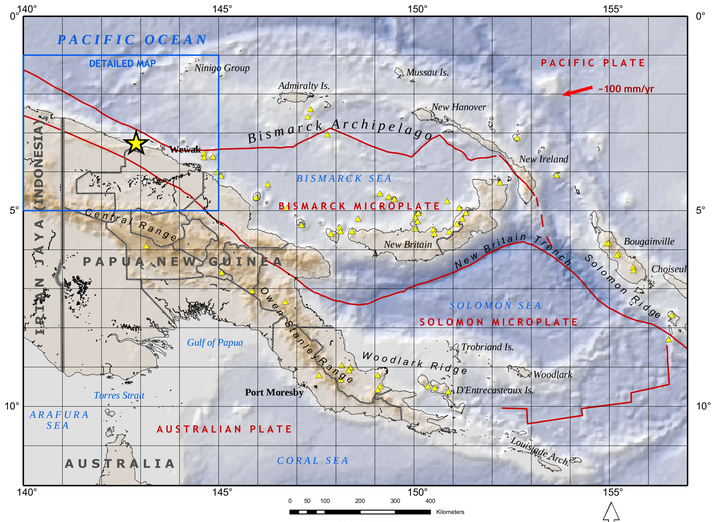
U.S. Department of the Interior
U.S. Geological Survey

