ISC	09	06	83	22	07	30.2	14.370N	91.370W	122	450MB	3.95
3445	ISC	26	06	83	23	22	57.0	14.050N	90.500W	110	460MB	4.12
3448	ISC	01	07	83	10	20	03.7	13.800N	90.300W	100	440MB	3.79
3449	ISC	03	07	83	01	45	31.6	13.600N	90.400W	85	490MB	4.61
3454	ISC	16	07	83	07	50	14.4	14.700N	93.600W	70	500MB	4.78
3455	ISC	18	07	83	03	45	22.1	14.900N	93.000W	70	440MB	3.79
3456	ISC	18	07	83	12	52	43.4	12.700N	87.200W	86	560MB	5.77
3458	ISC	26	07	83	17	39	59.1	12.200N	86.300W	114	480MB	4.45
3460	ISC	31	07	83	10	39	08.4	12.200N	87.600W	160	480MB	4.45
3461	ISC	31	97	83	20	33	21.7	14.500N	92.000W	118	450MB	3.95
3464	ISC	04	08	83	13	52	41.2	14.400N	91.300W	87	510MB	4.94
3467	ISC	11	08	83	06	29	49.8	13.400N	89.100W	80	450MB	3.95
3471	ISC	30	08	83	22	01	43.0	13.500N	90.000W	100	410MB	3.29
3474	ISC	09	09	83	10	29	56.7	11.700N	87.200W	72	490MB	4.61
3478	ISC	23	09	83	23	04	15.3	12.500N	89.300W	70	510MB	4.94
3479	ISC	01	10	83	21	48	24.9	13.400N	89.700W	76	460MB	4.12
3481	ISC	12	10	83	13	12	07.9	13.700N	91.000W	68	510MB	4.94
3482	ISC	13	10	83	11	42	18.4	13.800N	91.400W	74	510MB	4.94
3485	ISC	19	10	83	09	33	09.1	12.600N	87.700W	67	520MB	5.11
3486	ISC	23	10	83	18	37	53.7	13.400N	91.000W	76	470MB	4.28
3489	ISC	01	11	83	12	38	56.6	11.540N	86.590W	116	470MB	4.28
3490	ISC	05	11	83	20	22	36.0	14.350N	91.700W	78	450MB	3.95
3491	ISC	08	11	83	13	17	18.8	12.400N	86.700W	129	480MB	4.45
3492	ISC	11	11	83	19	22	16.7	13.200N	88.800W	85	470MB	4.28
3495	ISC	22	11	83	16	39	25.9	12.700N	87.500W	185	520MB	5.11
3496	ISC	28	11	83	12	49	24.3	14.200N	91.200W	103	430MB	3.62
3497	ISC	29	11	83	19	28	32.2	13.900N	90.600W	83	470MB	4.28
3498	ISC	30	11	83	03	49	57.4	13.800N	90.800W	67	520MB	5.11
3499	ISC	02	12	83	03	09	05.6	14.100N	91.900W	67	590MB	6.26
3503	ISC	02	12	83	13	45	04.6	14.300N	91.800W	35	480MB	4.45
3508	ISC	10	12	83	20	22	38.0	14.300N	91.700W	80	540MB	5.44
3509	ISC	11	12	83	06	19	34.6	14.100N	91.900W	76	520MB	5.11
3510	ISC	11	12	83	08	32	03.0	14.000N	91.900W	77	490MB	4.61
3515	ISC	21	12	83	11	10	39.6	12.000N	87.200W	103	490MB	4.61
3518	ISC	05	01	84	09	29	52.1	14.400N	89.940W	218		0.
3521	ISC	07	01	84	13	48	24.0	12.400N	88.830W	94	460MB	4.12
3532	ISC	19	01	84	15	26	23.5	11.570N	84.600W	128	460MB	4.12
3533	ISC	21	01	84	00	00	06.4	14.640N	91.940W	100		0.
3538	ISC	06	02	84	07	22	09.0	13.300N	90.300W	80	460MB	4.12
3541	ISC	10	02	84	21	49	33.6	13.900N	90.600W	87	470MB	4.28
3546	ISC	15	02	84	13	11	38.7	11.900N	86.200W	153	460MB	4.12
3547	ISC	15	02	84	22	09	48.0	14.200N	91.800W	71	490MB	4.61
3549	ISC	23	02	84	19	05	07.3	12.700N	87.600W	70	460MB	4.12
3556	ISC	07	03	84	06	23	11.9	15.900N	93.800W	70		0.

3567	ISC	23	03	84	20	21	25.9	15.730N	93.860W	70			0.
3574	ISC	13	04	84	09	17	17.8	12.700N	87.900W	77	480MB	4.45	
3575	ISC	13	04	84	18	44	03.0	11.200N	86.800W	109	450MB	3.95	
3577	ISC	18	04	84	17	00	16.4	14.000N	90.700W	77	450MB	3.95	
3579	ISC	28	04	84	15	58	50.9	12.400N	88.100W	104	440MB	3.79	
3581	ISC	10	05	84	21	01	06.6	12.500N	87.800W	119	430MB	3.62	
3583	ISC	15	05	84	14	05	46.6	11.700N	86.700W	67	500MB	4.78	
3585	ISC	17	05	84	21	58	01.0	11.330N	84.320W	70	370MB	2.63	
3586	ISC	18	05	84	17	01	06.8	11.700N	86.600W	72	530MB	5.27	
3587	ISC	21	05	84	04	23	36.6	12.700N	87.500W	84	440MB	3.79	
3591	ISC	03	06	84	10	39	13.7	12.100N	87.800W	101	460MB	4.12	
3592	ISC	11	06	84	09	51	26.3	13.000N	87.700W	232	500MB	4.78	
3595	ISC	19	06	84	16	17	34.6	12.500N	87.700W	80	540MB	5.44	
3596	ISC	26	06	84	05	01	24.9	14.300N	92.600W	68	460MB	4.12	
3598	ISC	01	07	84	20	59	45.0	13.760N	89.580W	60			0.
3599	ISC	03	07	84	19	18	26.5	13.510N	91.830W	80			0.
3600	ISC	05	07	84	12	37	35.0	14.700N	91.400W	119	400MB	3.13	
3602	ISC	10	07	84	05	54	39.0	12.700N	90.200W	180	430MB	3.62	
3611	ISC	30	07	84	21	32	58.0	13.300N	90.200W	65	500MB	4.78	
3617	ISC	11	08	84	08	19	08.2	13.400N	90.700W	122			0.
3618	ISC	17	08	84	08	18	53.0	13.500N	88.200W	153	490MB	4.61	
3620	ISC	22	08	84	18	13	42.1	11.500N	86.600W	62	530MB	5.27	
3621	ISC	22	08	84	23	53	00.1	11.500N	86.500W	63	510MB	4.94	
3624	ISC	27	08	84	18	45	38.2	12.000N	87.000W	90	490MB	4.61	
3629	ISC	04	09	84	18	44	52.9	11.400N	86.800W	77	460MB	4.12	
3630	ISC	07	09	84	14	09	42.2	13.300N	88.400W	73	480MB	4.45	
3631	ISC	09	09	84	18	18	48.0	13.460N	90.040W	78	420MB	3.46	
3636	ISC	13	09	84	13	46	13.4	11.200N	86.870W	65	430MB	3.62	
3640	ISC	15	10	84	04	31	15.8	11.700N	86.800W	99	440MB	3.79	
3645	ISC	27	10	84	06	55	22.2	13.500N	90.100W	78	470MB	4.28	
3650	ISC	31	10	84	20	44	02.1	14.300N	89.800W	259	420MB	3.46	
3652	ISC	02	11	84	03	48	00.5	13.300N	89.900W	72	530MB	5.27	
3653	ISC	02	11	84	03	57	00.0	13.200N	90.000W	69	430MB	3.62	
3656	ISC	05	11	84	05	57	55.5	14.200N	91.200W	91	470MB	4.28	
3658	ISC	06	11	84	12	38	46.2	15.500N	93.900W	81	420MB	3.46	
3660	ISC	08	11	84	03	07	23.2	13.600N	90.600W	67	490MB	4.61	
3661	ISC	08	11	84	03	17	38.7	13.800N	90.600W	61	440MB	3.79	
3665	ISC	13	11	84	02	02	19.6	12.800N	88.300W	67	460MB	4.12	
3668	ISC	18	11	84	04	25	35.8	14.300N	93.900W	61	430MB	3.62	
3669	ISC	22	11	84	01	25	29.7	13.500N	90.900W	94	440MB	3.79	
3671	ISC	23	11	84	19	27	32.9	14.600N	90.700W	213	480MB	4.45	
3674	ISC	14	12	84	00	18	29.6	13.200N	89.700W	100	440MB	3.79	
3678	ISC	20	12	84	16	26	14.3	11.400N	86.200W	63	540MB	5.44	
3680	ISC	23	12	84	02	35	10.2	14.300N	92.000W	96	410MB	3.29	
3681	ISC	23	12	84	21	42	47.7	13.400N	90.500W	120	400MB	3.13	
3687	PDE	09	01	85	10	03	24.5	13.230N	87.560W	213	460MB	4.12	
3688	PDE	10	01	85	00	09	22.0	12.830N	86.180W	91	440MB	3.79	
3690	PDE	02	02	85	18	29	43.8	12.371N	86.316W	180	450MB	3.95	
3692	PDE	04	03	85	22	11	13.8	15.289N	92.565W	103	500MB	4.78	
3693	PDE	10	03	85	19	33	13.1	13.454N	89.032W	77	520MB	5.11	
3695	PDE	14	03	85	04	49	00.9	13.434N	89.653W	78	430MB	3.62	
3696	PDE	22	03	85	03	28	41.9	11.527N	85.603W	249	440MB	3.79	
3698	PDE	03	05	85	07	02	53.4	11.853N	86.930W	88	510MB	4.94	
3702	PDE	10	05	85	11	09	39.9	12.190N	90.040W	125	410MB	3.29	
3703	PDE	11	05	85	08	46	55.9	12.961N	86.522W	67	450MB	3.95	
3704	PDE	13	05	85	04	13	24.2	13.460N	91.620W	144	420MB	3.46	
3705	PDE	15	05	85	07	26	55.2	11.690N	86.930W	97	470MB	4.28	
3710	PDE	27	05	85	12	40	55.7	14.014N	92.488W	60	440MB	3.79	
3711	PDE	31	05	85	06	00	02.6	15.852N	92.948W	112	480MB	4.45	
3713	PDE	02	06	85	06	37	43.3	15.423N	91.793W	168	500MB	4.78	
3715	PDE	05	06	85	04	21	04.2	14.133N	91.950W	69	490MB	4.61	
3717	PDE	09	06	85	17	49	28.6	15.670N	92.080W	138	410MB	3.29	
3720	PDE	12	06	85	11	03	04.9	15.765N	93.966W	63	550MB	5.60	
3721	PDE	13	06	85	11	42	32.3	14.729N	90.546W	223	500MB	4.78	
3726	PDE	24	06	85	02	59	54.5	13.289N	89.817W	71	440MB	3.79	
3733	PDE	17	07	85	05	33	40.2	15.253N	92.380W	173	480MB	4.45	
3735	PDE	30	07	85	21	51	35.9	13.297N	89.160W	80	510MB	4.94	
3738	PDE	17	08	85	06	58	55.3	12.956N	88.685W	81	500MB	4.78	
3740	PDE	02	09	85	19	28	36.1	14.284N	91.124W	146	410MB	3.29	
3743	PDE	12	09	85	23	49	19.0	15.523N	91.689W	174	460MB	4.12	
3750	PDE	23	10	85	15	27	56.7	14.232N	91.849W	61	490MB	4.61	
3755	PDE	12	11	85	21	47	54.2	15.834N	92.588W	185	420MB	3.46	
3757	PDE	15	11	85	05	39	12.5	13.088N	88.690W	89	500MB	4.78	
3758	PDE	16	11	85	04	22	38.4	16.210N	92.963W	160	470MB	4.28	
3760	PDE	20	11	85	04	45	40.7	14.810N	93.550W	97	470MB	4.28	
3761	PDE	22	11	85	00	55	18.7	13.336N	89.291W	74	370MB	2.63	
3763	PDE	27	11	85	15	08	57.7	13.882N	90.939W	74	510MB	4.94	
3764	PDE	28	11	85	07	20	07.8	14.180N	89.880W	271	440MB	3.79	
3768	PDE	13	12	85	07	10	07.0	14.108N	91.597W	105	480MB	4.45	
3776	PDE	28	12	85	21	37	56.5	11.670N	85.620W	128	420MB	3.46	
3777	PDE	27	01	86	00	52	37.1	15.222N	91.982W	97	440MB	3.79	
3785	PDE	15	02	86	21	37	48.6	14.774N	91.414W	136	530MB	5.27	
3787	PDE	20	02	86	00	13	43.8	14.661N	91.833W	102	470MB	4.28	
3788	PDE	20	02	86	20	54	33.9	17.605N	94.974W	139	480MB	4.45	
3790	PDE	25	02	86	09	25	29.9	14.300N	92.790W	102	430MB	3.62	
3793	PDE	04	03	86	07	27	24.2	11.827N	85.818W	187	450MB	3.95	
3795	PDE	09	03	86	19	13	48.3	11.305N	85.927W	103			0.
3797	PDE	14	03	86	01	13	13.5	15.678N	92.801W	165	420MB	3.46	
3798	PDE	19	03	86	23	37	10.2	14.767N	93.819W	35	450MB	3.95	
3800	PDE	24	03	86	10	33	57.5	14.132N	91.318W	67	510MB	4.94	
3801	PDE	29	03	86	03	08	29.3	14.139N	90.595W	160			0.
3810	PDE	07	04	86	00	05	13.4	12.160N	90.202W	65			0.
3811	PDE	17	04	86	09	09	45.9	12.511N	88.721W	68	480MB	4.45	
3814	PDE	08	05	86	21	02	31.7	12.655N	88.000W	95	480MB	4.45	
3821	PDE	18	08	86	10	03	05.4	14.775N	92.606W	113	430MB	3.62	
3827	PDE	30	06	86	22	52	12.4	11.254N	86.035W	64	540MB	5.44	
3829	PDE	02	08	86	17	49	25.6	13.073N	88.806W	80	540MB	5.44	
3830	PDE	03	08	86	12	15	11.9	15.717N	92.428W	136	450MB	3.95	
3831	PDE	05	08	86	17	40	02.2	16.894N	93.588W	139	500MB	4.78	
3849	PDE	01	11	86	23	12	39.0	11.593N	86.783W	119	460MB	4.12	
3853	PDE	29	11	86	18	42	18.9	11.248N	85.861W	77	460MB	4.12	
3855	PDE	01	12	86	11	45	39.3	11.810N	87.741W	69	490MB	4.61	
3857	PDE	03	12	86	14	26	44.7	14.457N	91.655W	89	490MB	4.61	
3858	PDE	04	12	86	05	01	21.2	15.685N	92.935W	67	500MB	4.78	
3860	PDE	09	12	86	23	48	50.2	12.439N	86.602W	123	480MB	4.45	
3865	PDE	20	12	86	18	05	36.9	13.877N	91.716W	69	480MB	4.45	
3867	PDE	21	12	86	06	03	18.5	12.743N	87.695W	68	490MB	4.61	
3870	PDE	25	12	86	16	17	53.1	15.040N	92.986W	87	470MB	4.28	

