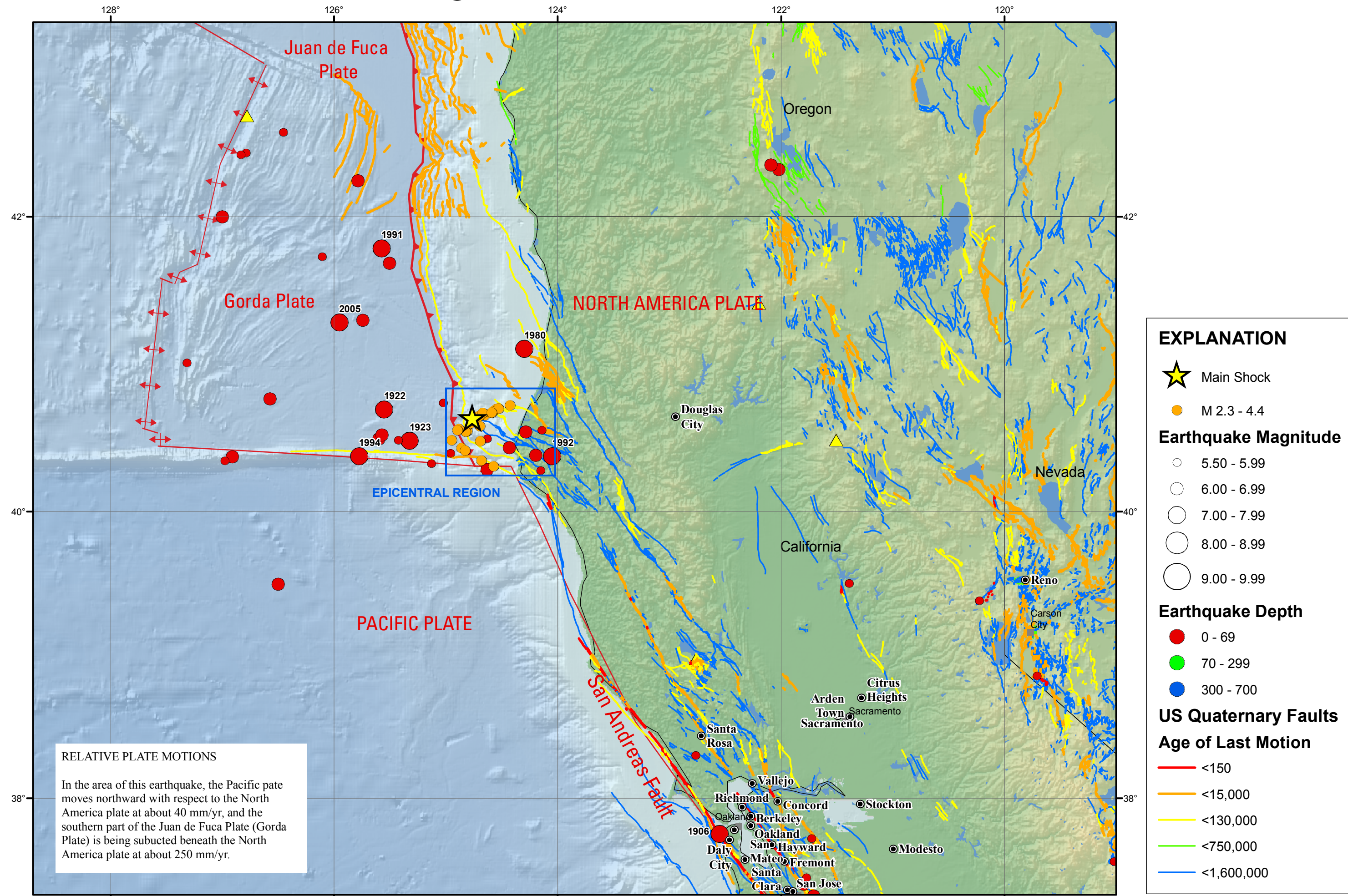


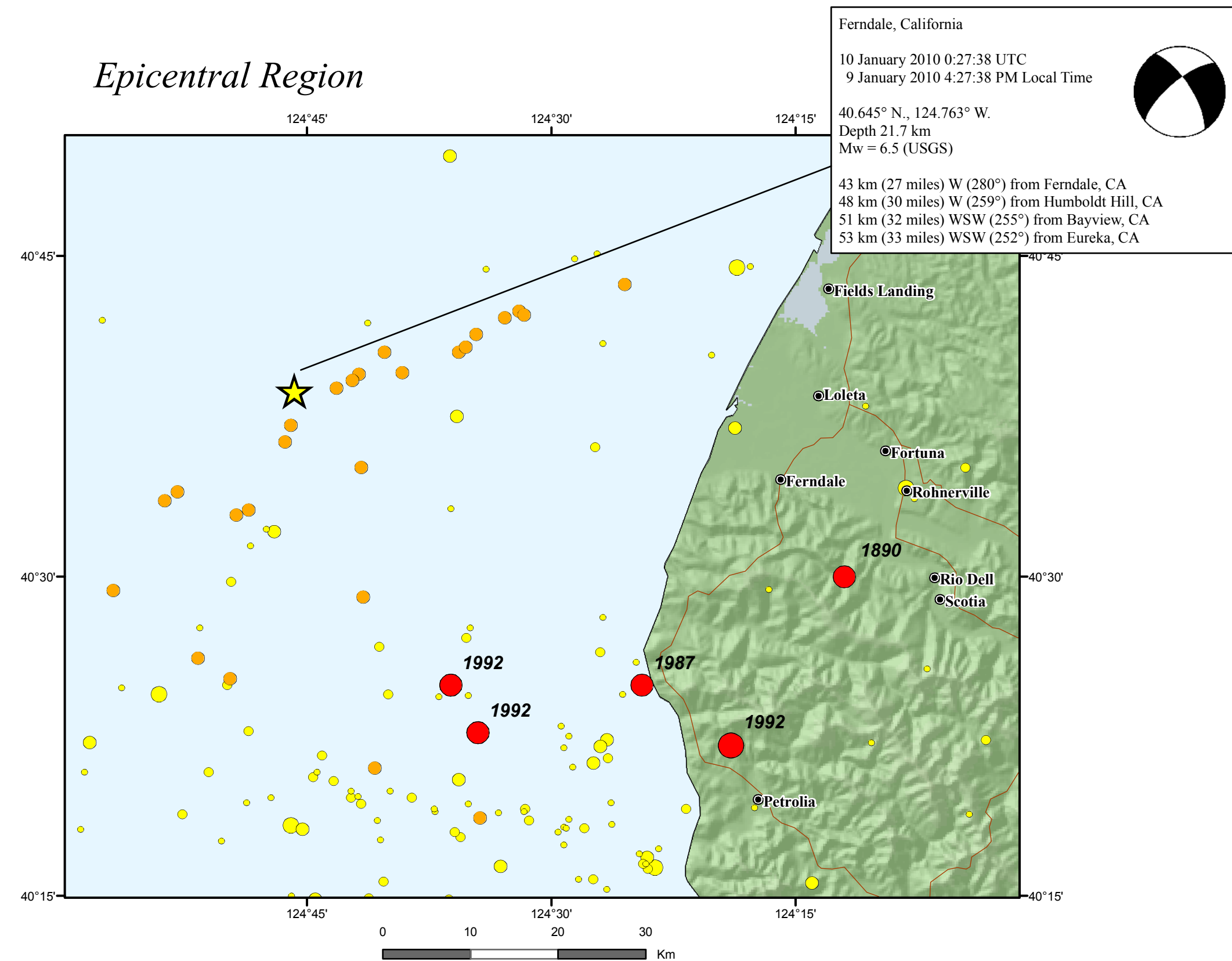
M6.5 Offshore Northern California Earthquake of 10 January 2010



