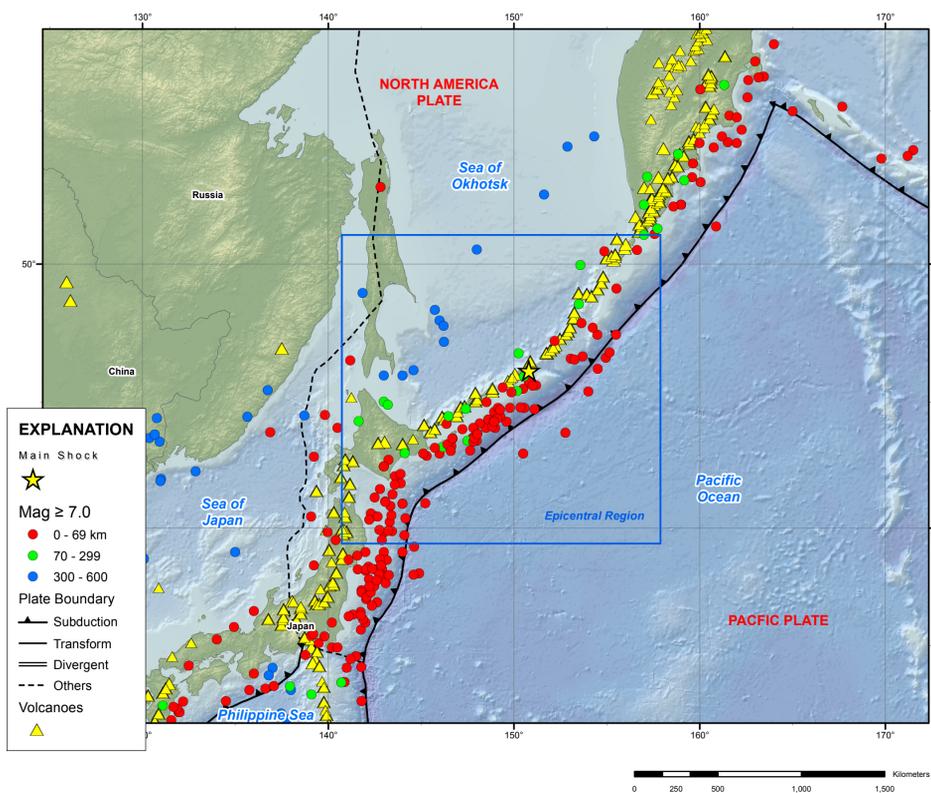


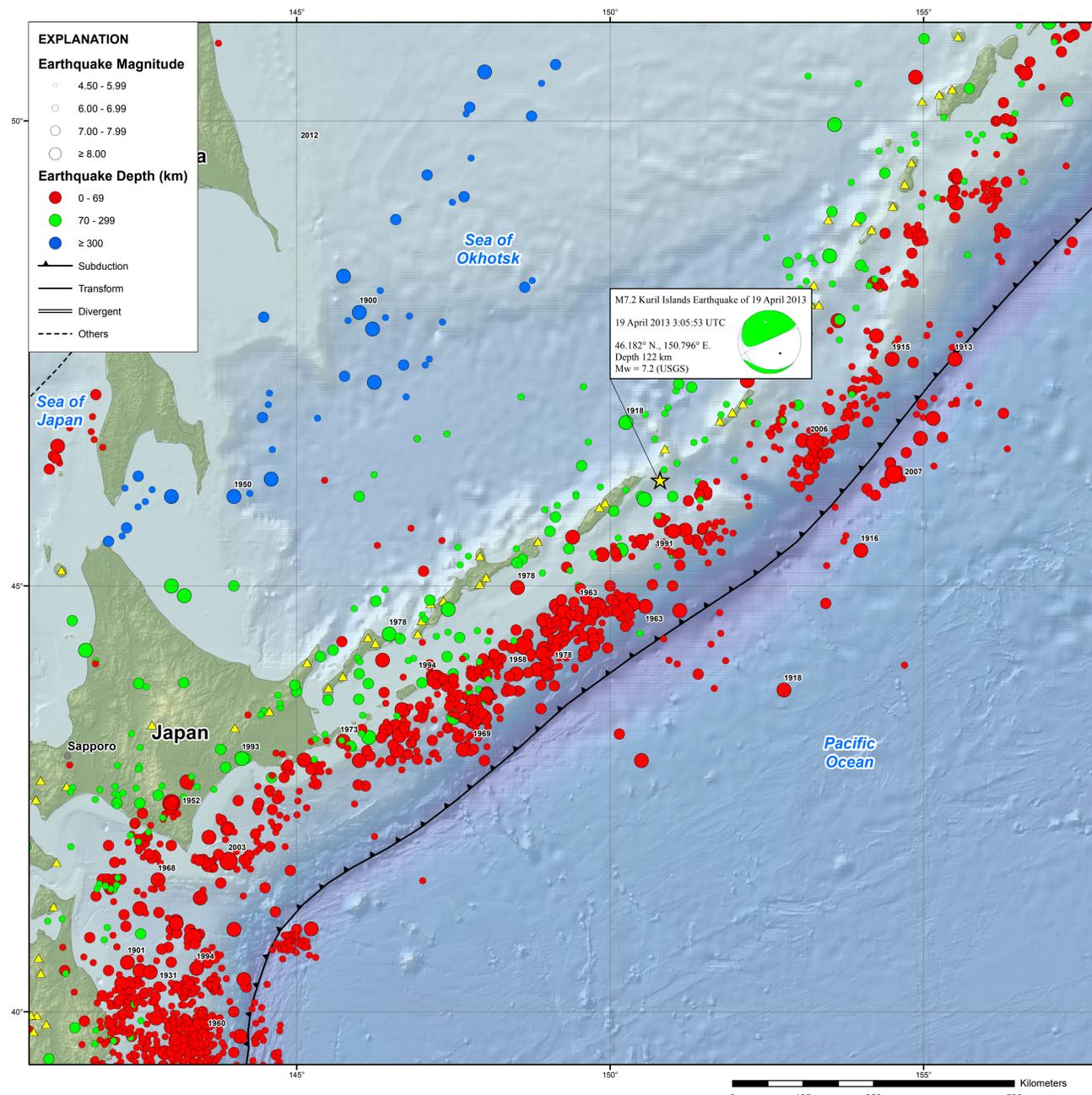
M7.2 Kuril Islands Earthquake of 19 April 2013