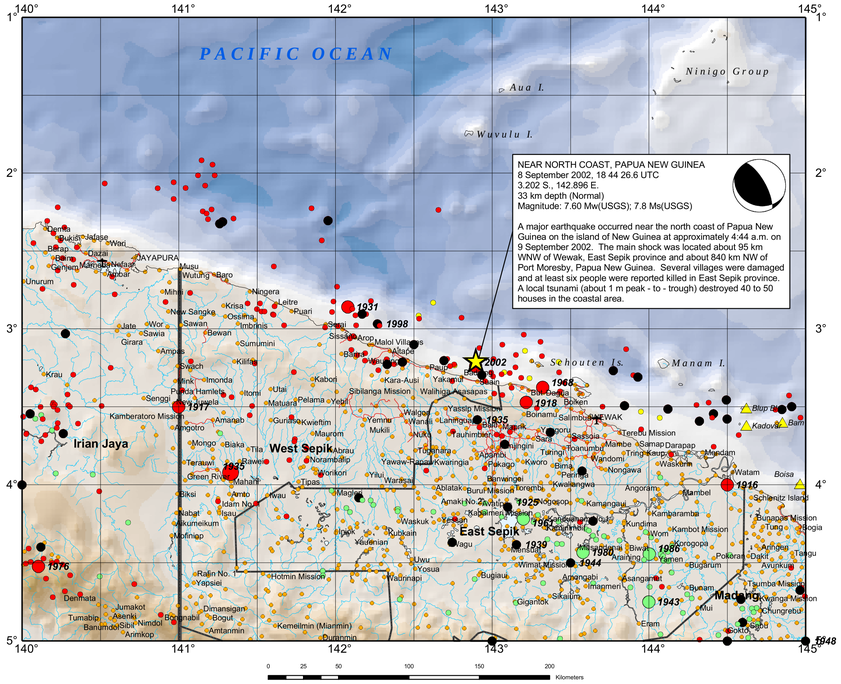
General Interest Product xxx

Papua New Guinea Earthquake of 8 September 2002

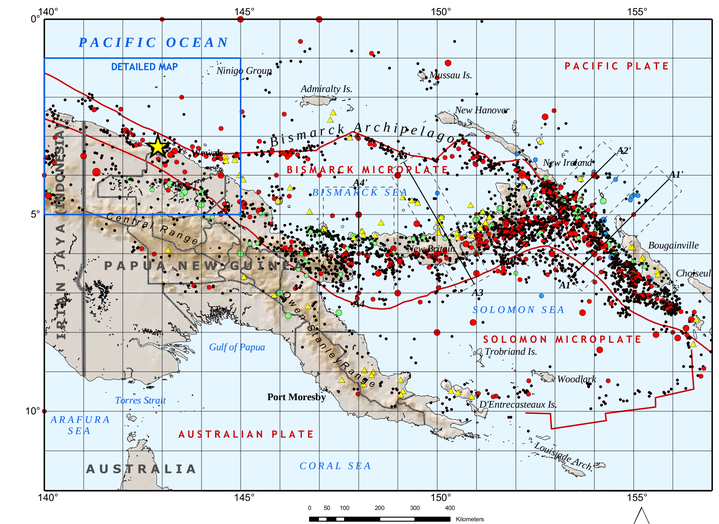
Plate Tectonic Setting



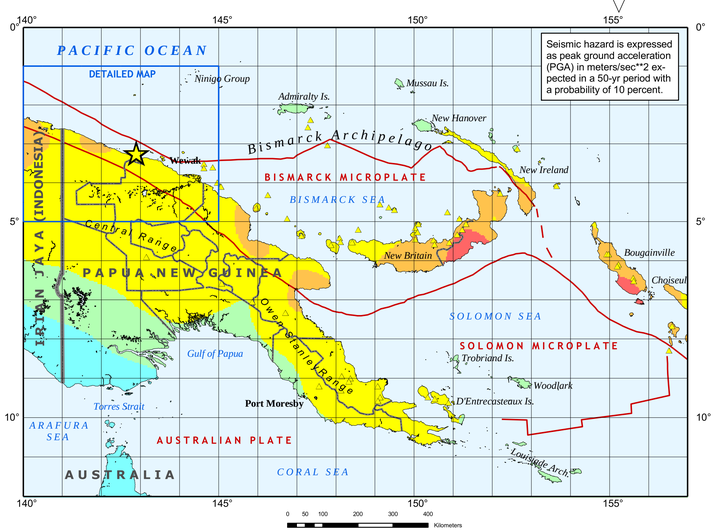
Epicentral Area



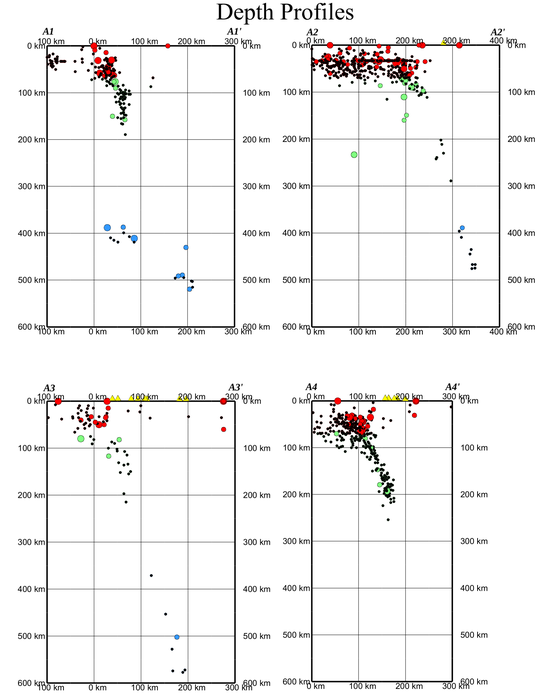
Seismicity of Papua New Guinea



Seismic Hazard of Papua New Guinea



Depth Profiles



EXPLANATION

Peak Ground Acceleration

- 0.0 - 0.2 m/sec**2
- 0.2 - 0.4
- 0.4 - 0.8
- 0.8 - 1.6
- 1.6 - 3.2
- 3.2 - 6.4
- 6.4 - 8.2

EXPLANATION

Main Shock — 8 September 2002

Volcanoes

Plate Boundaries

Political Boundaries

- International
- Provincial

EXPLANATION

Main Shock — 8 September 2002

Aftershocks — 8 - 11 September

Depth Classes

- 0 - 69 km
- 70 - 299 km

Magnitude Classes

- 5.0 - 6.0
- 6.0 - 7.0
- 7.0 - 8.0
- M > 8.0

Volcanoes

Airports

Roads

Populated Places

Political Boundaries

- International
- Provincial

EXPLANATION

Main Shock — 8 September 2002

Depth Classes

- 0 - 69 km
- 70 - 299 km
- > 300 km

Magnitude Classes

- 5.0 - 6.0
- 6.0 - 7.0
- 7.0 - 8.0
- M > 8.0

Volcanoes

Plate Boundaries

Political Boundaries

- International
- Provincial

DISCUSSION

This earthquake occurred in a subduction zone environment near the eastern end of the New Guinea trench off the north-east shore of the island of New Guinea, Papua New Guinea. It resulted from stresses developed by the complex interaction between three tectonic plates, namely the large Pacific and Australian plates and the small Bismarck microplate. Relative to New Guinea, the Pacific plate is moving west - southwest at a rate of about 100 mm per year.

This region has recently suffered several damaging earthquakes. The most significant was on July 17th, 1998; a magnitude 7.0 earthquake generated a tsunami that killed at least 2,183 people and injured thousands.

EARTHQUAKES M = 7.0 OR GREATER
1900 - 2002

YR	MO	DY	LAT	LON	DEPTH	MAG
1916	8	3	-4.000	144.500	0	7.10
1917	7	29	-3.500	141.000	0	7.60
1918	7	3	-3.471	143.217	35	7.20
1925	6	9	-4.142	143.098	35	7.00
1931	8	7	-2.859	142.079	35	7.10
1935	9	20	-3.583	142.905	35	7.00
1935	9	20	-3.920	141.330	35	8.10
1939	3	2	-4.383	143.155	35	7.00
1943	12	1	-4.750	144.000	120	7.30
1944	1	7	-4.500	143.500	120	7.00
1948	11	26	-5.000	145.000	70	7.00
1961	1	5	-4.219	143.199	140	7.10
1968	10	23	-3.375	143.322	9	7.10
1976	6	25	-4.523	140.105	3	7.20
1980	7	16	-4.432	143.579	87	7.30
1986	6	24	-4.443	144.003	123	7.20
1998	7	17	-2.968	142.268	23	7.00
2002	9	8	-3.202	142.896	33	7.60

DATA SOURCES

EARTHQUAKES AND SEISMIC HAZARD
USGS, National Earthquake Information Center
NOAA, National Geophysical Data Center
IASPEI, Centennial Catalog (1900 – 1999)
Handbook of Seismology and Earthquake Engineering
Global Seismic Hazard Assessment Program

PLATE TECTONICS
Smithsonian Institution, Global Volcano Program
University of Texas

BASE MAP
NIMA and ESRI, Digital Chart of the World
USGS, EROS Data Center

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
16 September 2002
Map approved for release by Director xx September 2002