CHIXOY-POLOCHIC FAULT ZONE

CHRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
1	WHITE2		538					15.463N	90.154W	0		7.50
2	WHITE2		702					15.167N	90.583W	0		6.50
6	WHITE205	05	714					15.560N	92.156W	0		6.50
16	WHITE215	02	741					15.333N	90.438W	0		7.00
24	WHITE208	03	750					15.571N	91.479W	0		6.70
40	WHITE206	01	785					15.366N	89.782W	0		7.50
43	WHITE2		12795					15.464N	91.458W	0		6.50
48	WHITE222	07	816					15.354N	91.372W	0		7.70
49	WHITE206	06	820					15.095N	90.344W	0		6.50
885	CGS-B	15	09	64	07	51	28.8	15.400N	90.600W	33	390MB	2.96
886	GELL	15	09	64	05	09	23.2	15.100N	91.000W	33	380MB	2.80
1147	CGS-B	26	10	66	20	43	19.8	15.200N	90.600W	20	440MB	3.79
1294	CGSPDE	04	10	67	00	12	12.6	15.700N	88.600W	33	440MB	3.79
1537	CGS	708	01	70	16	18	55.5	15.335N	90.507W	25	440MB	3.79
1928	ISC	12	12	72	08	16	50.0	15.400N	89.400W	0	400MB	3.13
2180	PDE	24	03	75	07	15	32.3	15.100N	90.800W	33	450MB	3.95
2205	ISC	04	06	75	16	35	49.0	15.200N	89.900W	33	420MB	3.46
2218	ISC	01	07	75	02	37	46.0	15.400N	92.100W	0	490MB	4.61
2307	PDE	04	02	76	17	20	44.7	15.856N	88.286W	5	440MB	3.79
2313	PDE	05	02	76	04	09	30.2	15.232N	90.626W	5	430MB	3.62
2318	PDE	06	02	76	01	57	17.6	15.363N	90.278W	5	400MB	3.13
2801	ISC	24	09	78	23	41	14.2	15.300N	90.900W	33	470MB	4.28
3095	ISC	28	07	80	17	16	04.9	15.800N	88.700W	33	430MB	3.62
3101	ISC	09	08	80	05	45	09.5	15.900N	88.500W	22	610MB	6.59
3107	ISC	02	09	80	10	28	08.8	15.900N	88.300W	25	530MB	5.27
3243	ISC	31	12	81	02	44	06.1	15.100N	90.900W	33	410MB	3.29
3670	ISC	23	11	84	10	51	28.1	15.900N	88.800W	33	410MB	3.29
3747	PDE	11	10	85	03	39	10.9	15.299N	90.863W	5	450MB	3.95
3773	PDE	19	12	85	07	32	00.9	15.268N	91.978W	33	480MB	4.45
3774	PDE	20	12	85	01	27	40.8	15.520N	92.040W	33	390MB	2.96
3871	PDE	28	12	86	07	31	34.9	15.335N	89.753W	5	440MB	3.79

MOTAGUA FAULT ZONE

CHRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
5	WHITE212	09	713					14.941N	90.750W	0		6.50
41	WHITE2		786					14.961N	91.052W	0		6.50
50	WHITE206	05	821					15.024N	91.167W	0		6.50
184	SSA	19	05	34	10	47	36	14.800N	91.000W	0		0.
189	GELL	24	12	34	14	35	48.0	15.000N	91.000W	0		0.
211	SCMUL	26	12	37				15.300N	89.400W	0		0.
237	ISS	15	02	41				15.300N	89.400W	0		0.
241	GELL	24	01	43	09	26	42.0	14.900N	91.000W	0		0.
269	WHITE210	08	45		11	20	00.0	15.250N	89.133W	0	0	5.80
270	GELL	10	08	45	14	09	05.0	15.500N	89.000W	0		0.
274	WHITE210	10	45					15.345N	89.063W	0		5.50
275	BSS36	27	10	45	11	24	05	15.000N	91.000W	0		0.
287	ISS	09	05	47				15.300N	89.400W	0		0.
447	GELL	03	01	59	08	40	12.0	15.000N	90.000W	0		0.
472	GELL	04	12	59	09	50	18.0	15.000N	90.500W	0		0.
484	GELL	03	03	60	11	48	55.0	14.833N	89.833W	0		0.
628	CGS-B	19	10	63	21	22	25.2	15.200N	89.200W	33	390MB	2.96
629	CGS-B	28	10	63	02	25	07.9	14.800N	90.800W	33	390MB	2.96
937	ISC	11	01	65	09	11	58.0	15.000N	91.000W	0		0.
1199	ISC	28	03	67	20	01	07.0	14.800N	91.000W	0	380MB	2.80
1698	ISC	12	02	71	02	30	59.0	15.000N	90.500W	33		0.
1879	ISC	24	08	72	01	03	19.0	14.900N	90.550W	33		0.
1934	ERL	7425	12	72	00	26	28.1	15.215N	88.943W	34	460MB	4.12
2305	PDE	04	02	76	09	30	29.4	14.943N	90.562W	5	540MB	5.44
2306	ISC	04	02	76	09	01	43.4	15.300N	89.100W	5	620MB	7.50
2308	PDE	04	02	76	16	40	53.9	15.361N	89.184W	5	450MB	3.95
2309	PDE	04	02	76	12	57	52.8	15.421N	89.223W	5	430MB	3.62
2310	ISC	04	02	76	19	42	24.9	14.800N	91.000W	33	460MB	4.12
2315	ISC	06	02	76	04	11	04.5	14.900N	91.000W	5	470MB	4.28
2316	PDE	06	02	76	18	19	17.9	14.764N	90.610W	5	570MB	5.93
2322	PDE	08	02	76	08	13	46.7	15.571N	88.466W	5	520MB	5.11
2326	PDE	09	02	76	11	44	46.6	15.319N	89.073W	5	520MB	5.11
2327	PDE	10	02	76	02	28	39.8	14.921N	90.778W	5	420MB	3.46
2329	PDE	10	02	76	06	17	42.6	14.833N	89.798W	5	490MB	4.61
2341	PDE	07	03	76	03	15	41.2	14.808N	90.889W	5	510MB	4.94
2342	PDE	09	03	76	07	42	37.3	14.869N	90.943W	5	520MB	5.11
2346	ISC	13	03	76	16	30	44.0	14.780N	91.000W	5	540MB	5.44
2384	PDE	26	04	76	15	24	22.0	15.016N	89.607W	5	410MB	3.29
2572	ISC	07	04	77	20	28	28.7	14.800N	91.200W	33	490MB	4.61
2597	ISC	03	06	77	07	18	31.9	15.000N	90.800W	33		0.
2734	ISC	30	03	78	19	30	09.0	14.970N	90.420W	33	510MB	4.94
2870	ISC	14	01	79	21	41	39.5	15.000N	91.500W	33	480MB	4.45
2912	ISC	15	05	79	22	44	42.2	15.740N	88.300W	33	460MB	4.12
2959	ISC	10	10	79	02	20	18.1	15.600N	88.700W	33	480MB	4.45
3042	ISC	04	04	80	19	51	39.0	14.900N	90.000W	33	460MB	4.12
3433	ISC	15	04	83	01	35	03.6	15.500N	88.700W	10	490MB	4.61
3554	ISC	02	03	84	07	04	00.1	14.940N	90.670W	33		0.
3619	ISC	19	08	84	11	06	43.6	14.900N	89.800W	33	430MB	3.62

JOCOTAN-CHAMELECON FAULT ZONE

CHRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
21	WHITE215	10743						14.765N	89.583W	0		6.50
29	WHITE202	06765						14.608N	89.594W	0		7.20
187	GELL	03	12	34	01	35	36.0	15.000N	89.000W	0		0.
188	GUTE	03	12	34	02	38	29.0	15.000N	88.750W	0	0	6.25
567	SYKES	17	12	61	00	51	43	15.700N	88.020W	0		0.
932	ISC	30	12	64	14	51	50.1	15.400N	88.300W	33	380MB	2.80
1307	ISC	26	10	67	09	48	30.0	15.000N	88.800W	33	410MB	3.29
1389	CGSPDE	14	07	68	03	55	24.9	15.237N	88.843W	14	450MB	3.95
1564	ISC	26	02	70	01	27	06.0	14.900N	89.100W	33	510MB	4.94
2188	ISC	14	04	75	05	42	54.0	15.600N	88.200W	33	410MB	3.29
2448	PDE	14	07	76	09	23	30.4	15.571N	88.042W	33	460MB	4.12
2625	ISC	05	07	77	13	05	31.3	14.980N	89.050W	33	470MB	4.28
3054	ISC	21	04	80	13	17	57.1	14.600N	89.800W	33	460MB	4.12
3254	ISC	01	02	82	05	15	39.6	14.700N	89.790W	33	440MB	3.79
3428	ISC	09	04	83	22	34	48.8	15.370N	88.570W	33		0.
3429	ISC	09	04	83	22	52	29.0	15.300N	88.400W	33	470MB	4.28

HONDURAS DEPRESSION ZONE

CHRONOLOGICAL ORDER	DATA SOURCE	DAY	MONTH	YEAR	HOUR	MINUTE	SECOND	LATITUDE	LONGITUDE	DEPTH	MB MAGNITUDE	MAGNITUDE
89	WHITE229	12	15	02	23	00.0		14.600N	88.583W	0		6.30
119	ISS	21	05	24	10	12	50	14.500N	88.700W	0		0.
132	ISS	26	05	26	17	53	30	14.500N	88.700W	0		0.
133	ISS	21	07	26	02	23	00	14.500N	88.700W	0		0.
224	SSA	28	09	39	14	58	30	14.500N	89.000W	0		0.
225	BSS30	28	09	39	14	58	30	14.500N	89.000W	0		0.
459	GELL	06	07	59	08	51	24.0	15.000N	88.500W	0		0.
539	SYKES	20	06	61	09	49	02	15.670N	87.140W	30		3.90
557	SYKES	25	08	61	05	41	58	15.560N	87.090W	0		4.10
641	ISC	03	01	64	04	25	39.0	14.400N	88.100W	33	400MB	3.13
643	CGS-B	09	01	64	18	38	10.8	14.900N	87.900W	33	470MB	4.28
753	ISC	19	04	64	17	52	00	14.470N	88.950W	10		0.
1431	CGS 1525	02	69	02	01	44.0		15.274N	87.544W	13	480MB	4.45
1432	CGS 1525	02	69	07	39	00.6		15.231N	87.466W	15	540MB	5.00
1751	NOS 4518	06	71	13	36	01.1		14.678N	87.567W	7	500MB	4.78
1908	ISC	29	10	72	23	17	28.0	14.200N	88.000W	0	410MB	3.29
2328	PDE	10	02	76	17	35	52.3	14.515N	88.964W	5	460MB	4.12
2362	ISC	16	04	76	11	04	44.0	14.700N	87.300W	33		0.
2364	ISC	16	04	76	20	02	56.0	14.500N	87.400W	33		0.
2403	ISC	18	05	76	15	55	32.0	15.400N	88.100W	33	460MB	4.12
2473	ISC	24	08	76	08	08	03.6	15.100N	88.300W	33	460MB	4.12
2877	ISC	05	02	79	22	38	49.4	14.200N	88.170W	33		0.
3052	ISC	20	04	80	07	51	01.3	14.490N	88.760W	33		0.
3055	ISC	22	04	80	09	08	50.0	14.540N	88.230W	33		0.
3283	ISC	27	04	82	00	14	03.1	14.500N	87.700W	33	500MB	4.78
3284	ISC	27	04	82	00	53	21.6	14.400N	87.800W	33	490MB	4.61
3285	ISC	27	04	82	03	15	20.4	14.500N	87.700W	34	450MB	3.95
3286	ISC	27	04	82	04	53	39.7	14.700N	87.700W	33	450MB	3.95
3351	ISC	27	07	82	06	54	43.8	14.600N	87.900W	33	490MB	4.61
3366	ISC	29	09	82	03	48	00.1	14.500N	89.100W	15	510MB	4.94
3367	ISC	29	09	82	05	50	32.2	14.500N	89.100W	12	550MB	5.60
3648	ISC	30	10	84	06	07	51.0	14.700N	87.400W	33		0.

