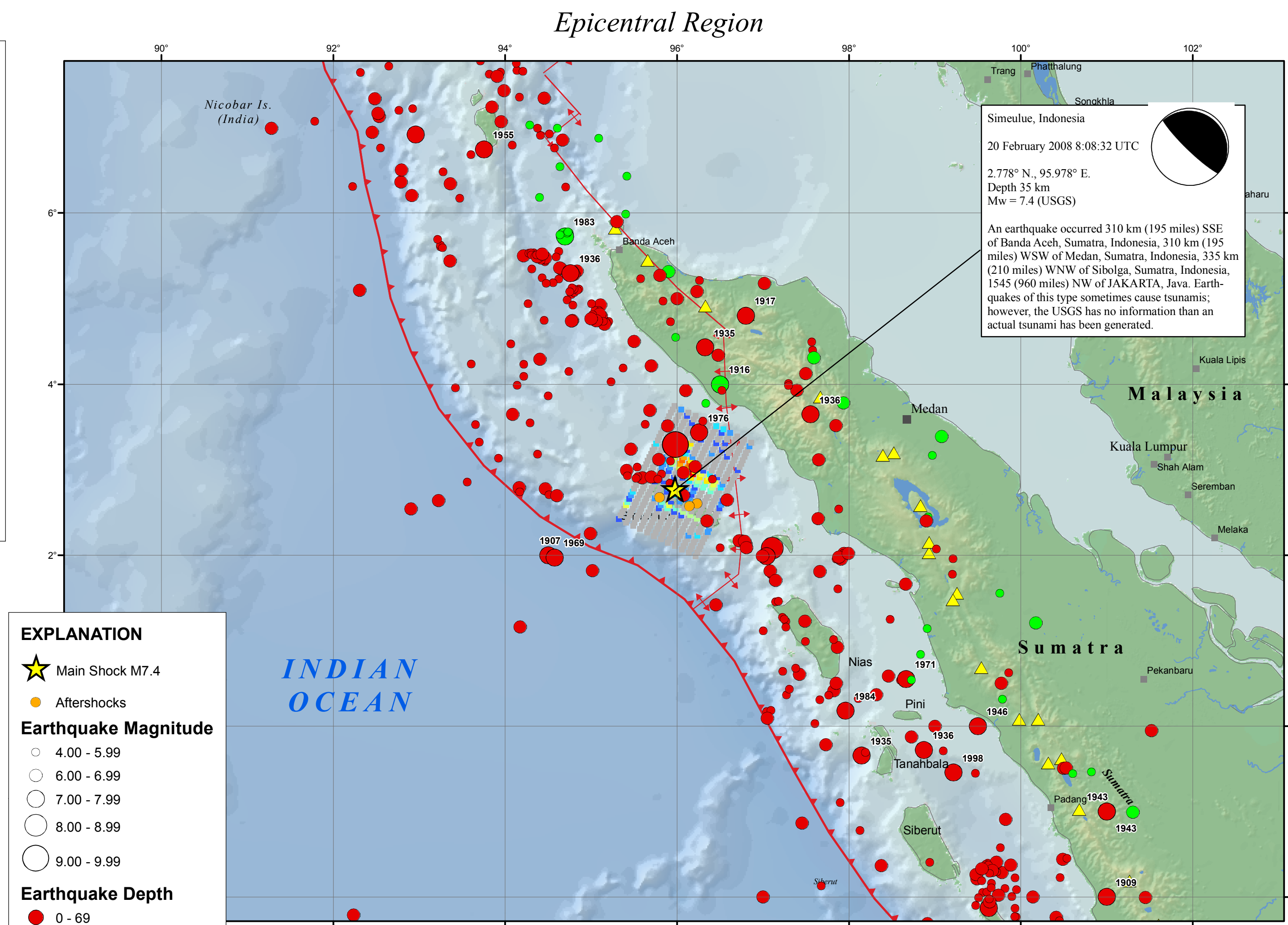
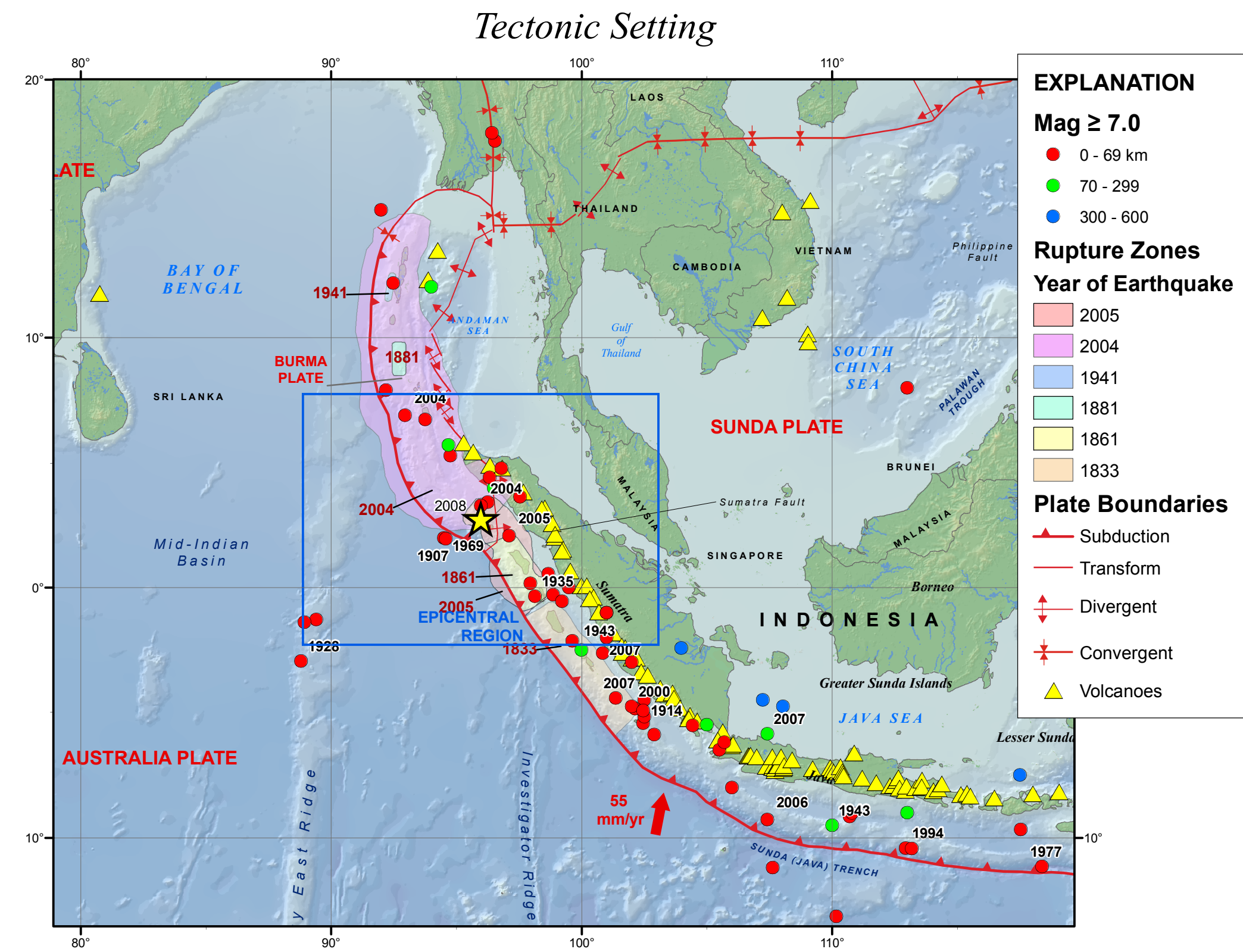
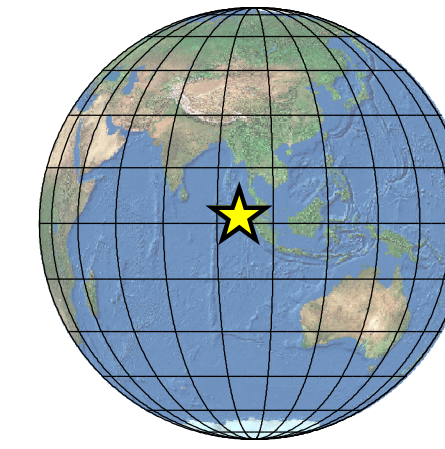


