U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

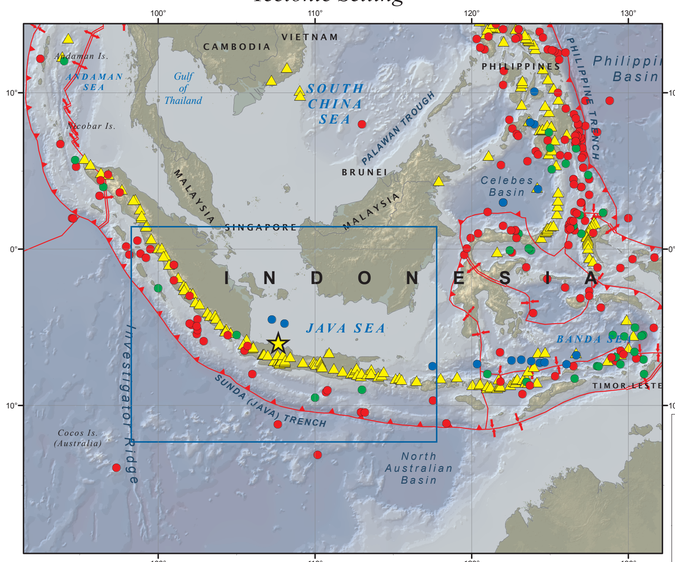
EARTHQUAKE SUMMARY MAP XXX

# M7.5 Java, Indonesia Earthquake of 8 August 2007

*Prepared in cooperation with the Global Seismographic Network*

GSN

## *Tectonic Setting*



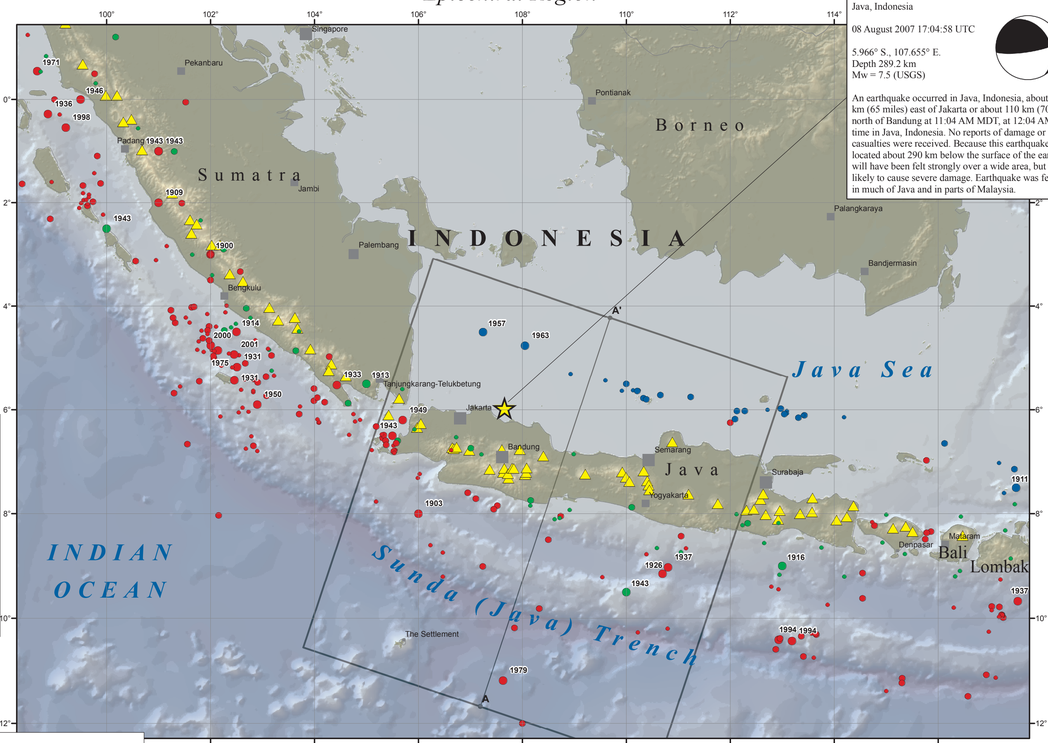

RELATIVE PLATE MOTIONS

The broad red vectors represent the motion of the Australia Plate relative to the other plates in the region. The motion of the Australia Plate is generally northward with respect to the Pacific Plate, and many micro-plates are caught between them.