APPENDIX C

SEISMIC PROVINCES

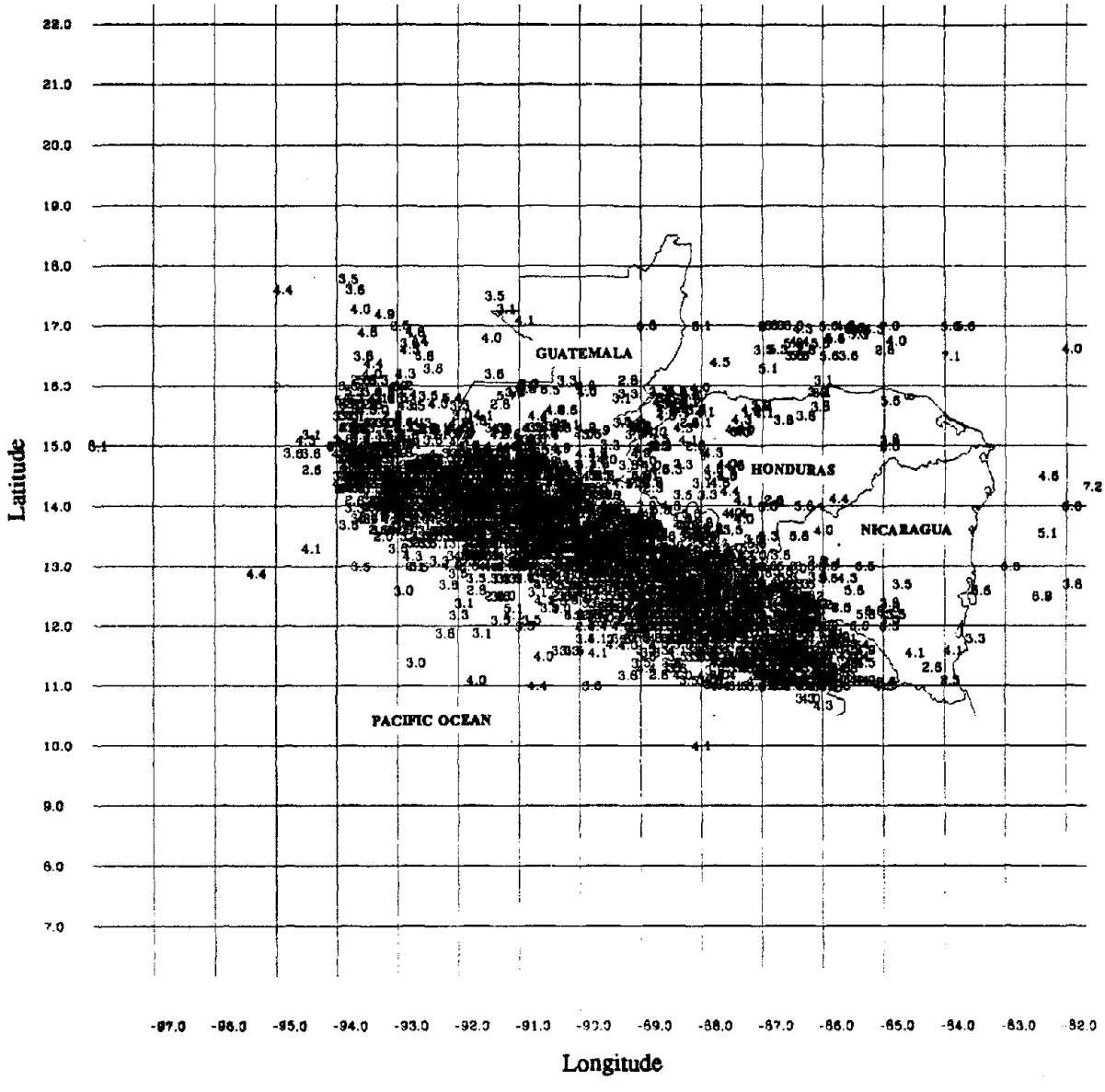

Figure C.1. Earthquake epicenters from all seismic sources for all depths and M≥3.0 since 1538.

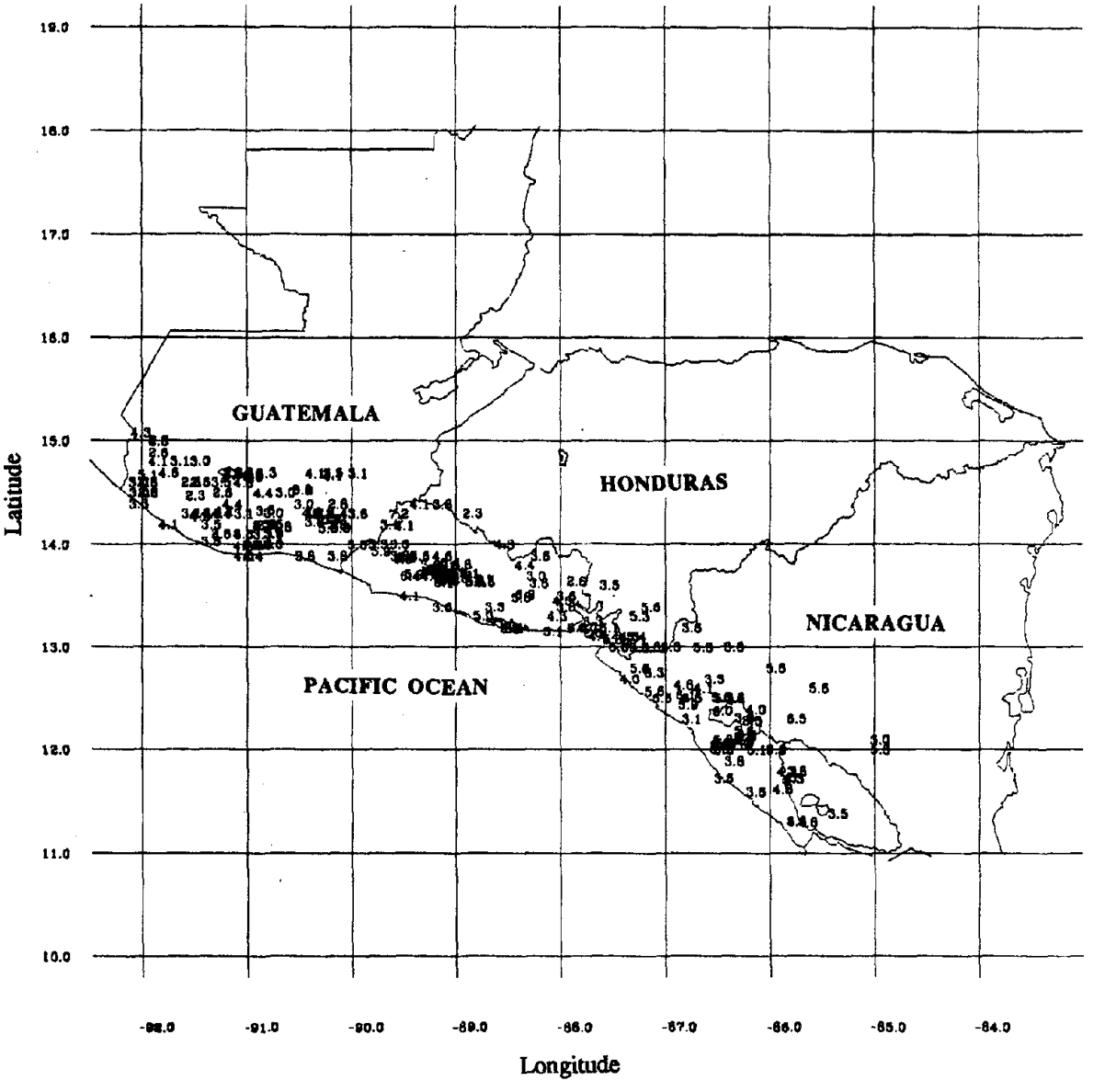

Figure C.2. Earthquake epicenters for the Volcanic Chain for M≥3.0 since 1730.

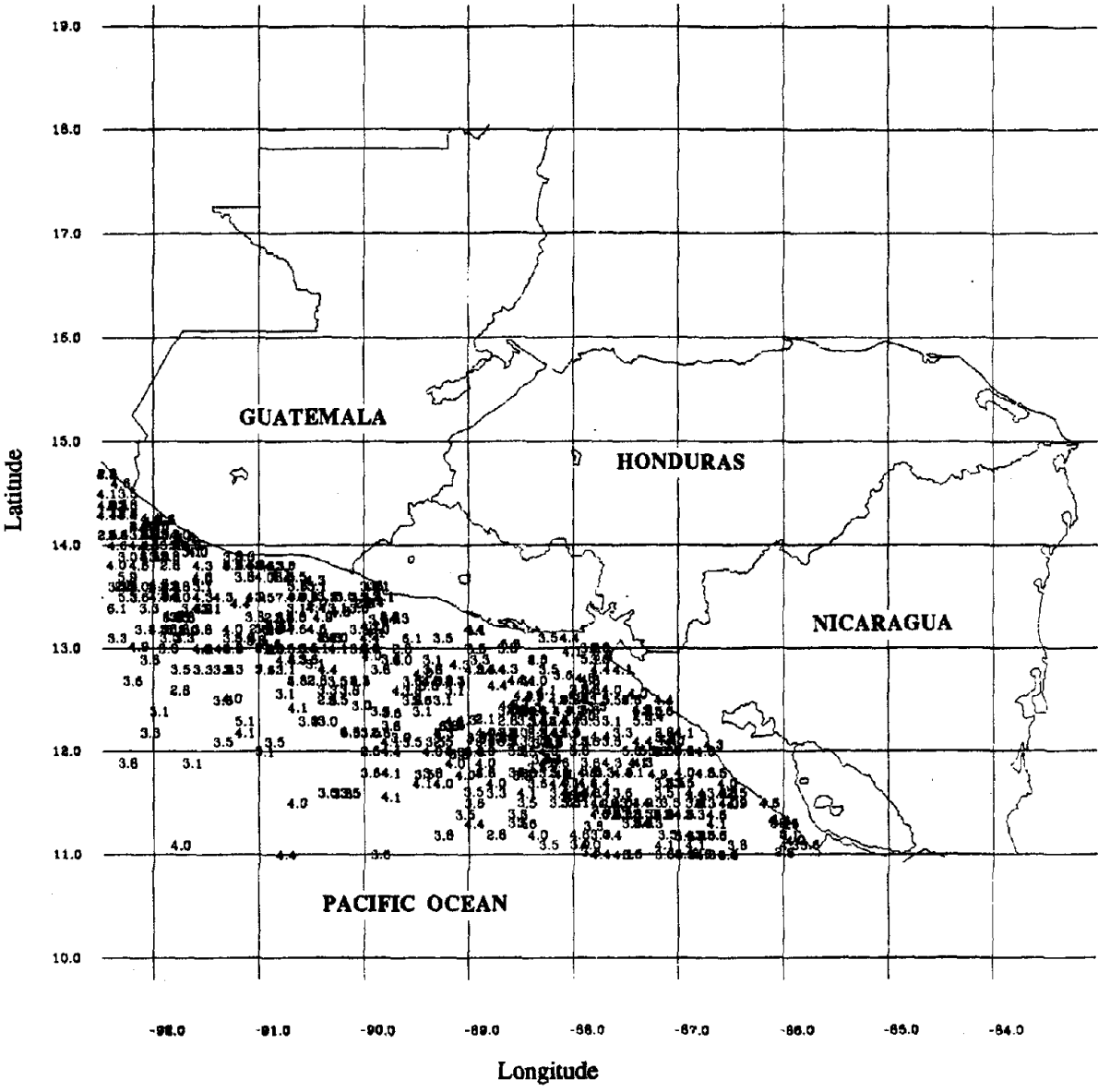

Figure C.3. Earthquake epicenters for the Shallow Benioff Zone for M≥3.0 since 1711.

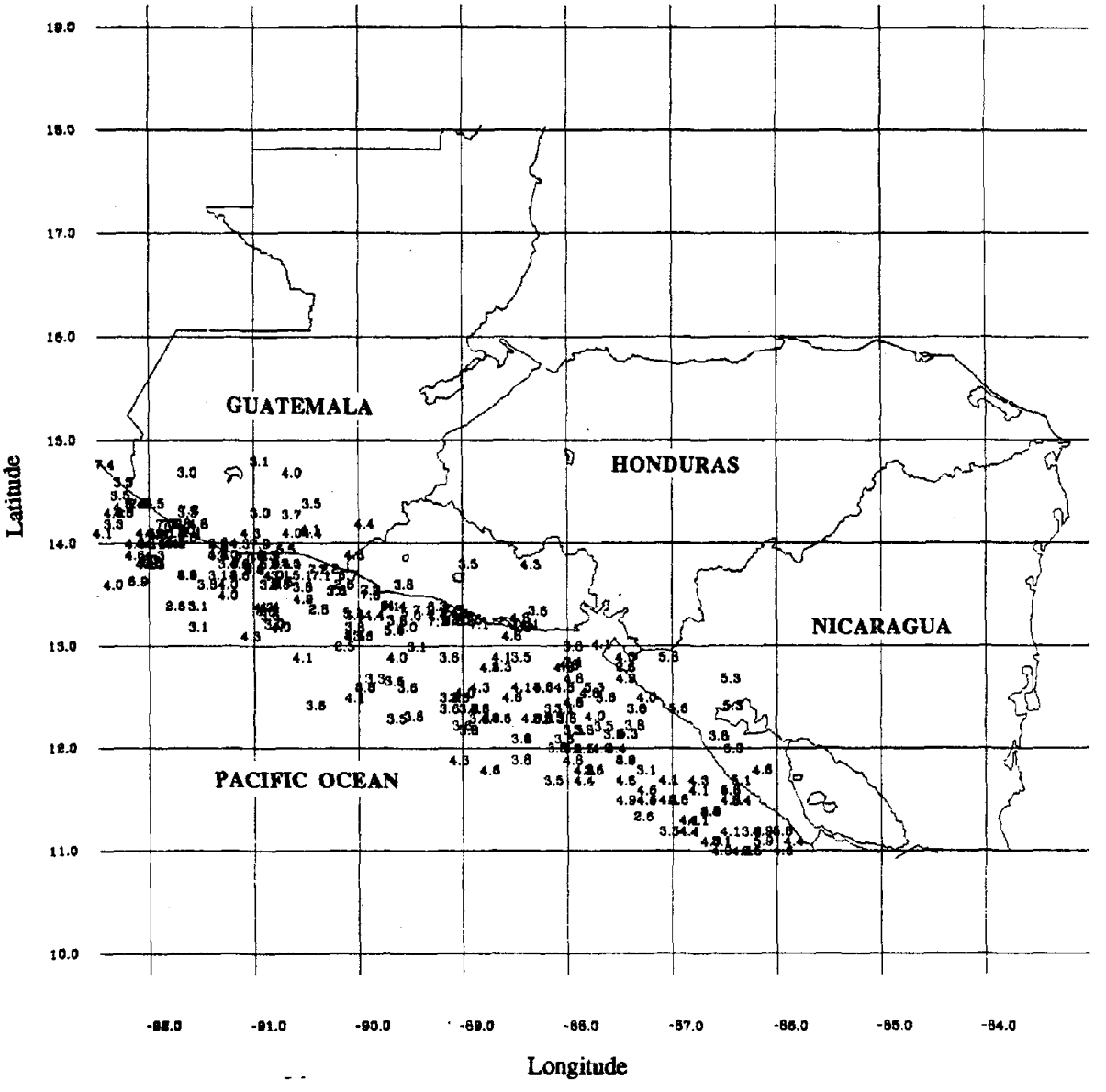

Figure C.4. Earthquake epicenters for the Intermediate Benioff Zone for M≥3.0 since 1711.

