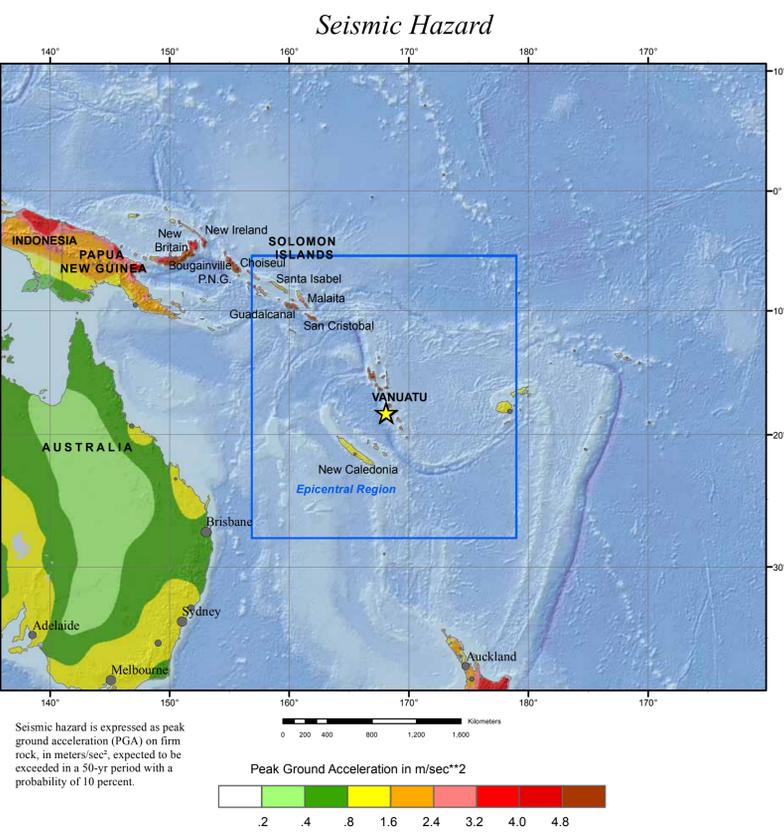
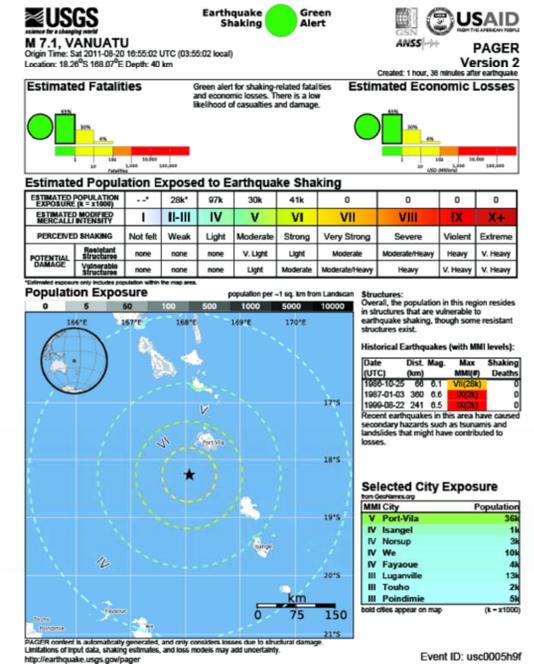