SCALE 1:20,000,000 at the Equator

Kilometers: 0 200 400 800 1,200 1,600

## *Epicentral Region*




Scale at the Equator 1:6,030,984
Mercator Projection

Kilometers: 0 100 200 400

Java, Indonesia

08 August 2007 17:04:58 UTC

5.966° S., 107.655° E.
Depth 289.2 km
Mw = 7.5 (USGS)

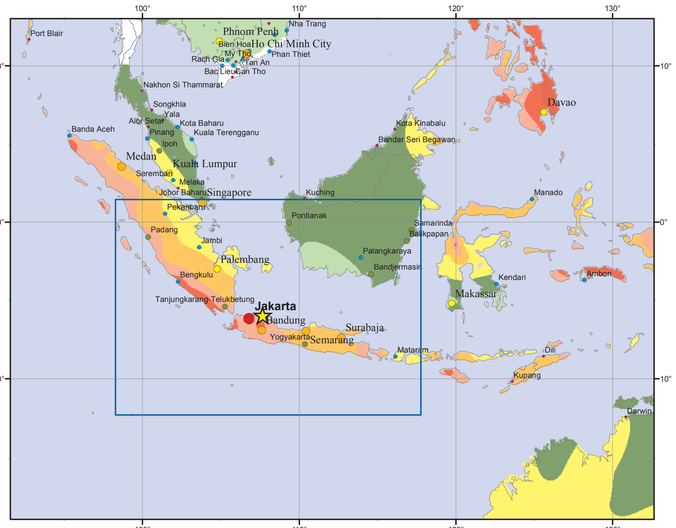
An earthquake occurred in Java, Indonesia, about 100 km (65 miles) east of Jakarta or about 110 km (70 miles) north of Bandung at 11:04 AM MDT, at 12:04 AM local time in Java, Indonesia. No reports of damage or casualties were received. Because this earthquake is located about 290 km below the surface of the earth, it will have been felt strongly over a wide area, but is not likely to cause severe damage. Earthquake was felt in much of Java and in parts of Malaysia.

**EXPLANATION**

**Mag >= 7.0**
- 0 - 69 km
- 70 - 299
- 300 - 600

**Plate Boundary**
- Subduction
- Transform
- Divergent
- Convergent

## *Seismic Hazard*




SCALE 1:20,000,000 at the Equator

Kilometers: 0 200 400 800 1,200 1,600

Peak Ground Acceleration in m/sec**2

.2 .4 .8 1.6 2.4 3.2 4.0 4.8

Seismic hazard is expressed as peak ground acceleration (PGA) on firm rock, in meters/sec$^2$, expected to be exceeded in a 50-yr period with a probability of 10 percent.

**EXPLANATION**

**Earthquake Magnitude**
- 4.00 - 5.99
- 6.00 - 6.99
- 7.00 - 7.99
- 8.00 - 8.99
- 9.00 - 9.99

**Earthquake Depth**
- 0 - 69
- 70 - 299
- 300 - 700

TECTONIC SETTING

The earthquake of August 8, 2007, occurred at a depth of about 290 km within the lithosphere of the Australia plate, which is subducting beneath the Sunda plate. In this region, the Australia plate moves to the north with respect to the Sunda plate with a velocity of about 58 mm/yr. The Australia plate is thrust beneath the Sunda plate at the Java trench, south of the island of Java, and is subducted to progressively greater depths with distance north of the trench. The subducted lithosphere beneath and north of Java is seismically active to a depth of about 650 km.

Earthquakes that have focal-depths between 70 and 300 km are commonly termed "intermediate-depth" earthquakes, and earthquakes with focal-depths greater than 300 km are termed "deep-focus" earthquakes. Intermediate-depth and deep-focus earthquakes represent deformation within subducted plates, rather than deformation at plate boundaries. Intermediate-depth and deep-focus earthquakes typically cause less damage on the ground surface above their foci than is the case with similar magnitude shallow-focus earthquakes, but large intermediate-depth and deep-focus earthquakes may be felt at great distance from their epicenters.

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

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.