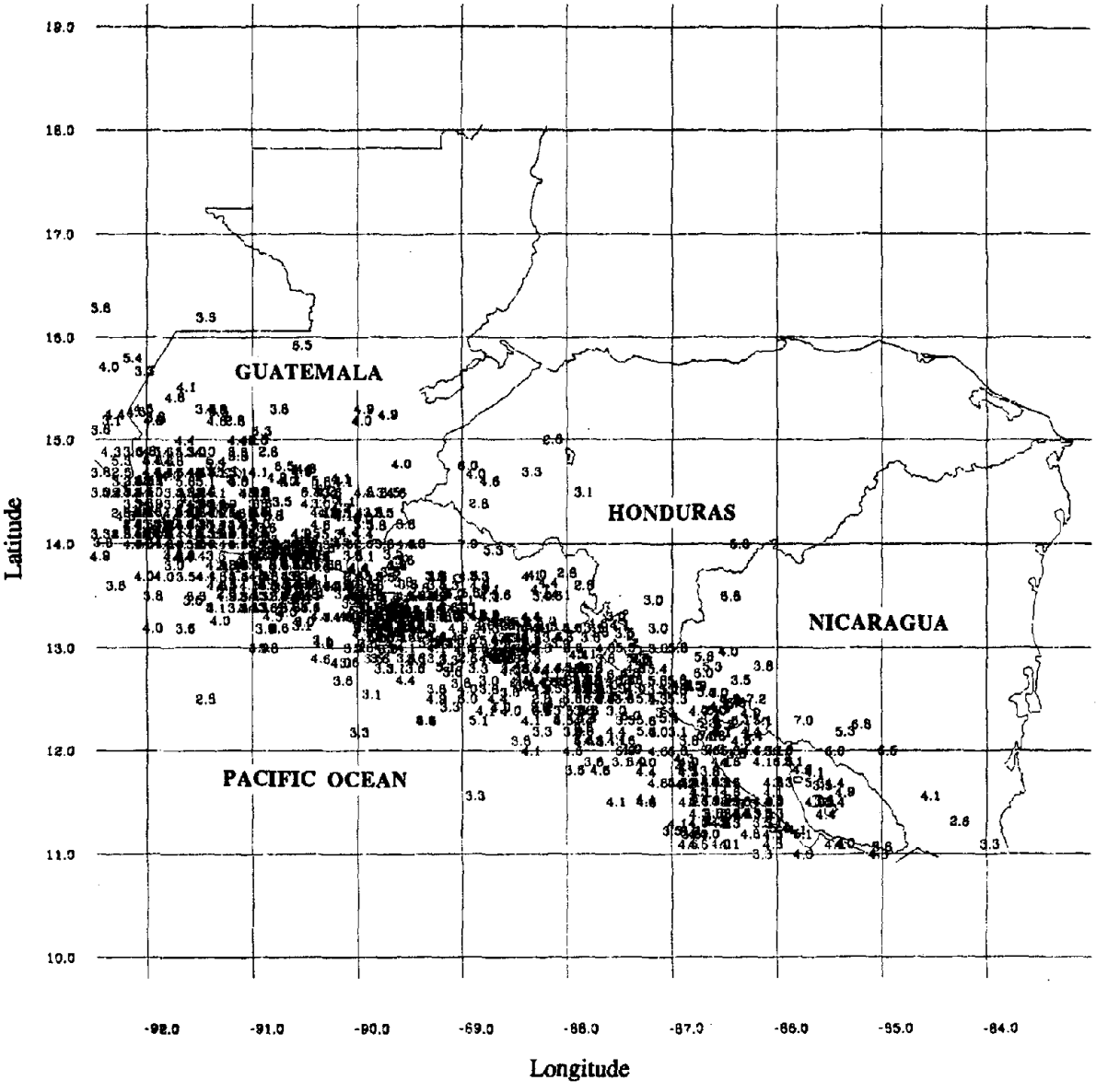

Figure C.5. Earthquake epicenters for the Deep Benioff Zone for M≥3.0 since 1711.

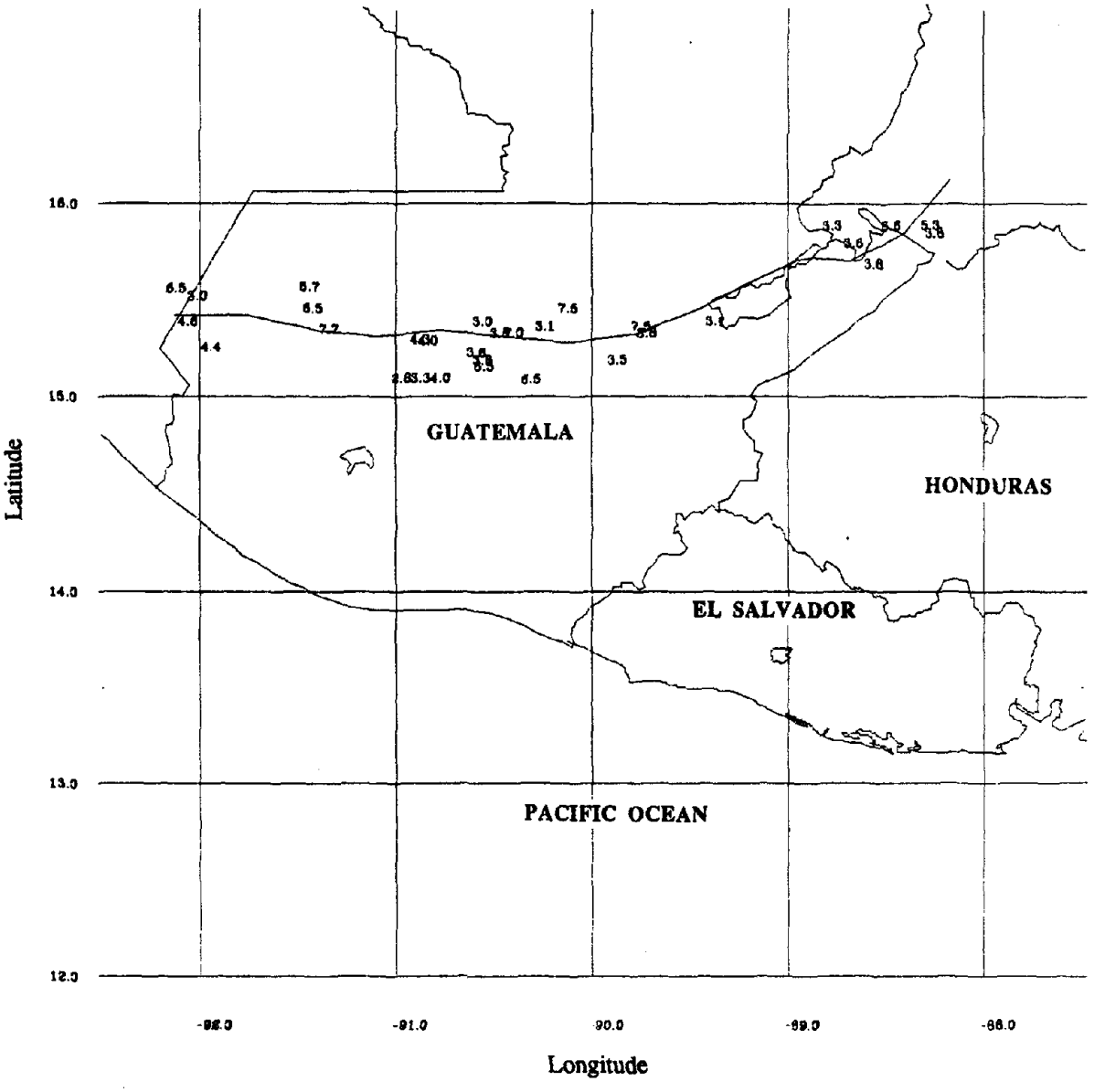

Figure C.6. Earthquake epicenters for the Chixoy-Polochic Fault Zone for M≥3.0 since 1538.

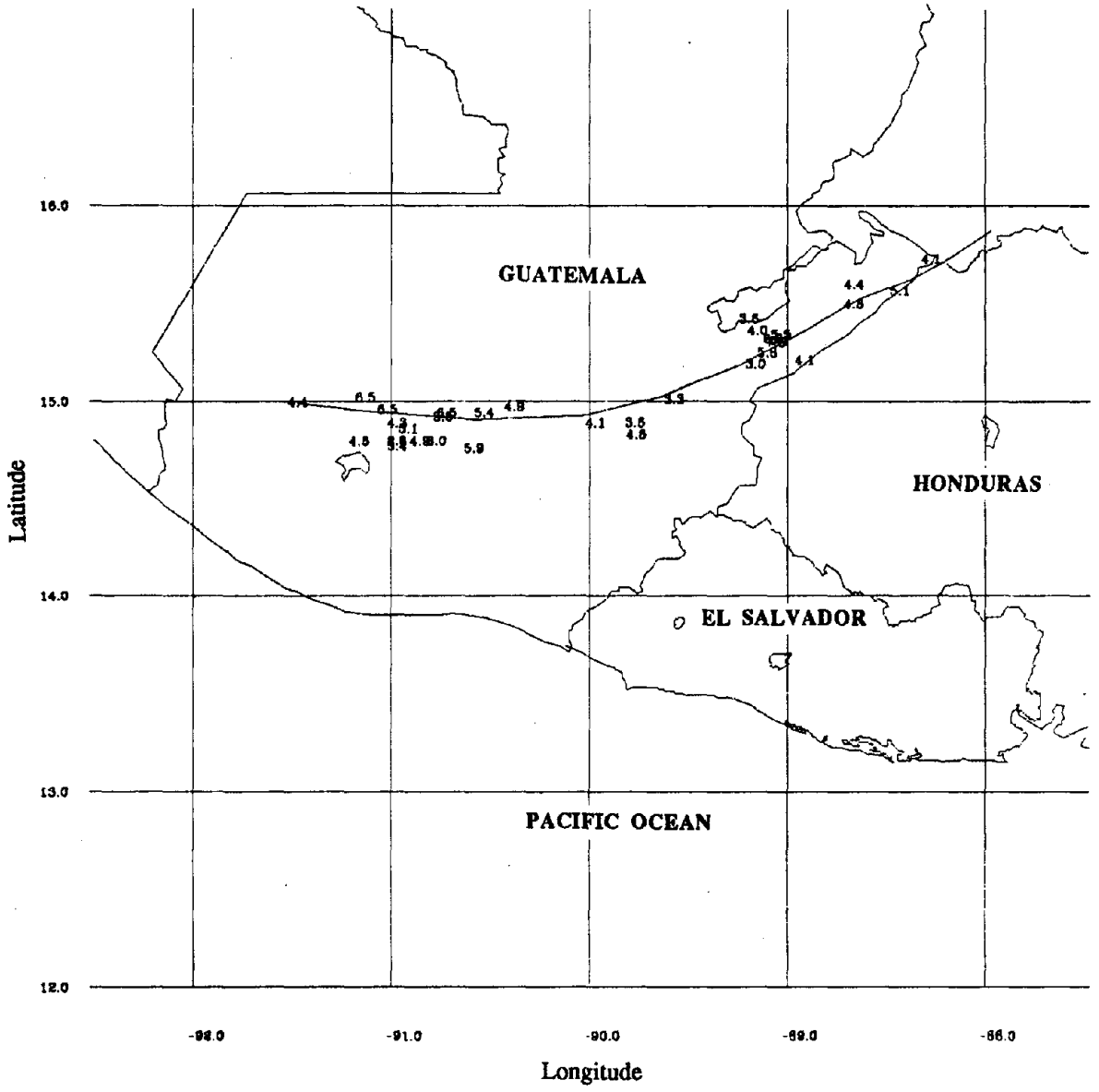

Figure C.7. Earthquake epicenters for the Motagua Fault Zone for M≥3.0 since 1700.

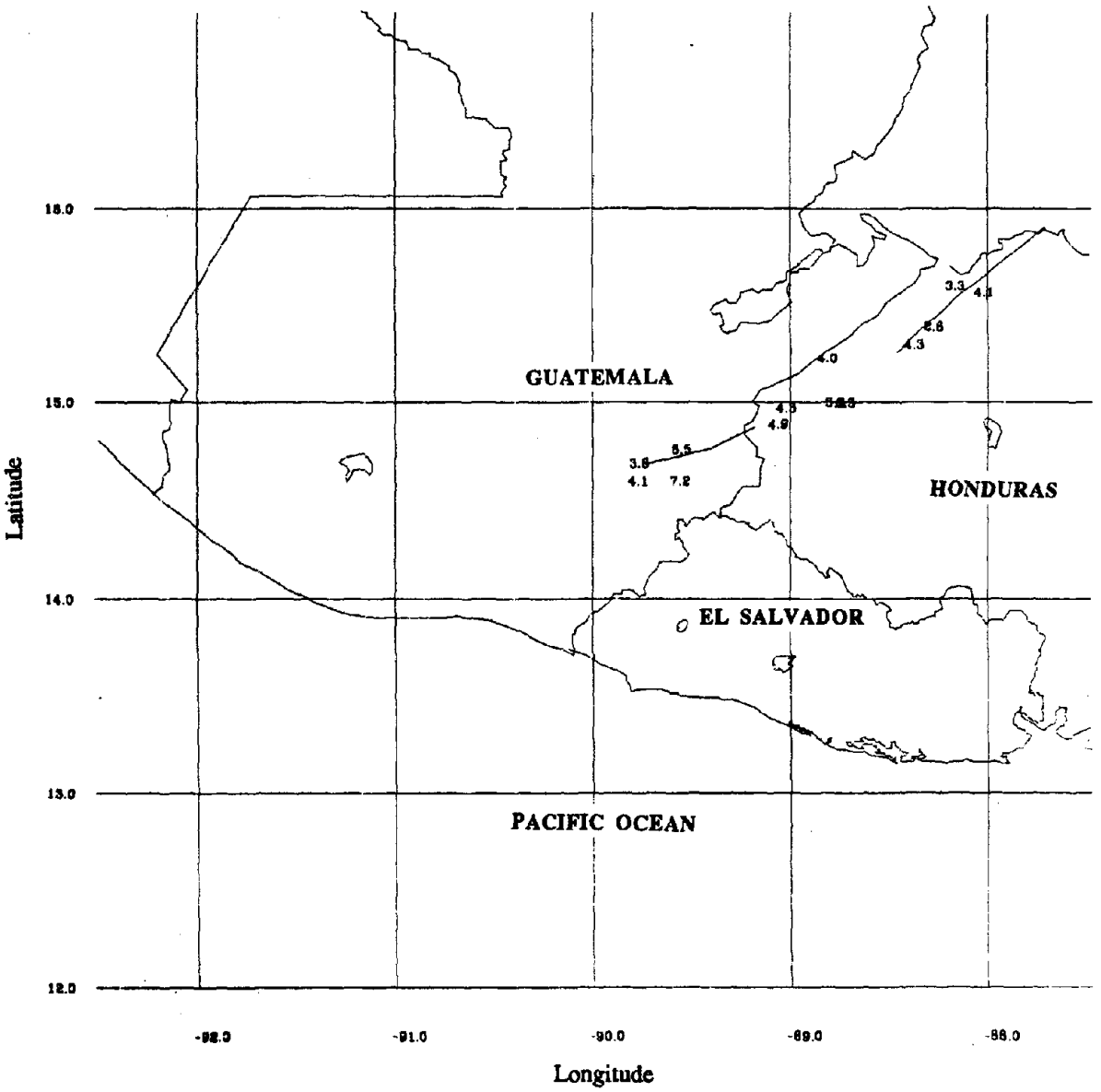

Figure C.8. Earthquake epicenters for the Jocotan-Chamelecon Fault Zone for M≥3.0 since 1700.