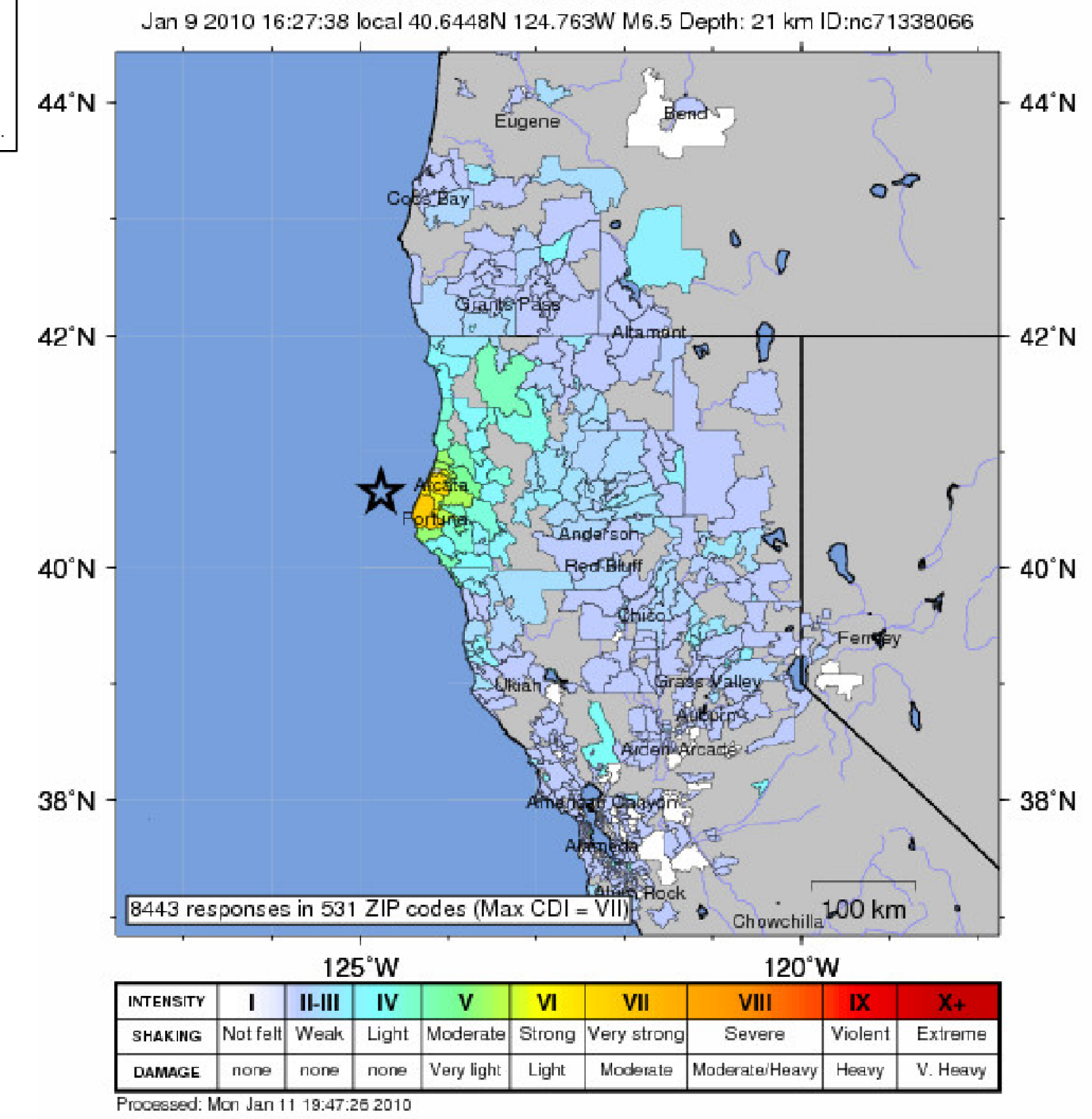
Tectonic Setting



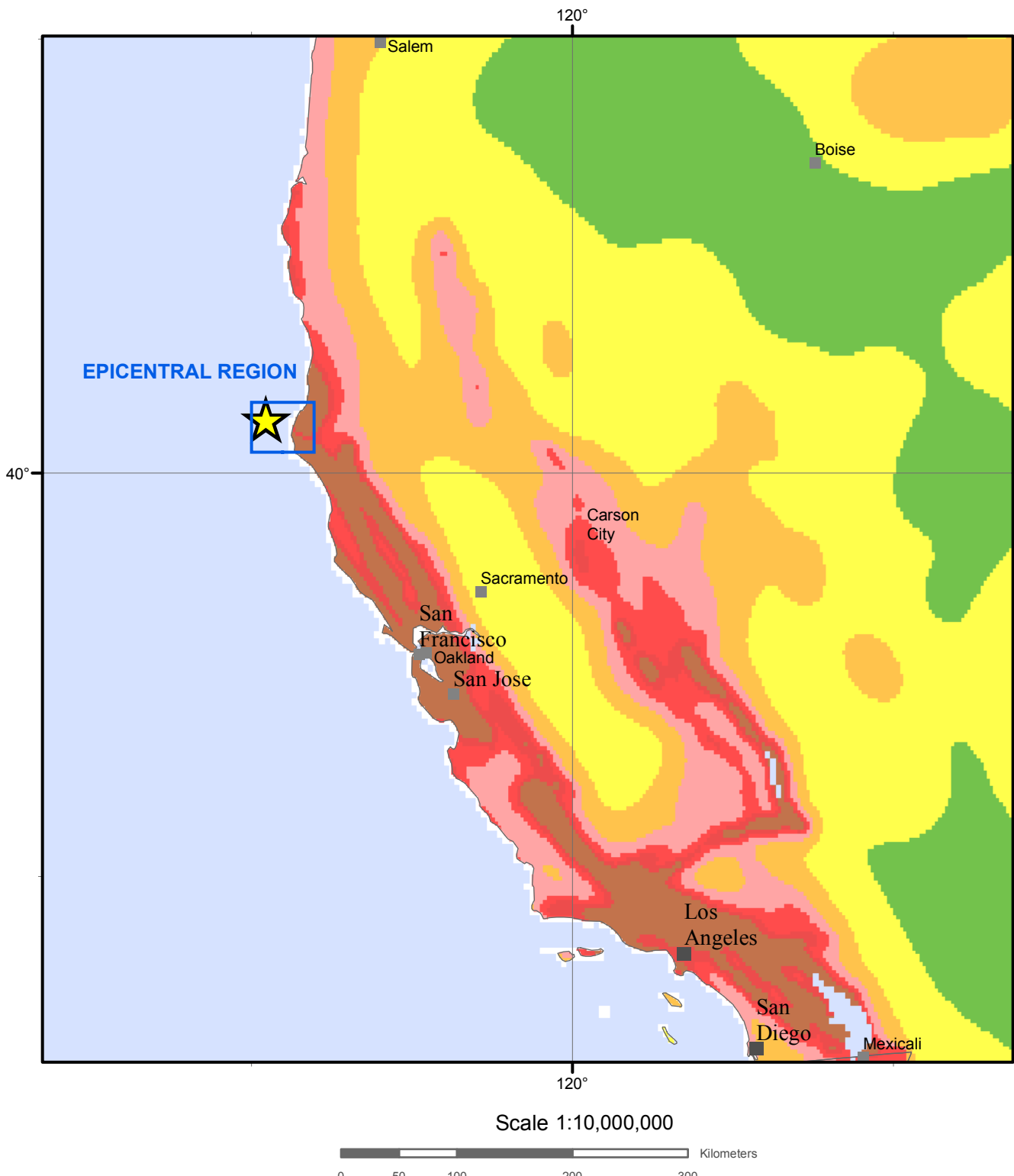
Epical Region



USGS Community Internet Intensity Map OFFSHORE NORTHERN CALIFORNIA



Seismic Hazard



Peak Ground Acceleration m/sec**2

Seismic hazard is expressed as peak ground acceleration (PGA) on firm rock, in meters/sec², expected to be exceeded in a 50-yr period with a probability of 10

Note on earthquakes: From 1900 - 1963, earthquakes shown are from Centennial Catalog, magnitudes greater than 5.5. From 1964 - 2002, earthquakes are from HDF catalog, magnitudes greater than 4.5. From 2003 to present, earthquakes are from NEIC, magnitudes greater than 4.5.

TECTONIC SUMMARY

This earthquake occurred approximately 35 km WNW of Ferndale, CA in a deformation zone of the southernmost Juan de Fuca plate that is commonly referred to as the Gorda plate. The earthquake's epicenter is northwest of the Mendocino Triple Junction, which is formed by the intersection of the Mendocino fracture zone, the San Andreas fault and the Cascadia subduction zone. The Gorda plate is subducting beneath the North America plate at about 2.5-3 cm/year in the direction N50E. The Gorda plate is also subjected to intense compressive stresses by oblique-convergence of the northwestern migrating Pacific Plate as well as localized eastward spreading at the Gorda Ridge. The resulting internal deformation of the Gorda plate is manifested primarily by intraplate strike-slip events on vertical NE-oriented faults.