M7.4 Simeulue, Indonesia Earthquake of 20 February 2008



USGS **USAID**

M 7.4, SIMEULUE, INDONESIA

Origin Time: Wed 2008-02-20 08:08:32 UTC
Location: 2.78° N 95.98° E Depth: 35 km

PAGER Version 2

Estimated Population Exposed to Earthquake Shaking

ESTIMATED POPULATION EXPOSURE (k = x1000)	I	II-III	IV	V	VI	VII	VIII	IX	X+
ESTIMATED MODIFIED MERCALLI INTENSITY	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
PERCEIVED SHAKING	none	none	none	none	V. Light	Light	Moderate	Moderate/Heavy	Heavy
POTENTIAL DAMAGE	Resistant Structures	Resistant Structures	Vulnerable Structures	Vulnerable Structures	Vulnerable Structures	Vulnerable Structures	Vulnerable Structures	Vulnerable Structures	Vulnerable Structures

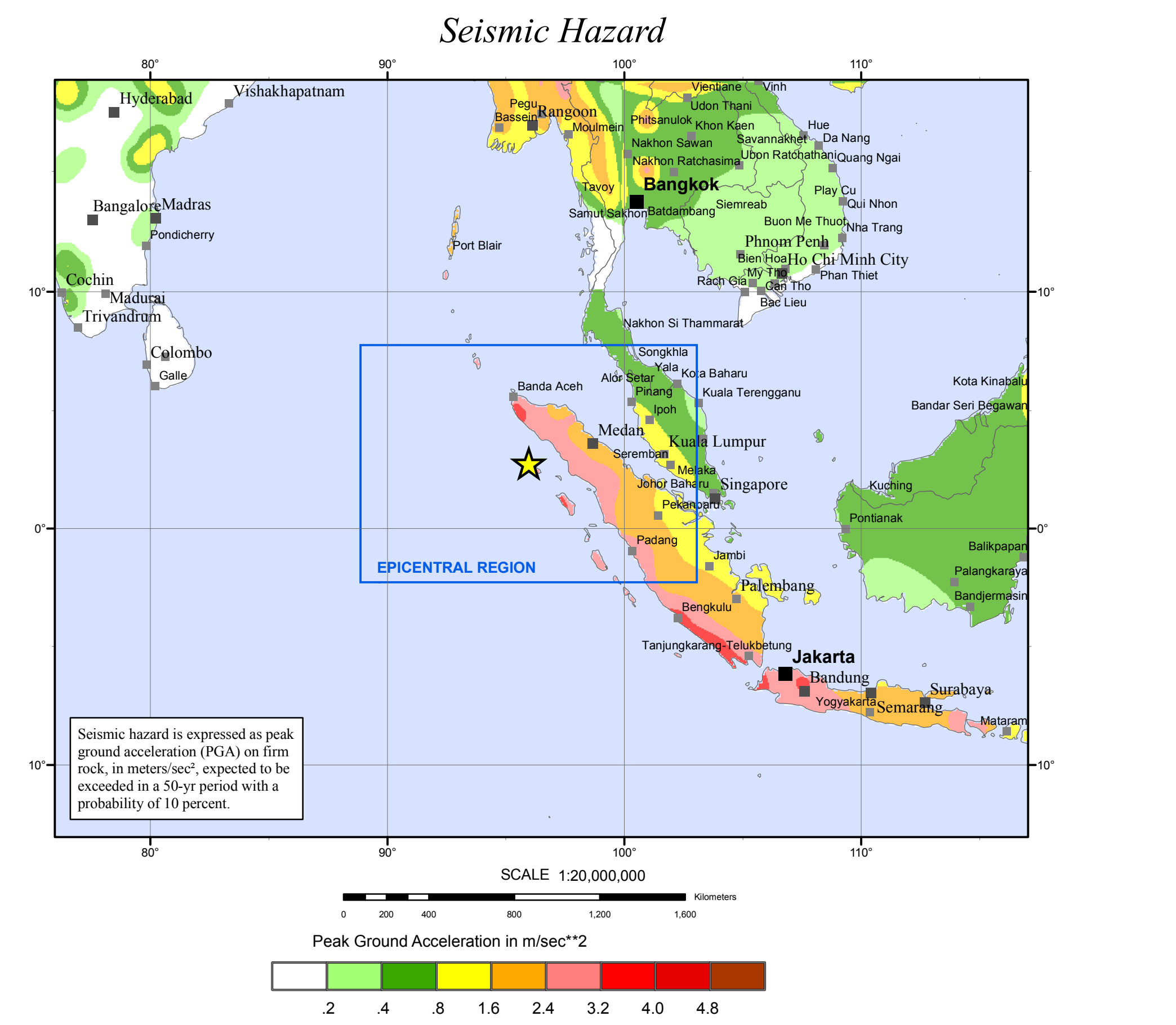
Population Exposure population per -1 sq. km from Landsat 2005