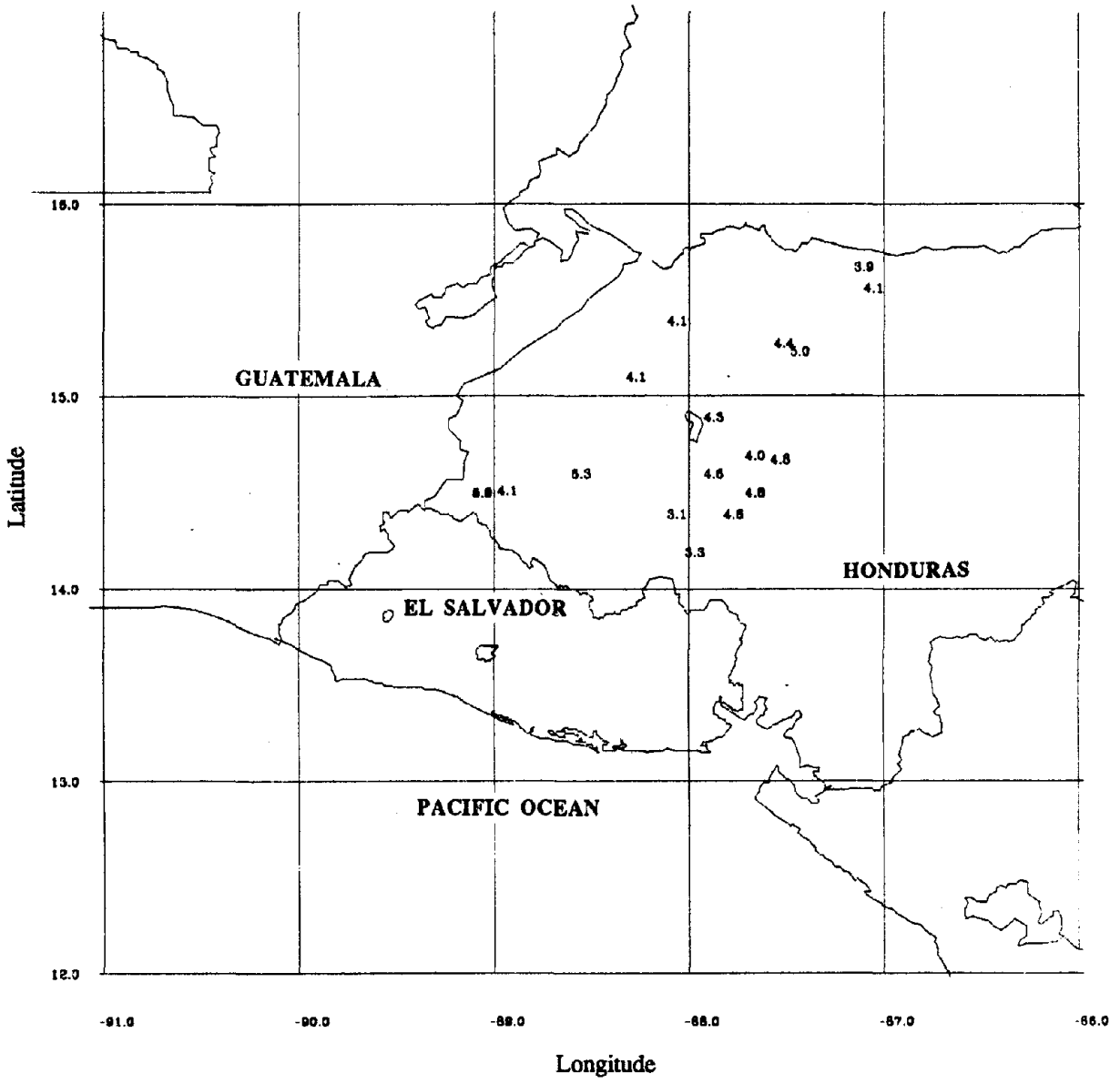

Figure C.9. Earthquake epicenters for the Honduras Depression Zone for M≥3.0 since 1915.

APPENDIX D

EARTHQUAKE RECURRENCE RELATIONSHIPS

APPENDIX D

EARTHQUAKE RECURRENCE RELATIONSHIPS

D.1 Introduction.

This appendix presents a review of different calculation methods of an earthquake recurrence relationship. In the past, Gutenberg and Richter (1956), Wiechert (1980), and Dong et al. (1984) suggested, respectively, the use of the least squares method, the maximum likelihood method, and the maximum entropy method for the development of earthquake recurrence relationships. These methods are described and applied to the seismicity of several seismic sources in El Salvador. The evaluation and adequacy of these relationships is discused below.

D.2 The Least Squares Method.

The simplest and most common method of representing information on earthquake occurrences is by a least squares best fitted line. This method states that the occurrence of earthquakes during a period of time is approximated by the following relationship:

$$\ln N(M) = \alpha + \beta M \tag{D.1}$$

where N(M) is the number of events above a magnitude M. α and β are regression constants obtained through least squares fit to the data. This equation assumes temporal and spatial independence of all events. α and β are given by

$$\alpha = \frac{\sum_i \ln N(m) + \sum_i m_i \beta}{n} \tag{D.2}$$

and

$$\beta = \frac{\sum_i m_i \sum_i \ln N(m_i) - n \sum_i \ln N(m_i)}{n \sum_i m_i^2 - (\sum_i m_i)^2} \tag{D.3}$$

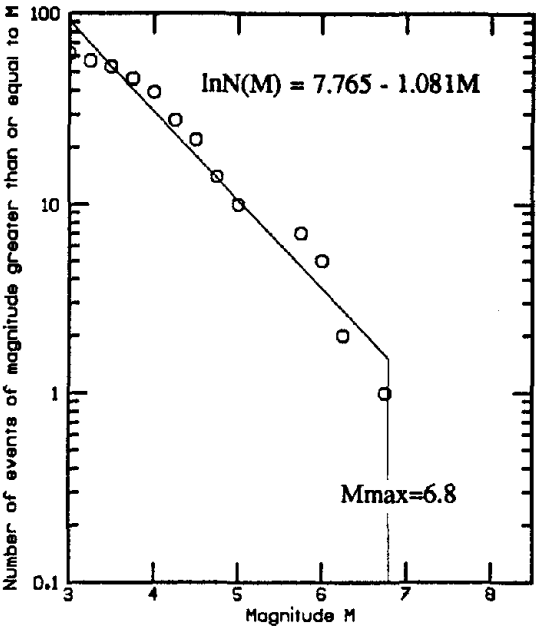

Figure D.1. Recurrence relationship for the Guatemalan Segment of the Volcanic Chain Zone for a time period of 256 yrs.

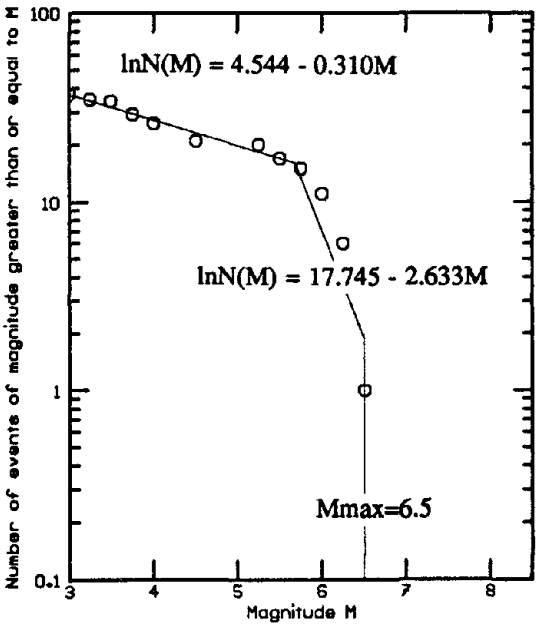

Figure D.2. Recurrence relationship for the Central El Salvador Segment of the Volcanic Chain Zone for a time period of 256 yrs.

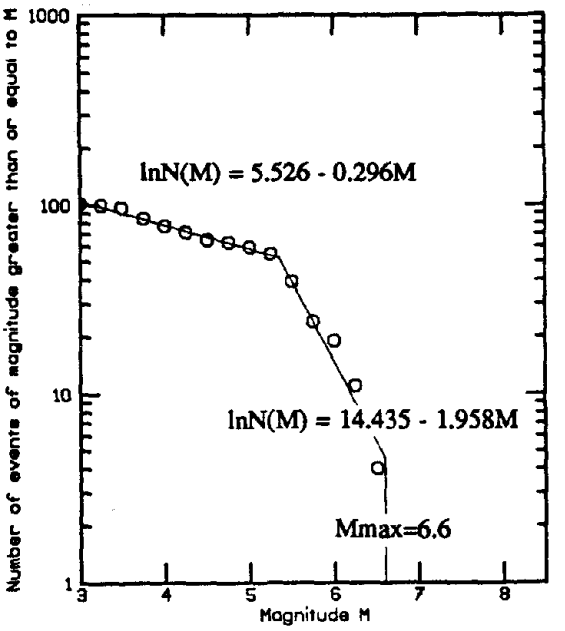

Figure D.3. Recurrence relationship for the Eastern El Salvador Segment of the Volcanic Chain Zone for a time period of 256 yrs.

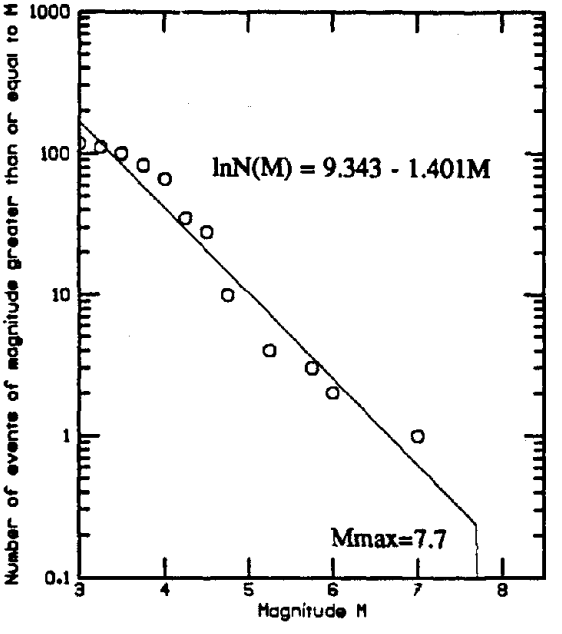

Figure D.4. Recurrence relationship for the Segment 1 of the Shallow Benioff Zone for a time period of 275 yrs.

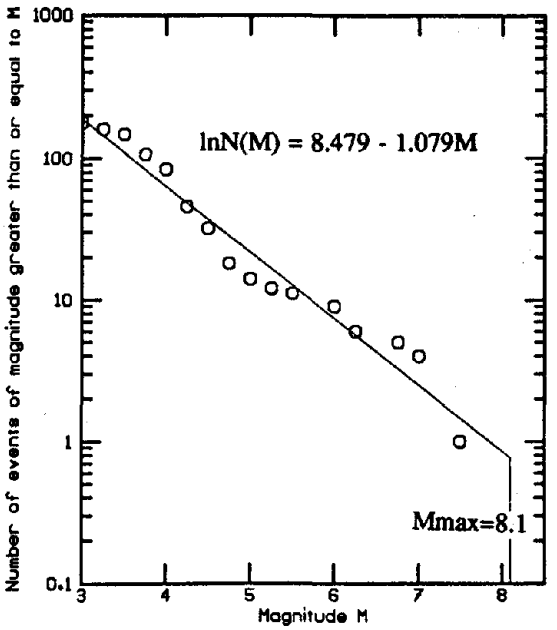

Figure D.5. Recurrence relationship for the Segment 2 of the Shallow Benioff Zone for a time period of 275 yrs.

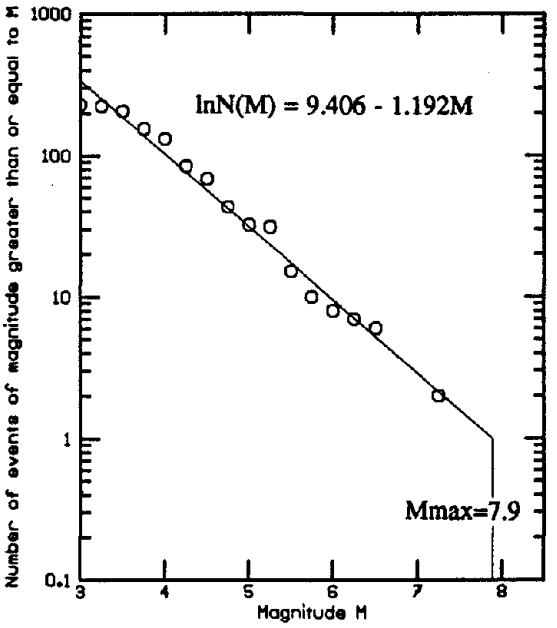

Figure D.6. Recurrence relationship for the Segment 3 of the Shallow Benioff Zone for a time period of 275 yrs.