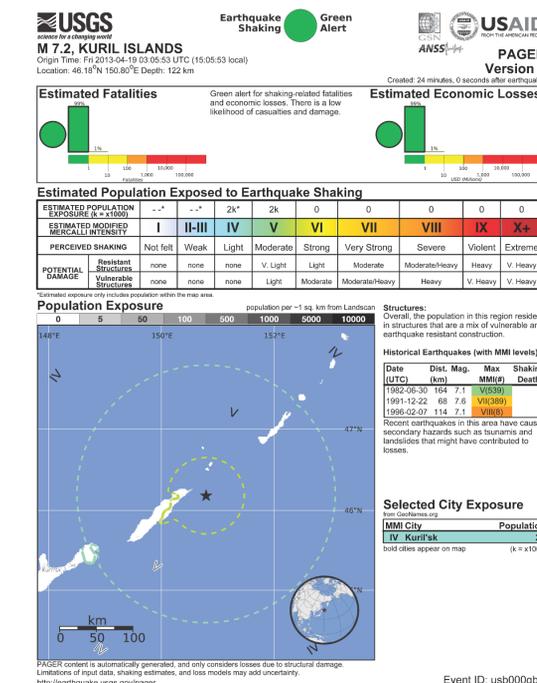
Tectonic Setting



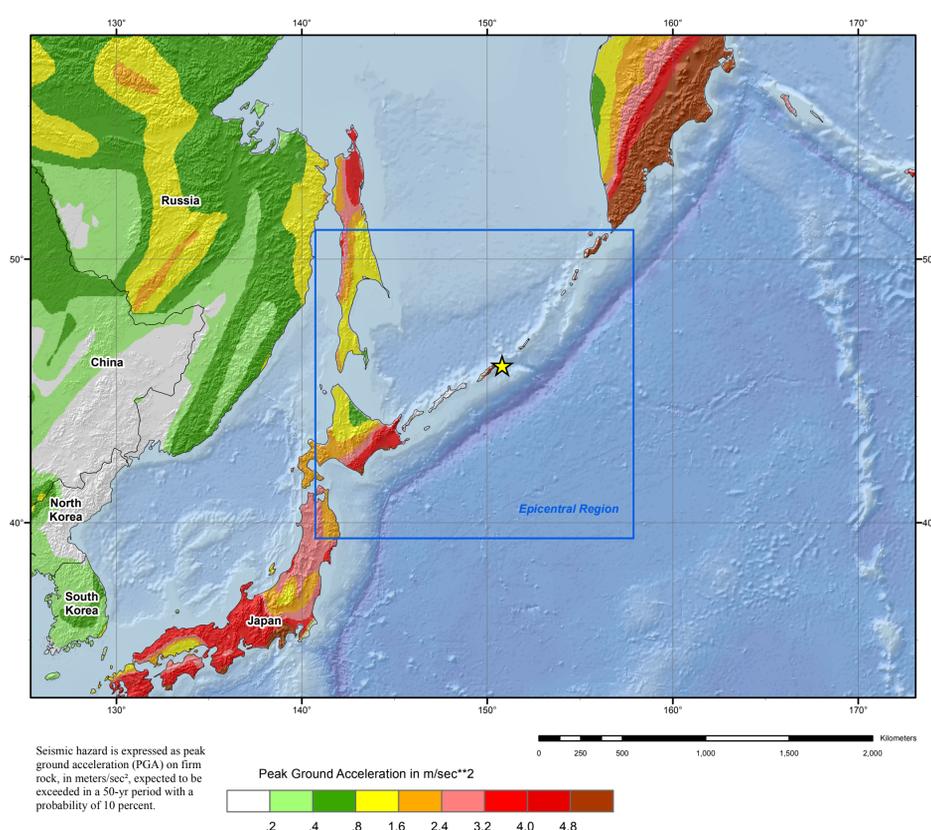
Epicentral Region



PAGER



Seismic Hazard



TECTONIC SUMMARY

The April 19, 2013 M 7.2 earthquake ENE of Kuril'sk, Russia, occurred as a result of oblique normal faulting at intermediate depths within the subducting lithosphere of the Pacific plate. At the latitude of this earthquake, the Pacific plate converges with the North America plate (and the smaller Okhotsk microplate) towards the west-northwest at a velocity of approximately 82 mm/yr, and subducts beneath the Kuril Islands at the Kuril-Kamchatka trench, some 160 km to the southeast of the April 19 event. The depth of this earthquake, and its oblique-faulting mechanism, indicate that it involved intraplate faulting within the subducting slab, rather than being an interplate thrust event on the shallower seismogenic zone between the two tectonic plates.

The Kuril-Kamchatka arc has frequent moderate-to-large earthquakes, and has hosted over three-dozen M 6.5+ events within 250 km of the April 19 earthquake over the past 40 years. None are known to have caused shaking-related fatalities. The largest of these was the November 2006 M 8.3 interplate thrust event, approximately 200 km to the east of the April 19 earthquake. However, while the Pacific slab is seismically active in this region to depths of almost 700 km, just one of these nearby M 6.5+ events has occurred at depths greater than 70 km – a M 6.7 event in October 1994, 130 km to the southwest.

Significant Earthquakes Mag >= 7.5

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1900	01	31	1922	48.000	146.000	450	7.5
1901	08	09	1833	40.600	142.300	35	7.5
1913	08	01	1710	47.500	155.500	0	7.7
1915	05	01	0500	47.500	154.500	35	7.9
1916	10	31	1530	45.400	154.000	0	7.6
1918	09	07	1715	48.812	150.253	242	7.8
1918	11	08	0438	43.816	152.775	63.5	7.5
1931	03	09	0348	40.484	142.664	35	7.7
1950	02	28	1020	46.000	144.000	340	7.5