**Significant Earthquakes Mag ≥ 7.0**

| Year | Mon | Day | Time | Lat | Long | Dep | Mag |
|---|---|---|---|---|---|---|---|
| 1900 | 01 | 05 | 1900 | -3.000 | 102.000 | 0 | 7.0 |
| 1903 | 02 | 27 | 0043 | -8.000 | 106.000 | 0 | 7.3 |
| 1909 | 06 | 03 | 1840 | -2.000 | 101.000 | 0 | 7.2 |
| 1911 | 07 | 05 | 1840 | -7.500 | 117.500 | 370 | 7.0 |
| 1913 | 08 | 13 | 0425 | -5.500 | 105.000 | 75 | 7.3 |
| 1914 | 06 | 25 | 1907 | -4.500 | 102.500 | 0 | 7.6 |
| 1916 | 09 | 11 | 0630 | -9.000 | 113.000 | 100 | 7.1 |
| 1926 | 09 | 10 | 1034 | -9.152 | 110.701 | 35 | 7.0 |
| 1931 | 02 | 10 | 0634 | -5.433 | 102.458 | 35 | 7.1 |
| 1931 | 09 | 25 | 0559 | -5.178 | 102.511 | 35 | 7.3 |
| 1933 | 06 | 24 | 2154 | -5.522 | 104.434 | 35 | 7.3 |
| 1936 | 01 | 02 | 2234 | -0.279 | 98.872 | 35 | 7.0 |
| 1937 | 08 | 11 | 0055 | -9.675 | 117.533 | 35 | 7.2 |
| 1937 | 09 | 27 | 0855 | -9.027 | 110.802 | 35 | 7.0 |
| 1943 | 04 | 01 | 1418 | -6.500 | 105.500 | 0 | 7.1 |
| 1943 | 06 | 08 | 2042 | -1.000 | 101.000 | 50 | 7.2 |
| 1943 | 06 | 09 | 0306 | -1.000 | 101.000 | 50 | 7.5 |
| 1943 | 07 | 23 | 1453 | -9.500 | 110.000 | 90 | 7.6 |
| 1943 | 11 | 26 | 2125 | -2.500 | 100.000 | 130 | 7.1 |
| 1946 | 05 | 08 | 0520 | 0.000 | 99.500 | 0 | 7.1 |
| 1949 | 06 | 24 | 2238 | -6.200 | 105.700 | 65 | 7.0 |
| 1950 | 03 | 27 | 2118 | -5.900 | 102.900 | 0 | 7.0 |
| 1957 | 04 | 16 | 0404 | -4.504 | 107.244 | 600 | 7.2 |
| 1963 | 12 | 15 | 1934 | -4.764 | 108.050 | 668 | 7.1 |
| 1971 | 02 | 04 | 1533 | 0.552 | 98.665 | 60 | 7.1 |
| 1975 | 10 | 01 | 0330 | -4.859 | 102.145 | 37.2 | 7.0 |
| 1979 | 07 | 24 | 1931 | -11.185 | 107.628 | 12.1 | 7.0 |
| 1994 | 06 | 02 | 1817 | -10.411 | 112.935 | 34.5 | 7.8 |
| 1994 | 06 | 02 | 1817 | -10.432 | 113.191 | 35 | 7.1 |
| 1998 | 04 | 01 | 1756 | -0.544 | 99.217 | 32 | 7.0 |
| 2000 | 06 | 04 | 1628 | -4.762 | 102.007 | 34.6 | 7.9 |
| 2001 | 02 | 13 | 1928 | -4.933 | 102.454 | 34 | 7.3 |
| 2007 | 08 | 08 | 1704 | -5.966 | 107.655 | 289 | 7.5 |

USGS science for a changing world — ANSS — GSN

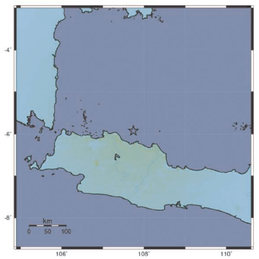
## Prompt Assessment of Global Earthquakes for Response (PAGER)

PAGER V5(Wed Aug 08, 2007, 06:27:25 PM GMT)

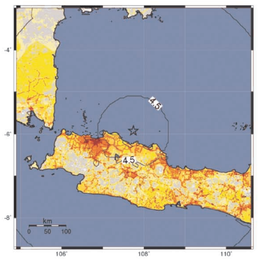
M7.5 JAVA, INDONESIA

S5.92 E107.74 282.1km Wed Aug 08, 2007 05:04:57 PM GMT

Shaking Intensity



Population per km$^2$




(Data from LandScan 2003)

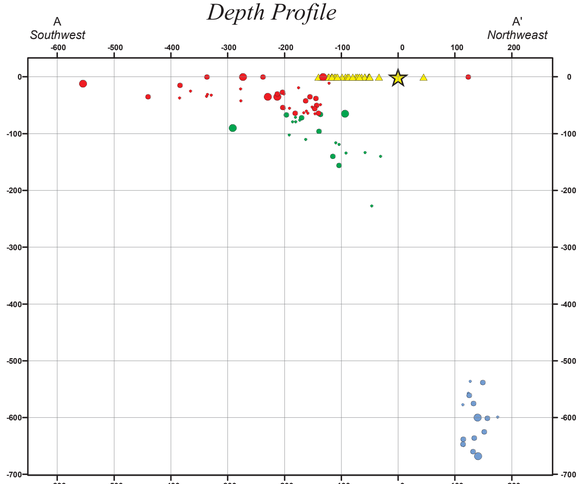
Population exposed to shaking

| MMI Intensity | Population |
|---|---|
| V | 9,850,000 |
| IV | 82,100,000* |
| III | 431,000* |

* - MMI level extends beyond map boundary, actual population exposure may be much larger

These results are from a prototype system and users are cautioned to carefully consider, and use common sense, in any decisions relating to personal or public safety or the allocation of resources. PAGER results are often updated as more earthquake information is reported or derived. Considerable effort has been made to provide accurate information, but reliance on earthquake impact information from a single source is not advised.

## *Depth Profile*




Map prepared by U.S. Geological Survey
National Earthquake Information Center
2007
Map not approved for release by Director USGS