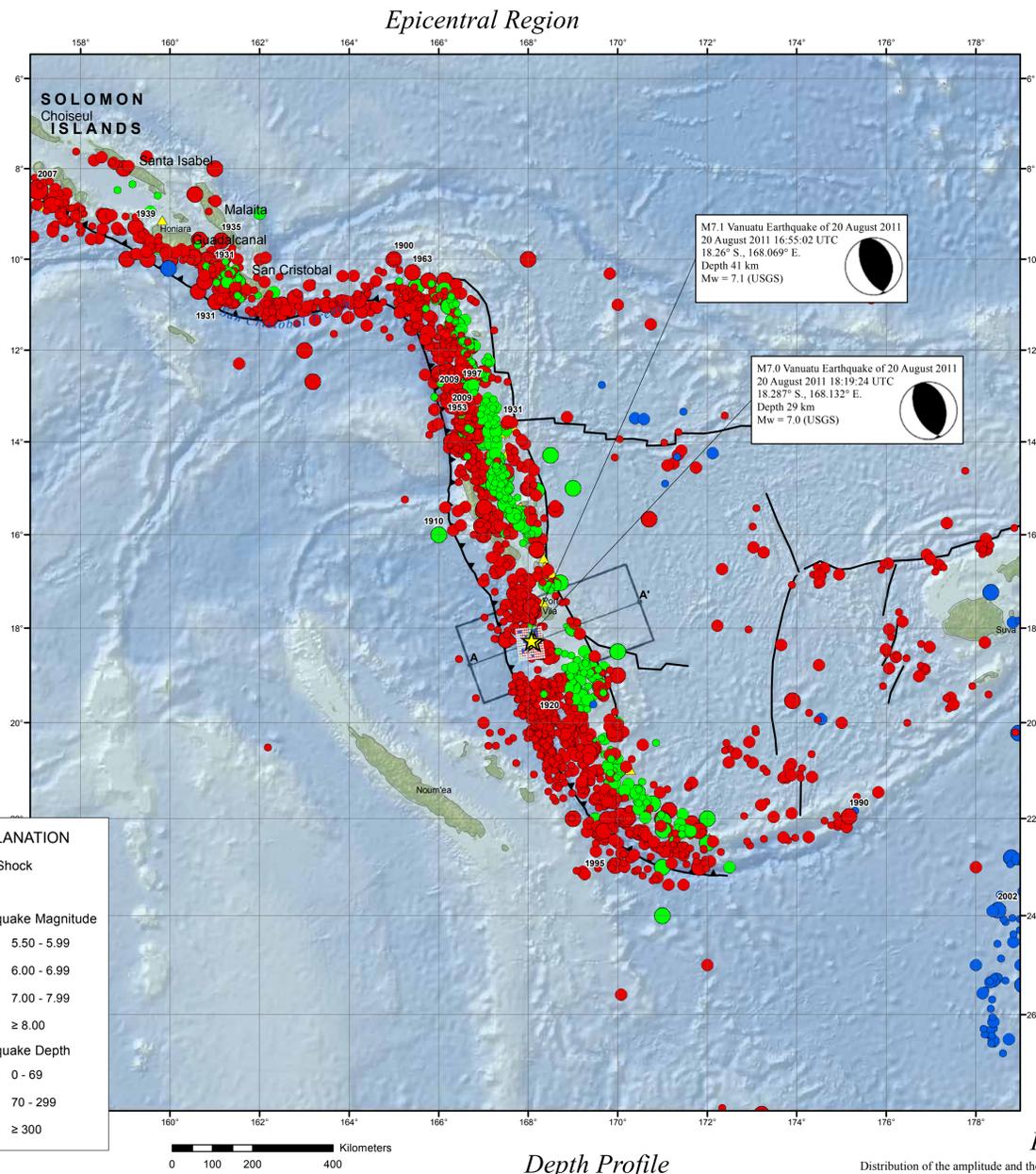
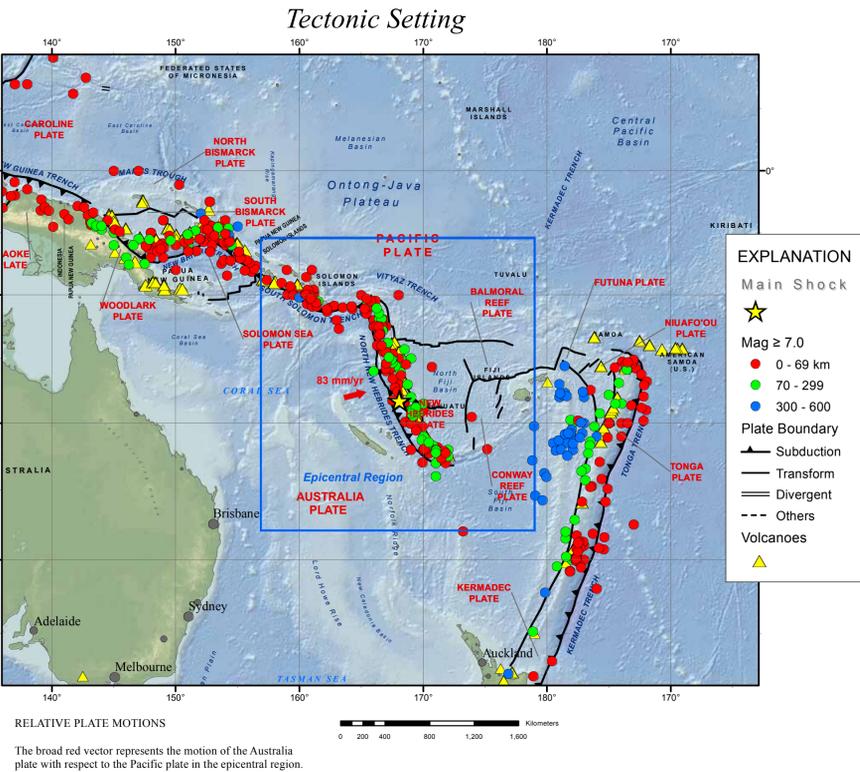