1952	03	04	0122	42.500	143.000	0	8.1
1958	11	06	2258	44.329	148.623	35	8.4
1960	03	20	1707	39.871	143.435	2.1	7.8
1963	10	13	0517	44.770	149.798	13.4	8.6
1963	10	20	0053	44.772	150.563	27.9	7.9
1968	05	16	0049	40.903	143.346	25.8	8.3
1968	05	16	1039	41.593	142.786	11.8	7.8
1969	08	11	2127	43.478	147.815	45.6	8.2
1973	06	17	0355	43.223	145.743	43.3	7.8
1978	03	23	0314	44.359	149.113	8.2	7.5
1978	03	23	0315	44.982	148.523	21	7.6
1978	03	24	1947	44.233	148.923	12.2	7.5
1978	12	06	1402	44.455	148.475	181	7.8
1991	12	22	0843	45.615	151.010	25	7.6
1993	10	15	1106	43.022	144.124	102	7.6
1994	10	04	1322	43.945	147.224	14	8.3
1994	12	28	1219	40.530	143.403	29.2	7.8
1995	12	03	1801	44.708	149.262	24.4	7.9
2003	09	25	1950	41.615	143.910	27	8.3
2006	11	15	1114	46.592	153.266	10	8.3
2007	01	13	0423	46.243	154.524	10	8.1
2012	08	14	1102	49.800	145.064	583	7.7

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 Villaseor, 2002)
 EHB catalog (Engdahl et al., 1998)
 HDF (unpublished earthquake catalog, Engdahl, 2003)
 Global Seismic Hazard Assessment Program

PLATE TECTONICS AND FAULT MODEL
 PB2002 (Bird, 2003)
 J. C. D. J. Wald, and D. V. Helmberger. Source description of the 1999 Hector Mine, California earthquake; Part I: Wavelet domain inversion theory and resolution analysis. Bull. Seism. Soc. Am., Vol 92, No. 4, pp. 1192-1207, 2002.
 DeMets, C., Gordon, R.G., Argus, D.F., 2010. Geologically current plate motions. Geophys. J. Int. 181, 1-80.

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

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	22	40	75	>139
PEAK ACC (m/s ²)	<0.05	0.3	2.8	6.2	12	20	41	86	>178
PEAK VEL (cm/s)	<0.02	0.1	1.4	4.7	9.6	20	41	86	>178
INSTRUMENTAL INTENSITY	I	II-III	IV	V	VI	VII	VIII	IX	X+

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 Villaseor, 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
 19 April 2013
<http://earthquake.usgs.gov/>
 Map not approved for release by Director USGS

Event ID: usb000gbf8