Preliminary analysis of the earthquake indicates that it results from slip on a near vertical, left-lateral fault oriented about N47E. Large strike-slip earthquakes like this one are common in the interior of the Gorda plate. There are no reports of this earthquake causing a tsunami. Strike-slip earthquakes are less likely to produce large tsunamis because they cause relatively little vertical ground displacement. Shaking was strongest near the coast line between Petrolia and Eureka, CA, although felt reports for this event extend from as far south and north as Capitola, CA and Eugene, OR, respectively, and as far east as Reno, NV. The maximum recorded shaking was observed in Eureka (33%), which is sufficient to cause moderate damage.

This is the largest quake to occur in this region since the April 25, 1992 M7.2 Petrolia and the June 15, 2005 M7.2 Gorda plate earthquakes.

The probability of a strong and possibly damaging aftershock (M>5) in the 7 days following the earthquake is approximately 78%. Most likely, the mainshock will be the largest in the sequence. However, there is a small chance (~5-10%) of an earthquake equal to or larger than this mainshock in the next 7 days. In addition, numerous M3-5 aftershocks are expected to occur in the same 7-day period, but most are unlikely to be felt due to the distance from land.

Significant Earthquakes Mag >= 6.

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1890	07	26	940	40.5	-124.2	0	6
1897	07	31	2356	40.415	-124.407	16	6.0
1992	04	25	1806	40.368	-124.316	15	7.2
1992	04	26	0741	40.415	-124.603	20	6.6
1992	04	26	1118	40.378	-124.575	22	6.7

DATA SOURCES

EARTHQUAKES AND SEISMIC HAZARD
USGS, National Earthquake Information Center
NOAA, National Geophysical Data Center
IASPEI, Centennial Catalog (1900 - 1999) and extensions (Engdahl and Villaseñor, 2002)
HDF (unpublished earthquake catalog) (Engdahl, 2003)
Global Seismic Hazard Assessment Program

PLATE TECTONICS AND FAULT MODEL
PB2002 (Bird, 2003)

BASE MAP
NIMA and ESRI, Digital Chart of the World
USGS, EROS Data Center
NOAA GEBCO and GLOBE Elevation Models

REFERENCES

Bird, P., 2003, An updated digital model of plate boundaries: *Geochim. Geophys. Geosyst.*, v. 4, no. 3, pp. 1027-80.

Engdahl, E.R. and Villaseñor, A., 2002, *Global Seismicity: 1900 - 1999*, chap. 41 of *Lee, W.H.K., and others, eds., International Earthquake and Engineering Seismology, Part A*: New York, N.Y., Elsevier Academic Press, 932 p.

Engdahl, E.R., Van der Hilst, R.D., and Buland, R.P., 1998, Global teleseismic earthquake relocation with improved travel times and procedures for depth determination: *Bull. Seism. Soc. Amer.*, v. 88, p. 722-743.

DISCLAIMER

Base map data, such as place names and political boundaries, are the best available but may not be current or may contain inaccuracies and therefore should not be regarded as having official significance.

Map prepared by U.S. Geological Survey
National Earthquake Information Center
10 January 2010
Map not approved for release by Director USGS