MMI City	Population
V Meulaboh	35k
IV Banda Aceh	250k
IV Reuleuet	40k
IV Sigi	17k
IV Lhokseumawe	86k
IV Bireun	25k
IV Langsa	54k
IV Sungaili	157k
IV Medan	1,750k
IV Binjai	228k
IV Percut	311k

Shaking Intensity MMI

Users should consider the preliminary nature of this information and check for updates as additional data becomes available. Population exposure estimates are NOT a direct estimate of earthquake damage, comparable shaking will result in significantly lower losses in regions with well built structures than in regions with vulnerable structures. Overall, structures in this region are vulnerable to earthquake shaking, though some resistant structures exist. A magnitude 9.0 earthquake struck the Sumatra - Andaman Islands, Indonesia region on December 26, 2004 (UTC), with estimated population exposures of 62,000 at intensity IX or greater and 1.6 million at intensity VIII, resulting in an estimated 297,200 deaths. Recent earthquakes in this area have also triggered landslide and liquefaction hazards that have contributed to losses.

This information was automatically generated and has not been reviewed by a seismologist.
<http://earthquake.usgs.gov/pager> Event ID: us2008nran



TECTONIC SUMMARY

The magnitude 7.4 Simeulue, Indonesia earthquake of February 20, 2008 occurred as the result of thrust faulting on the boundary between the Australia and Sunda plates. At the location of this earthquake, the Australia plate moves north-northeast with respect to the Sunda plate at a velocity of about 55 mm/year. The direction of relative plate motion is oblique to the orientation of the plate boundary offshore of the west coast of Sumatra. The component of plate-motion perpendicular to the boundary is accommodated by thrust faulting on the offshore plate-boundary, with the Australia plate subducting beneath the Sunda plate. Much of the component of plate motion parallel to the plate boundary is accommodated by strike-slip faulting on the Sumatra fault, which is inland on Sumatra proper.

This earthquake occurred at the south end of the rupture zone of the great magnitude 9.1 earthquake of December 26, 2004 and at the north end of the rupture zone of the magnitude 8.6 Nias Island earthquake of March 28, 2005, where the 2004 and 2005 rupture zones nearly abut. The earthquake of December 26, 2004, produced the devastating Indian Ocean tsunami of that date. Since 2000, much of the Sunda trench between the northern Andaman Islands to Eggnago Island, a distance of more than 2,000 km, has ruptured in a series of large subduction zone earthquakes.

Significant Earthquakes Mag >= 7.5

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1907	01	04	0519	2.000	94.500	50	7.5
1935	12	28	0235	-0.345	98.147	35	7.8
1943	06	09	0306	-1.000	101.000	50	7.5
1969	11	21	0205	1.973	94.574	11	7.6
2004	12	26	0058	3.295	95.982	30	9.0
2004	12	26	0421	6.910	92.958	39	7.5
2005	03	28	1609	2.085	97.108	30	8.6

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)
Finite Fault Model, Chen Ji, UC Santa Barbara (2007)

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.