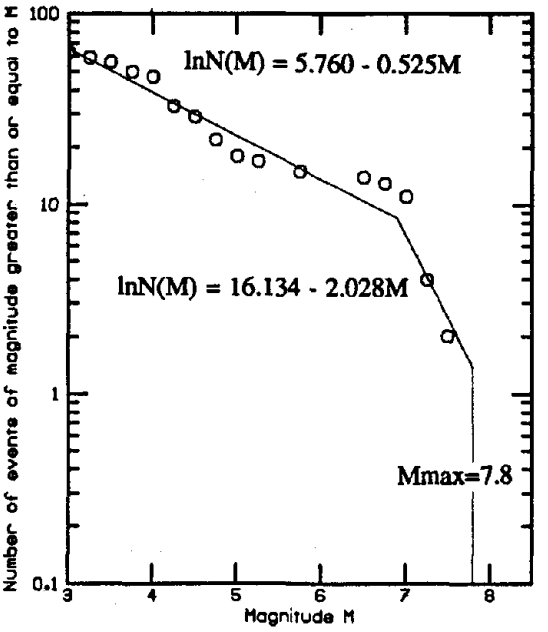

Figure D.7. Recurrence relationship for the Segment 1 of the Intermediate Benioff Zone for a time period of 275 yrs.

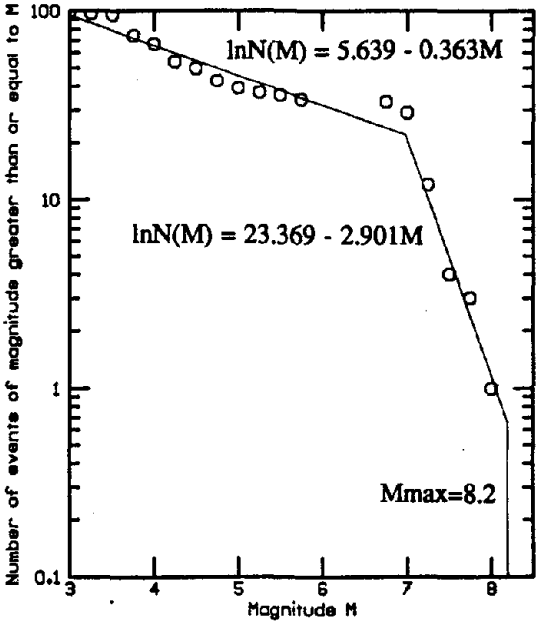

Figure D.8. Recurrence relationship for the Segment 2 of the Intermediate Benioff Zone for a time period of 275 yrs.

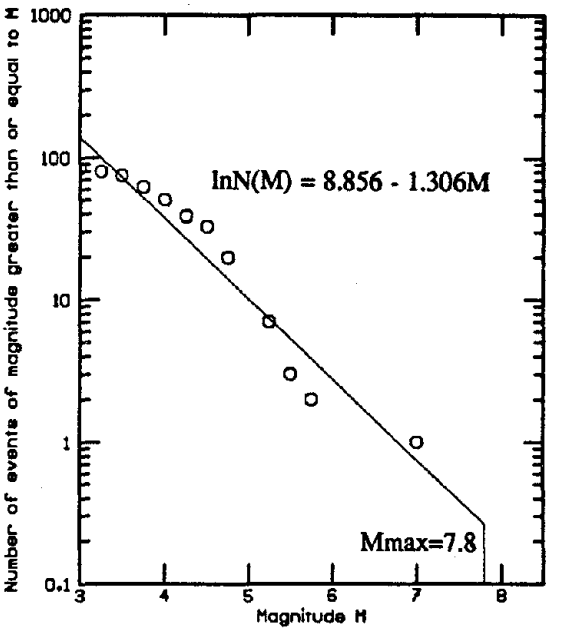

Figure D.9. Recurrence relationship for the Segment 3 of the Intermediate Benioff Zone for a time period of 275 yrs.

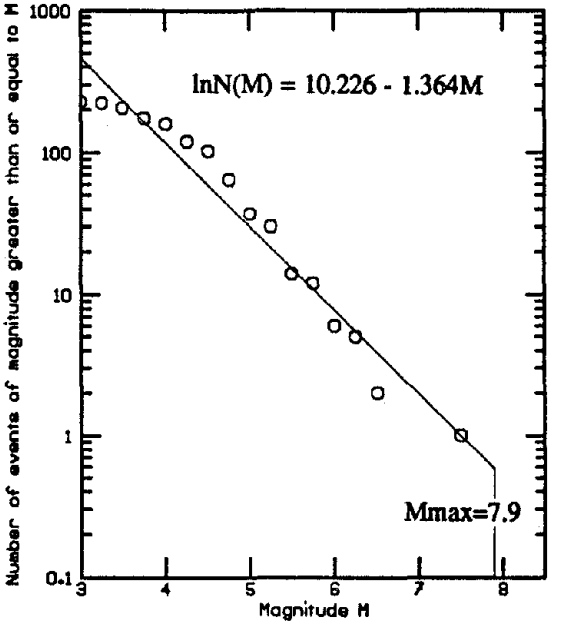

Figure D.10. Recurrence relationship for the Segment 1 of the Deep Benioff Zone for a time period of 275 yrs.

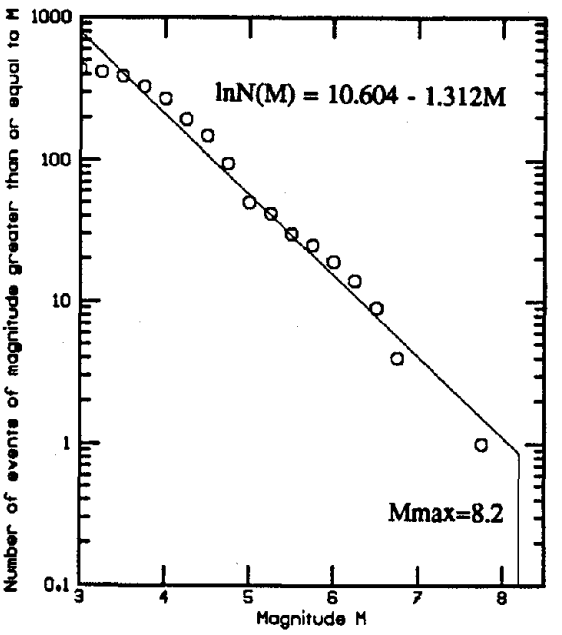

Figure D.11. Recurrence relationship for the Segment 2 of the Deep Benioff Zone for a time period of 275 yrs.

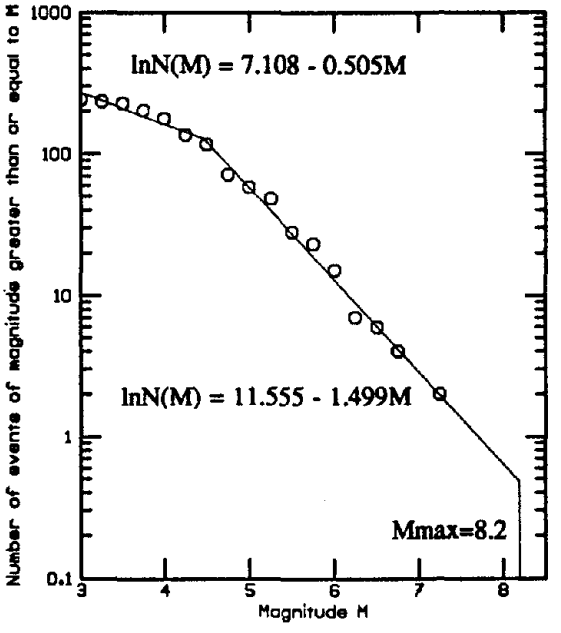

Figure D.12. Recurrence relationship for the Segment 3 of the Deep Benioff Zone for a time period of 275 yrs.

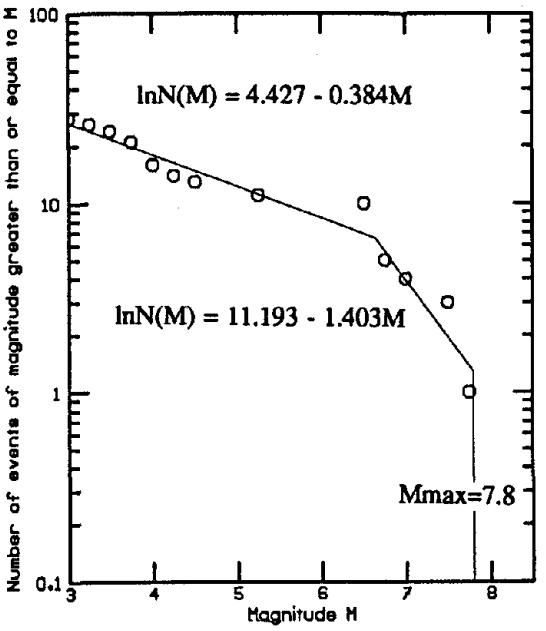

Figure D.13. Recurrence relationship for the Chixoy-Polochic Fault for a time period of 448 yrs.

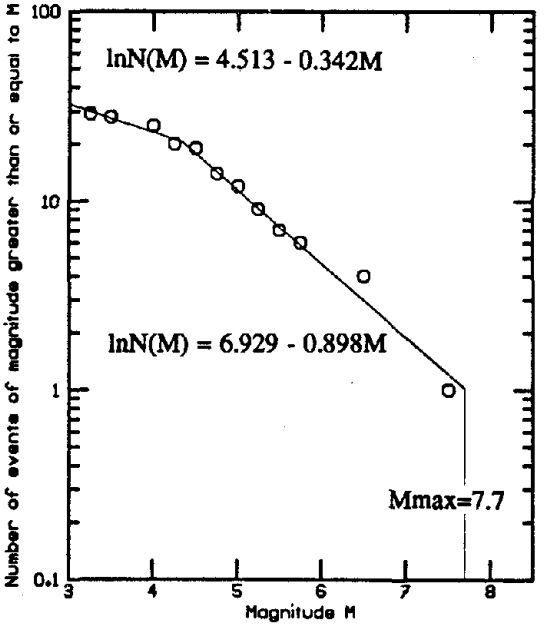

Figure D.14. Recurrence relationship for the Motagua Fault for a time period of 273 yrs.

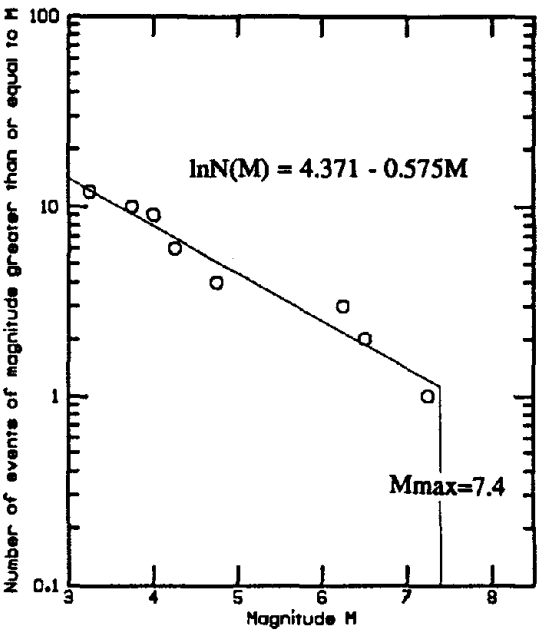

Figure D.15. Recurrence relationship for the Jocotan-Chamelecon for a time period of 243 yrs.

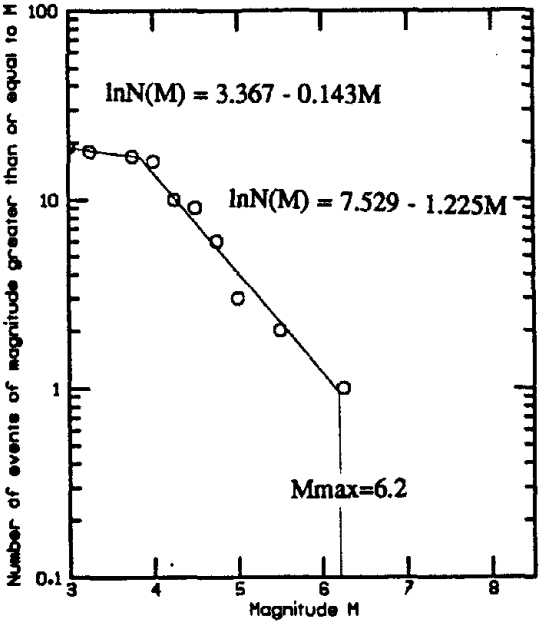

Figure D.16. Recurrence relationship for the Honduras Depression Zone for a time period of 71 yrs.

The Figures D.1-D.16 show plottings of best fitted lines and actual data grouped in intervals of 1/4 of magnitude. As is expected, the lines represent quite well the data sets. Bilinear recurrence relationships were developed when differences in slope where observed between small and large magnitude of frequency of occurrence.

D.3 The Maximum Likelihood Method.

In this method, maximum likelihood estimation of the earthquake parameters α and β in the relationship $N(M) = \alpha \exp(-\beta M)$ are extended to the case of earthquakes grouped in magnitude intervals observed in different time periods. In the development of this scheme, Wiechert (1980) considered the following aspects: a) different periods of observation, t_i; b) classification of data in magnitude intervals, $M_i \pm \delta$; and c) an assumed maximum magnitude, M_x. Integrating over magnitude intervals and normalizing a given truncated recurrence density, a likelihood function is obtained. An extreme of this function is represented by

$$\frac{\sum_i t_i M_i \exp(-\beta M_i)}{\sum_j t_j \exp(-\beta M_j)} = \frac{\sum_i n_i M_i}{N} = \overline{M} \qquad \text{(D.4)}$$

where β can be obtained by solving equation D.4 using and iterative scheme. N is the total number of earthquakes. $\overline{M}$ is the sample mean of the magnitude.

In addition, α is given by

$$\alpha = \frac{N \sum_i \exp(-\beta M_i)}{\sum_j t_j \exp(-\beta M_j)} \qquad \text{(D.5)}$$

To study the adequacy of the method for the region of study, two sources are considered: segment 3 of the Intermediate Benioff Zone and the Chixoy-Polochic fault. The maximum possible magnitude is estimated to be 7.8 for both sources. Their recurrence parameters were obtained applying the method to the data and the results are summarized in Table D.1.