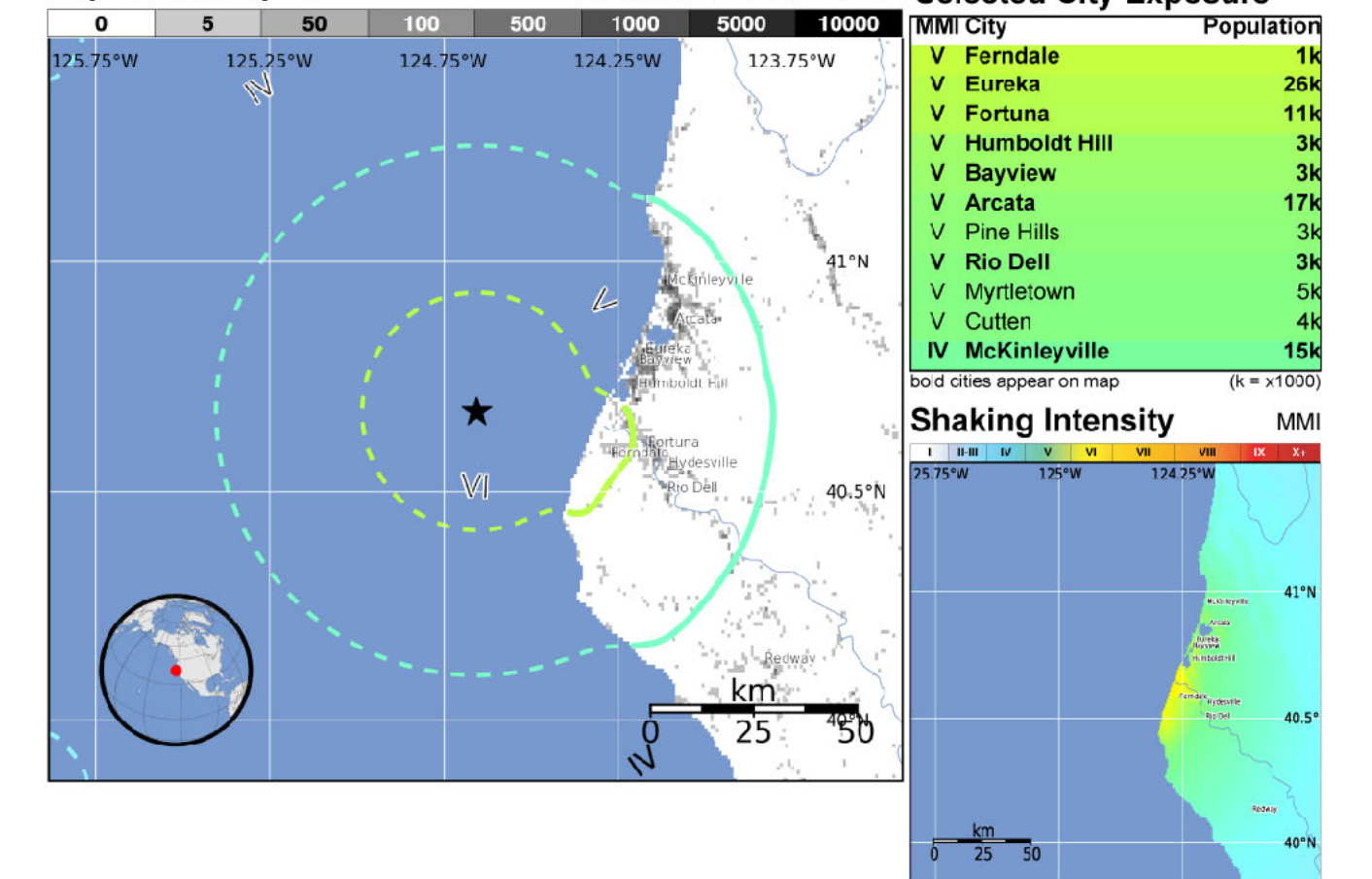
M 6.5, 34.7 km (21.6 mi) WNW of Ferndale, CA
Origin Time: Sun 2010-01-10 00:27:39 UTC
Location: 40.67°N 124.66°W Depth: 16 km

PAGER
Version 3
Created: 1 hour, 37 minutes after earthquake

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (N = 1160)	0*	14k*	114k	3k	0	0	0	0	
ESTIMATED MODIFIED MERCALLI INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+
PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very Strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	Resistant Structures: none	Resistant Structures: none	Resistant Structures: none	Resistant Structures: V. Light	Resistant Structures: Light	Resistant Structures: Moderate	Resistant Structures: Moderate/Heavy	Resistant Structures: Heavy	Resistant Structures: V. Heavy
	Vulnerable Structures: none	Vulnerable Structures: none	Vulnerable Structures: none	Vulnerable Structures: Light	Vulnerable Structures: Moderate	Vulnerable Structures: Moderate/Heavy	Vulnerable Structures: Heavy	Vulnerable Structures: V. Heavy	Vulnerable Structures: V. Heavy

Population Exposure



A magnitude 7.2 earthquake 61 km Southeast of this one struck Petrolia, California on April 25, 1992 (UTC), with estimated population exposures of 2,000 at intensity IX or greater and 7,000 at intensity VIII, with no reported fatalities. On September 21, 1993 (UTC), a magnitude 6.0 earthquake 285 km Northeast of this one struck Klamath Falls, Oregon, with estimated population exposures of 1,000 at intensity VII and 47,000 at intensity VI, resulting in an estimated 1 fatality. Recent earthquakes in this area have caused landslides and liquefaction that may have contributed to losses.

This information was automatically generated and has not been reviewed by a seismologist.

<http://earthquake.usgs.gov/pager>

Event ID: nc71338066