M7.1 & M7.0 Vanuatu Earthquakes of 20 August 2011



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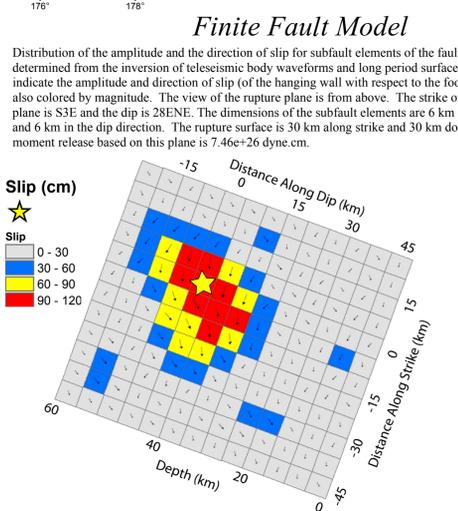
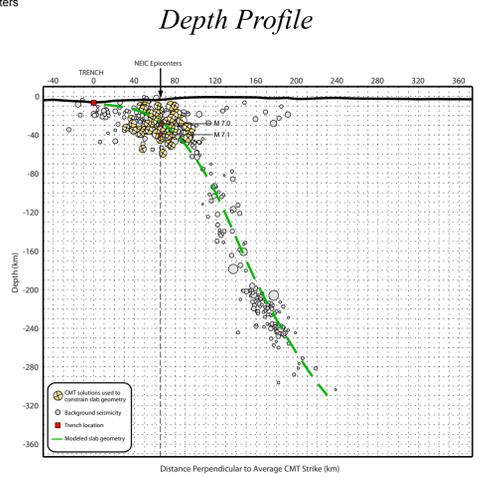


DISCUSSION

The Vanuatu earthquakes of August 20, 2011 (M 7.1 and M 7.0) resulted from thrust faulting on or near the subduction zone plate boundary between the Australia and Pacific plates in the Coral Sea region of the southwest Pacific. Near the epicenter of the earthquakes, the Australia plate moves to the east-northeast with respect to the Pacific plate at a velocity of approximately 83 mm/year, and begins its eastward decent beneath the arc at the North New Hebrides trench.

The M 7.1 earthquake (August 20, 2011, 16:55 GMT) preceded the M 7.0 event (August 20, 2011, 18:19 GMT) by 84 minutes, and was located approximately 6 km away horizontally, and 12 km in depth – each within location uncertainties of typical global earthquakes. The two events also had approximately the same focal-mechanism. The latter earthquake was almost certainly triggered by the earlier event. Seismologists sometimes refer to a pair of similarly sized shocks that occur at nearly the same time and location as an earthquake “doublet.”

These earthquakes are located approximately 80 km to the south of an M 7.3 earthquake that occurred in August of 2010, and 600 km to the south of a sequence of large subduction thrust earthquakes that occurred in October of 2009. The Vanuatu region experiences a very high level of earthquake activity, with almost 50 events of magnitude 7 and larger having been recorded since 1973. The subducting Australia plate is seismically active to depths of about 350 km beneath the islands.



Significant Earthquakes Mag >= 7.5

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1900	07	29	0659	-10.000	165.000	0	7.6
1901	08	09	1301	-22.000	170.000	0	7.9
1910	06	16	0630	-19.000	169.500	100	7.9
1910	11	09	0602	-16.000	166.000	70	7.5
1910	08	14	0808	-19.500	169.000	230	7.6
1920	09	20	1439	-19.919	168.530	35	7.8
1928	03	16	0501	-22.281	170.476	35	7.5
1931	10	03	1913	-10.932	161.016	35	7.8
1931	10	10	0020	-9.968	161.194	50.2	7.7
1934	07	18	1940	-11.907	166.731	35	7.8
1935	12	15	0707	-9.590	161.145	35	7.5
1939	04	30	0255	-9.295	159.234	35	7.9
1953	11	04	0349	-13.189	166.516	35	7.5
1963	09	15	0046	-10.472	165.770	35	7.5
1963	09	17	1920	-10.286	165.413	27.6	7.5
1965	05	20	0040	-14.642	167.504	9.7	7.6
1965	08	11	2231	-15.797	167.268	45.8	7.6
1970	08	11	1022	-14.095	166.570	39.1	7.5
1980	07	08	2319	-12.487	166.482	56	7.5
1980	07	17	1942	-12.504	166.011	31.6	7.8
1980	10	25	1100	-21.941	170.056	39	7.5
1981	07	06	0308	-22.251	171.814	30	7.6
1984	02	07	2133	-9.957	160.522	17	7.6
1988	08	10	0438	-10.258	160.896	36.1	7.6
1990	03	03	1216	-21.956	175.171	35.5	7.6
1995	05	16	2012	-22.968	169.945	23.6	7.7
1997	04	21	1202	-12.560	166.738	29.8	7.7
1998	01	04	0611	-22.239	171.017	97.1	7.5
2002	08	19	1108	-23.884	178.495	675	7.7
2007	04	01	2039	-8.466	157.043	24	8.1
2009	10	07	2203	-13.006	166.510	45	7.7
2009	10	07	2218	-12.517	166.382	35	7.8

DATA SOURCES AND REFERENCES

EARTHQUAKES AND SEISMIC HAZARD
USGS, National Earthquake Information Center
NOAA, National Geophysical Data Center
IASPEI Centennial Catalog (1900 - 1999) and extensions 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.

EHB catalog (Engdahl et al., 1998)
HDF (unpublished earthquake catalog, Engdahl, 2003)
Global Seismic Hazard Assessment Program
<http://www.seismo.ethz.ch/GSHA/>

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.

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