	Segment 3 IBZ	Chixoy-Polochic fault
α	68.34	18.79
β	0.9724	1.0328

Table D.1 Earthquake recurrence parameters

Figures D.17 and D.18 show comparisons of the fitted lines and the data normalized with time. It can be observed that the lines do not represent the data well in both cases. This, is primarily due to the large differences of observation time for the different magnitude intervals. For the Intermediate Benioff Zone segment, the number of occurrences at large magnitudes are overestimated by a factor of 5 per year. For the Chixoy-Polochic fault, in the magnitude interval of 5.25 to 5.50 the number of occurrences are underestimated by a factor of 6 per year. For the remaining seismic sources, similar results were obtained; therefore, this method was not considered for further applications in this study.

D.4 The Maximum Entropy Principle Method.

In this section, the Maximum Entropy Principle (MEP) is used to obtain unbiased recurrence relationships. In addition, a modified MEP method developed by Dong et al. (1984) is used for nonhomogeneous data bases. A description of the method is first presented and then is applied to several seismic sources in El Salvador.

D.4.1 The Non Modified MEP Method.

In this method, the entropy of the magnitude M is maximized, subject to given constraints. Thus, the probability density function of M for a range of magnitudes from M_o to M_u is given by

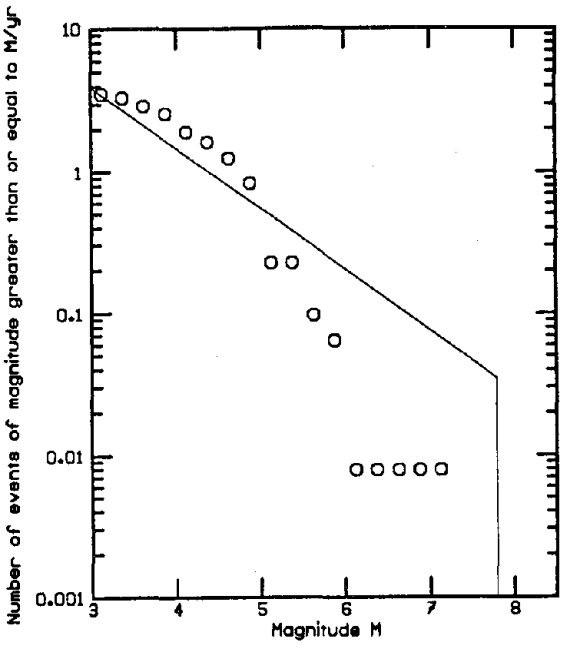

Figure D.17. Recurrence relationship for the segment 3 of the IBZ using the Maximum Likelihood method. The dots represent actual data grouped in intervals of 1/4 of magnitude.

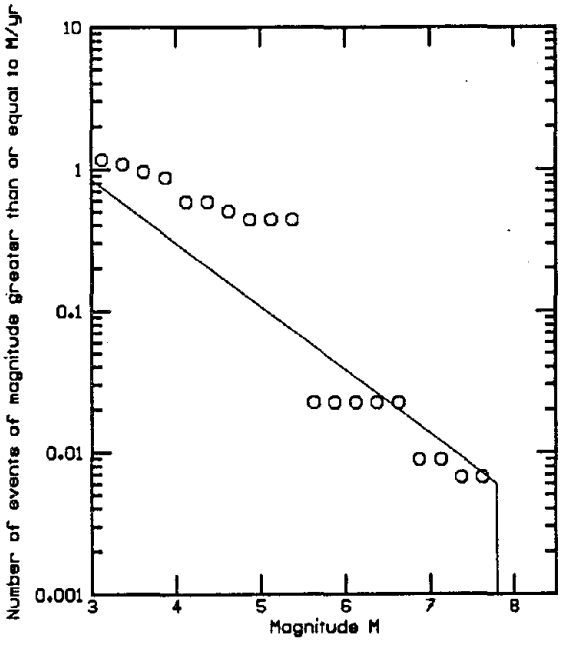

Figure D.18. Recurrence relationship for the Chixoy-Polochic fault using the Maximum Likelihood method. The dots represent actual data grouped in intervals of 1/4 of magnitude.

$$f_M(m) = \frac{\gamma_1 \exp(-\gamma_1 m)}{\exp(-\gamma_1 M_o) - \exp(-\gamma_1 M_u)} \tag{D.6}$$

where γ_1 can be determined by

$$\frac{1}{\gamma_1} + \frac{M_o \exp(-\gamma_1 M_o) - M_u \exp(-\gamma_1 M_u)}{\exp(-\gamma_1 M_o) - \exp(-\gamma_1 M_u)} = \overline{M} \tag{D.7}$$

Solving equation D.7 for γ_1 and substituting this value in equation D.6, the minimally unbiased probability density function of M is obtained.

D.4.2 The Modified Maximum Entropy Method.

In this method, the return period (RP_H) for large events between magnitudes M_u' and M_u is estimated. Define M_H as the magnitude between M_u' and M_u, then

$$\mu_H = \frac{1}{RP_H} \tag{D.8}$$

where μ_H is the mean rate of magnitude M_H events. The probability that the magnitude of the event will be between these magnitudes is given by

$$P_H = P(M_u' < M_H < M_u) = \frac{\mu_H}{\mu} = \frac{T}{NRP_H} \tag{D.9}$$

where μ is the mean rate of the data set, T is the period of instrumental data base, and N is the total number of events in time T. Additionally, the ordinate of the density function at $m=M_H$ should be adjusted as follows:

$$f_M(M_H) = \frac{P_H}{M_u - M_u'} = f_H \tag{D.10}$$

Similarly, as in the non modified MEP method the approximate solution of $f_M(m)$ is

$$f_M(m) = f_H \frac{m - M_o}{M_H - M_o} + \frac{1 - P_H - Af_H}{\{\frac{1}{\gamma_1}(\exp(-\gamma_1 M_o) - \exp(-\gamma_1 M_u')) - A\exp(-\gamma_1 M_H)\}}$$

$$\cdot\{\exp(-\gamma_1 m) - \frac{m - M_o}{M_H - M_o}\exp(-\gamma_1 M_H)\} \qquad (D.11)$$

where the parameter γ_1 is determined by

$$\frac{1 - P_H - Af_H}{\{\frac{1}{\gamma_1}(\exp(-\gamma_1 M_o) - \exp(-\gamma_1 M_u')) - A\exp(-\gamma_1 M_H)\}} =$$

$$\frac{\overline{M} - f_H B}{\{\frac{1}{\gamma_1^2}(\exp(-\gamma_1 M_o) - \exp(-\gamma_1 M_u')) + \frac{1}{\gamma_1}(M_o\exp(-\gamma_1 M_o) - M_u'\exp(-\gamma_1 M_u')) - B\exp(-\gamma_1 M_H)\}} \qquad (D.12)$$

and

$$A = \frac{(M_u' - M_o)^2}{2(M_H - M_o)} \qquad (D.13)$$

$$B = \frac{(M_u' - M_o)^2 (2M_u' + M_o)}{6(M_H - M_o)} \qquad (D.14)$$

The Figures D.19 and D.20 show plottings of the recurrence relationships obtained by the non modified MEP and least squares methods for segments 1 and 2 of the Deep Benioff Zone. It can be seen that the MEP method overestimates the number of occurrences in almost all ranges of magnitudes considered. Sensitivity analysis for the MEP methods are recommended but since similar results were obtained for other sources of the study area, those studies will be disregarded in this project. The MEP methods will not be considered in further calculations in this study.

In summary, three methods were used to investigate the best representation of earthquake occurrences for the study region. The least squares method was found the most adequate among them. To overcome the problem of incompleteness of the data set at lower

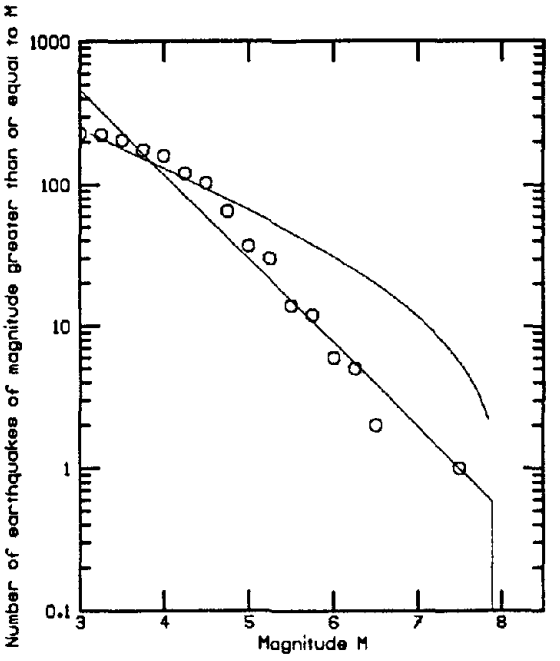

Figure D.19. Comparison of recurrence relationships obtained by using the non modified MEP (curved line) and the least squares (straight line) methods for the segment 1 of the DBZ.

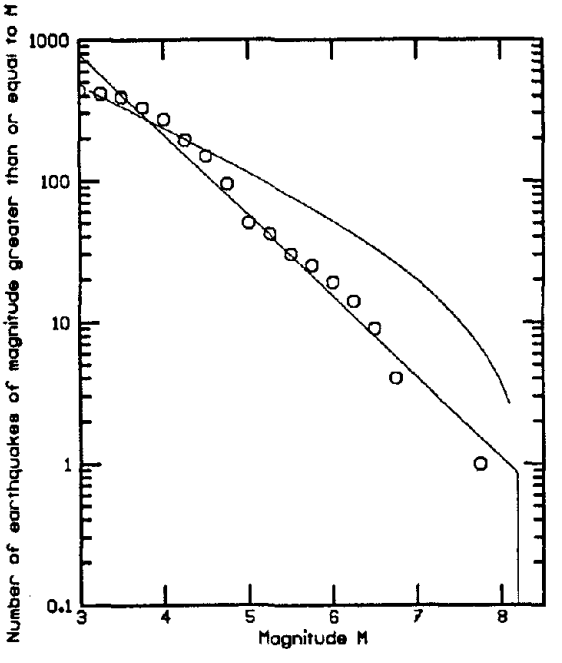

Figure D.20. Comparison of recurrence relationships obtained by using the non modified MEP (curved line) and the least squares (straight line) methods for the segment 2 of the DBZ.

magnitudes, a bilinear regression model was adopted. For hazard analysis calculations only this method will be used.

APPENDIX E

BAYESIAN PARAMETERS

	Source : Volcanic Chain - Guatemalan segment.			
	Time data base (T): 256 yr Number of recorded events (N): 46 ν' from log-linear fit : $\lambda'' = \lambda' + T = 256 + 256 = 512$ $\nu'' = \nu' + N = 35.7 + 46 = 81.7$ $\eta''_{Mi} = \eta'_{Mi} + N = 35.7 + 46 = 81.7$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.1) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	11	35.7	8.4	19.4
4.25	7	27.3	6.5	13.5
4.50	11	20.8	4.9	15.9
4.75	3	15.9	3.8	6.8
5.00	6	12.1	2.8	8.8
5.25	1	9.3	2.2	3.2
5.50	0	7.1	1.7	1.7
5.75	0	5.4	1.3	1.3
6.00	4	4.1	1.0	5.0
6.25	2	3.1	0.7	2.7
6.50	0	2.4	0.6	0.6
6.75	0	1.8	0.4	0.4
7.00	1	1.4	1.4	2.4
7.25				
7.50				
7.75				
8.00				
8.25				

Table E.1. Seismic source parameters

	Source : Volcanic Chain - Central El Salvador segment			
	Time data base (T): 256 yr Number of recorded events (N): 29 ν' from log-linear fit : 28.3 $\lambda'' = \lambda' + T \quad = 256 + 256 = 512$ $\nu'' = \nu' + N \quad = 28.3 + 29 = 57.3$ $\eta''_{Mi} = \eta'_{Mi} + N \; = 28.3 + 29 = 57.3$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.2) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	4	28.3	2.1	6.1
4.25	4	26.2	2.0	6.0
4.50	0	24.2	1.8	1.8
4.75	1	22.4	1.6	2.6
5.00	0	20.8	1.6	1.6
5.25	0	19.2	1.4	1.4
5.50	4	17.8	1.4	5.4
5.75	2	16.4	6.7	8.7
6.00	6	9.7	4.7	10.7
6.25	4	5.0	2.4	6.4
6.50	4	2.6	2.6	6.6
6.75				
7.00				
7.25				
7.50				
7.75				
8.00				
8.25				

Table E.2. Seismic source parameters

	Source : Volcanic Chain - East -El Salvador segment			
	Time data base (T): 256 yr Number of recorded events (N): 84 ν' from log-linear fit : 79.8 $\lambda'' = \lambda' + T = 256 + 256 = 512$ $\nu'' = \nu' + N = 79.8 + 84 = 163.8$ $\eta''_{Mi} = \eta'_{Mi} + N = 79.8 + 84 = 163.8$			
Magnitude (M_i)	Nb of recorded occurrences in M_i bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.3) (N_c)	Nb of occurrences in M_i bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	10	79.8	5.7	15.7
4.25	3	74.1	5.3	8.3
4.50	8	68.8	4.9	12.9
4.75	0	63.9	4.6	4.6
5.00	6	59.3	4.2	10.2
5.25	2	55.1	5.2	7.2
5.50	17	49.9	19.3	36.3
5.75	15	30.6	11.8	26.8
6.00	10	18.8	7.3	17.3
6.25	4	11.5	4.5	8.5
6.50	8	7.0	2.7	10.7
6.75				
7.00	1	4.3	4.3	5.3
7.25				
7.50				
7.75				
8.00				
8.25				

Table E.3. Seismic source parameters

	Source : Shallow Benioff Zone - Segment 1			
	Time data base (T): 275 yr Number of recorded events (N): 83 ν' from log-linear fit : 48.4 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 48.4 + 83 = 131.4$ $\eta''_{Mi} = \eta'_{Mi} + N = 48.4 + 83 = 131.4$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.4) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	39	48.4	14.4	53.4
4.25	9	34.0	10.1	19.1
4.50	16	23.9	7.1	23.1
4.75	9	16.8	5.0	14.0
5.00	6	11.8	3.5	9.5
5.25	0	8.3	2.5	2.5
5.50	1	5.8	1.7	2.7
5.75	0	4.1	1.2	1.2
6.00	1	2.9	0.9	1.9
6.25	1	2.0	0.6	1.6
6.50	0	1.4	0.4	0.4
6.75	0	1.0	0.3	0.3
7.00	1	0.7	0.2	1.2
7.25	0	0.5	0.2	0.2
7.50	0	0.3	0.1	0.1
7.75	0	0.2	0.2	0.2
8.00				
8.25				

Table E.4. Seismic source parameters

	Source : Shallow Benioff Zone - Segment 2			
	Time data base (T): 275 yr Number of recorded events (N): 106 ν' from log-linear fit : 73.5 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 73.5 + 106 = 179.5$ $\eta''_{Mi} = \eta'_{Mi} + N = 73.5 + 106 = 179.5$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.5) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	39	73.5	17.3	56.3
4.25	21	56.2	13.3	34.3
4.50	26	42.9	19.2	45.2
4.75	2	32.7	7.7	9.7
5.00	4	25.0	5.9	9.9
5.25	2	19.1	4.5	6.5
5.50	1	14.6	3.5	4.5
5.75	2	11.1	2.6	4.6
6.00	2	8.5	2.0	4.0
6.25	1	6.5	1.5	2.5
6.50	1	5.0	1.2	2.2
6.75	0	3.8	0.9	0.9
7.00	2	2.9	0.7	2.7
7.25	2	2.2	0.5	2.5
7.50	1	1.7	0.4	1.4
7.75	0	1.3	0.3	0.3
8.00	0	1.0	1.0	1.0
8.25				

Table E.5. Seismic source parameters

	Source : Shallow Benioff Zone - Segment 3			
	Time data base (T): 275 yr Number of recorded events (N): 155 ν' from log-linear fit : 119.9 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 119.9 + 155 = 274.9$ $\eta''_{Mi} = \eta'_{Mi} + N = 119.9 + 155 = 274.9$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.6) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	53	119.9	30.9	83.9
4.25	18	89.0	22.9	40.9
4.50	33	66.1	17.0	50.0
4.75	8	49.1	12.7	20.7
5.00	11	36.4	9.4	20.4
5.25	1	27.0	6.9	7.9
5.50	18	20.1	5.2	23.2
5.75	3	14.9	3.8	6.8
6.00	3	11.1	2.9	5.9
6.25	0	8.2	2.1	2.1
6.50	4	6.1	1.6	5.6
6.75	1	4.5	1.1	2.1
7.00	0	3.4	0.9	0.9
7.25	0	2.5	0.7	0.7
7.50	2	1.8	0.4	2.4
7.75	0	1.4	0.4	0.4
8.00	0	1.0	1.0	1.0
8.25				

Table E.6. Seismic source parameters

	Source : Intermediate Benioff Zone - Segment 1			
	Time data base (T): 275 yr Number of recorded events (N): 50 ν' from log-linear fit : 41.5 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 41.5 + 50 = 91.5$ $\eta''_{Mi} = \eta'_{Mi} + N = 41.5 + 50 = 91.5$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.7) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	10	41.5	5.1	15.1
4.25	7	36.4	4.5	11.5
4.50	7	31.9	3.9	10.9
4.75	4	28.0	3.5	7.5
5.00	4	24.5	3.0	7.0
5.25	1	21.5	2.6	3.6
5.50	2	18.8	2.3	4.3
5.75	0	16.6	2.1	2.1
6.00	1	14.5	1.8	2.8
6.25	0	12.7	1.5	1.5
6.50	1	11.2	1.4	2.4
6.75	0	9.8	0.9	0.9
7.00	5	8.9	3.5	8.5
7.25	5	5.4	2.2	7.2
7.50	2	3.2	1.2	3.2
7.75	1	2.0	2.0	3.0
8.00				
8.25				

Table E.7. Seismic source parameters

	Source : Intermediate Benioff Zone - Segment 2			
	Time data base (T): 275 yr Number of recorded events (N): 73 ν' from log-linear fit : 68.9 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 68.9 + 73 = 141.9$ $\eta''_{Mi} = \eta'_{Mi} + N = 68.9 + 73 = 141.9$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.8) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	14	68.9	6.0	20.0
4.25	5	62.9	5.5	10.5
4.50	9	57.4	4.9	13.9
4.75	2	52.5	4.6	6.6
5.00	4	47.9	4.1	8.1
5.25	2	43.8	3.8	5.8
5.50	2	40.0	3.5	5.5
5.75	1	36.5	3.2	4.2
6.00	1	33.3	2.9	3.9
6.25	0	30.4	2.6	2.6
6.50	0	27.8	2.4	2.4
6.75	1	25.4	2.2	3.2
7.00	9	23.2	8.3	17.3
7.25	15	14.9	7.7	22.7
7.50	5	7.2	3.7	8.7
7.75	2	3.5	1.8	3.8
8.00	0	1.7	0.9	0.9
8.25	1	0.8	0.8	1.8

Table E.8. Seismic source parameters

	Source : Intermediate Benioff Zone - Segment 3			
	Time data base (T): 275 yr Number of recorded events (N): 62 ν' from log-linear fit : 44.5 $\lambda'' = \lambda' + T \quad = 275 + 275 = 550$ $\nu'' = \nu' + N \quad = 44.5 + 62 = 106.5$ $\eta''_{Mi} = \eta'_{Mi} + N = 44.5 + 62 = 106.5$			
Magnitude (M_i)	Nb of recorded occurrences in M_i bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.9) (Nc)	Nb of occurrences in M_i bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	16	44.5	12.4	28.4
4.25	7	32.1	8.9	15.9
4.50	10	23.2	6.5	16.5
4.75	9	16.7	4.6	13.6
5.00	13	12.1	3.4	16.4
5.25	0	8.7	2.4	2.4
5.50	4	6.3	1.8	5.8
5.75	1	4.5	1.2	2.2
6.00	1	3.3	0.9	1.9
6.25	0	2.4	0.7	0.7
6.50	0	1.7	0.5	0.5
6.75	0	1.2	0.3	0.3
7.00	0	0.9	0.3	0.3
7.25	1	0.6	0.1	1.1
7.50	0	0.5	0.2	0.2
7.75	0	0.3	0.3	0.3
8.00				
8.25				

Table E.9. Seismic source parameters

	Source : Deep Benioff Zone - Segment 1			
	Time data base (T): 275 yr Number of recorded events (N): 176 ν' from log-linear fit : 139.8 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 139.8 + 176 = 315.8$ $\eta''_{Mi} = \eta'_{Mi} + N = 139.8 + 176 = 315.8$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.10) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	36	139.8	40.4	76.4
4.25	20	99.4	28.7	48.7
4.50	37	70.7	20.4	57.4
4.75	18	50.3	14.6	32.6
5.00	28	35.7	10.3	38.3
5.25	7	25.4	7.3	14.3
5.50	16	18.1	5.2	21.2
5.75	2	12.9	3.8	5.8
6.00	7	9.1	2.6	9.6
6.25	0	6.1	1.9	1.9
6.50	4	4.6	1.3	5.3
6.75	0	3.3	1.0	1.0
7.00	0	2.3	0.6	0.6
7.25	0	1.7	0.5	0.5
7.50	1	1.2	0.4	1.4
7.75	0	0.8	0.2	0.2
8.00	0	0.6	0.6	0.6
8.25				

Table E.10. Seismic source parameters

	Source : Deep Benioff Zone - Segment 2			
	Time data base (T): 275 yr Number of recorded events (N): 327 ν' from log-linear fit : 249.6 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 249.6 + 327 = 576.6$ $\eta''_{Mi} = \eta'_{Mi} + N = 249.6 + 327 = 576.6$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.11) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	89	249.6	69.8	158.8
4.25	49	179.8	50.3	99.3
4.50	69	129.5	36.2	105.2
4.75	25	93.3	26.1	51.1
5.00	47	67.2	18.8	65.8
5.25	7	48.4	13.5	20.5
5.50	14	34.9	9.8	23.8
5.75	4	25.1	7.0	11.0
6.00	9	18.1	5.1	14.1
6.25	1	13.0	3.6	4.6
6.50	8	9.4	2.6	10.6
6.75	1	6.8	1.9	2.9
7.00	3	4.9	1.4	4.4
7.25	0	3.5	1.0	1.0
7.50	0	2.5	0.7	0.7
7.75	0	1.8	0.5	0.5
8.00	1	1.3	0.4	1.4
8.25	0	0.9	0.9	0.9

Table E.11. Seismic source parameters

	Source : Deep Benioff Zone - Segment 3			
	Time data base (T): 275 yr Number of recorded events (N): 202 ν' from log-linear fit : 172.6 $\lambda'' = \lambda' + T = 275 + 275 = 550$ $\nu'' = \nu' + N = 172.6 + 202 = 350.5$ $\eta''_{Mi} = \eta'_{Mi} + N = 172.6 + 202 = 350.5$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.12) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	43	172.6	20.4	63.4
4.25	24	152.2	18.1	42.1
4.50	38	134.1	31.4	70.4
4.75	26	101.7	31.8	57.8
5.00	13	69.9	21.8	34.8
5.25	10	48.1	15.1	25.1
5.50	22	33.0	10.3	32.3
5.75	3	22.7	7.1	10.1
6.00	14	15.6	4.9	18.9
6.25	2	10.7	3.3	5.3
6.50	3	7.4	2.3	5.3
6.75	0	5.1	1.6	1.6
7.00	2	3.5	1.1	3.1
7.25	1	2.4	0.8	1.8
7.50	1	1.6	0.5	1.5
7.75	0	1.1	0.3	0.3
8.00	0	0.8	0.3	0.3
8.25	0	0.5	0.5	0.5

Table E.12. Seismic source parameters

	Source : Chixoy - Polochic fault			
	Time data base (T): 448 yr Number of recorded events (N): 21 ν' from log-linear fit : 19.5 $\lambda'' = \lambda' + T = 448 + 448 = 896$ $\nu'' = \nu' + N = 19.5 + 21 = 39.9$ $\eta''_{Mi} = \eta'_{Mi} + N = 19.5 + 21 = 39.9$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.13) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	7	18.9	1.7	8.7
4.25	0	17.2	1.6	1.6
4.50	2	15.6	1.4	3.4
4.75	1	14.2	1.3	2.3
5.00	0	12.9	1.2	1.2
5.25	0	11.7	1.1	1.1
5.50	1	10.6	0.9	1.9
5.75	0	9.7	0.9	0.9
6.00	0	8.8	0.8	0.8
6.25	0	8.0	0.8	0.8
6.50	4	7.2	0.5	4.5
6.75	2	6.7	2.0	4.0
7.00	1	4.7	1.4	2.4
7.25	0	3.3	1.0	1.0
7.50	2	2.3	0.7	2.7
7.75	1	1.6	1.6	2.6
8.00				
8.25				

Table E.13. Seismic source parameters

	Source : Motagua fault			
	Time data base (T): 286 yr Number of recorded events (N): 25 ν' from log-linear fit : 24.2 $\lambda'' = \lambda' + T = 286 + 286 = 572$ $\nu'' = \nu' + N = 24.2 + 25 = 49.2$ $\eta''_{Mi} = \eta'_{Mi} + N = 24.2 + 25 = 49.2$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.14) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	1	24.2	2.0	3.0
4.25	4	22.2	2.2	6.2
4.50	3	20.0	4.0	7.0
4.75	3	16.0	3.2	6.2
5.00	2	12.8	2.6	4.6
5.25	3	10.2	2.0	5.0
5.50	3	8.2	1.7	4.7
5.75	0	6.5	1.3	1.3
6.00	2	5.2	1.0	3.0
6.25	0	4.2	0.9	0.9
6.50	3	3.3	0.6	3.6
6.75	0	2.7	0.6	0.6
7.00	0	2.1	0.4	0.4
7.25	0	1.7	0.3	0.3
7.50	1	1.4	0.3	1.3
7.75	0	1.1	1.1	1.1
8.00				
8.25				

Table E.14. Seismic source parameters

	Source : Jocotan - Chamelecon fault			
	Time data base (T): 286 yr Number of recorded events (N): 10 ν' from log-linear fit : 8.5 $\lambda'' = \lambda' + T = 286 + 286 = 572$ $\nu'' = \nu' + N = 8.5 + 10 = 18.5$ $\eta''_{Mi} = \eta'_{Mi} + N = 8.5 + 10 = 18.5$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.15) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	2	8.5	1.1	3.1
4.25	2	7.4	1.0	3.0
4.50	2	6.4	0.9	2.9
4.75	0	5.5	0.7	0.7
5.00	1	4.8	0.6	1.6
5.25	0	4.2	0.6	0.6
5.50	0	3.6	0.5	0.5
5.75	0	3.1	0.4	0.4
6.00	0	2.7	0.4	0.4
6.25	0	2.3	0.3	0.3
6.50	2	2.0	0.2	2.2
6.75	0	1.8	0.3	0.3
7.00	0	1.5	0.2	0.2
7.25	1	1.3	0.3	1.3
7.50	0	1.1	1.1	1.1
7.75				
8.00				
8.25				

Table E.15. Seismic source parameters

	Source : Honduras Depression Zone			
	Time data base (T): 71 yr Number of recorded events (N): 16 ν' from log-linear fit : 16.1 $\lambda'' = \lambda' + T = 71 + 71 = 142$ $\nu'' = \nu' + N = 16.1 + 16 = 32.1$ $\eta''_{Mi} = \eta'_{Mi} + N = 16.1 + 16 = 32.1$			
Magnitude (Mi)	Nb of recorded occurrences in Mi bands (R_{Mi})	Cumulative Nb of occurrences (log-linear fit Fig. D.16) (Nc)	Nb of occurrences in Mi bands (log-linear fit) (ε'_{Mi})	$\varepsilon'_{Mi} + R_{Mi}$ (ε''_{Mi})
4.00	3	16.1	4.2	7.2
4.25	4	11.9	3.1	7.1
4.50	2	8.8	2.4	4.4
4.75	2	6.4	1.7	3.7
5.00	4	4.7	1.2	5.2
5.25	0	3.5	0.9	0.9
5.50	0	2.6	0.7	0.7
5.75	1	1.9	0.5	1.5
6.00	0	1.4	0.4	0.4
6.25	1	1.0	1.0	2.0
6.50				
6.75				
7.00				
7.25				
7.50				
7.75				
8.00				
8.25				

Table E.16. Seismic source parameters