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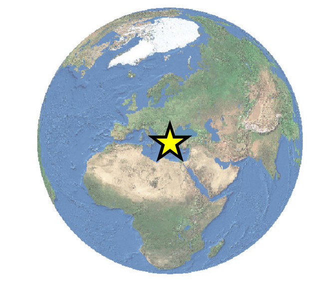
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

EARTHQUAKE SUMMARY MAP

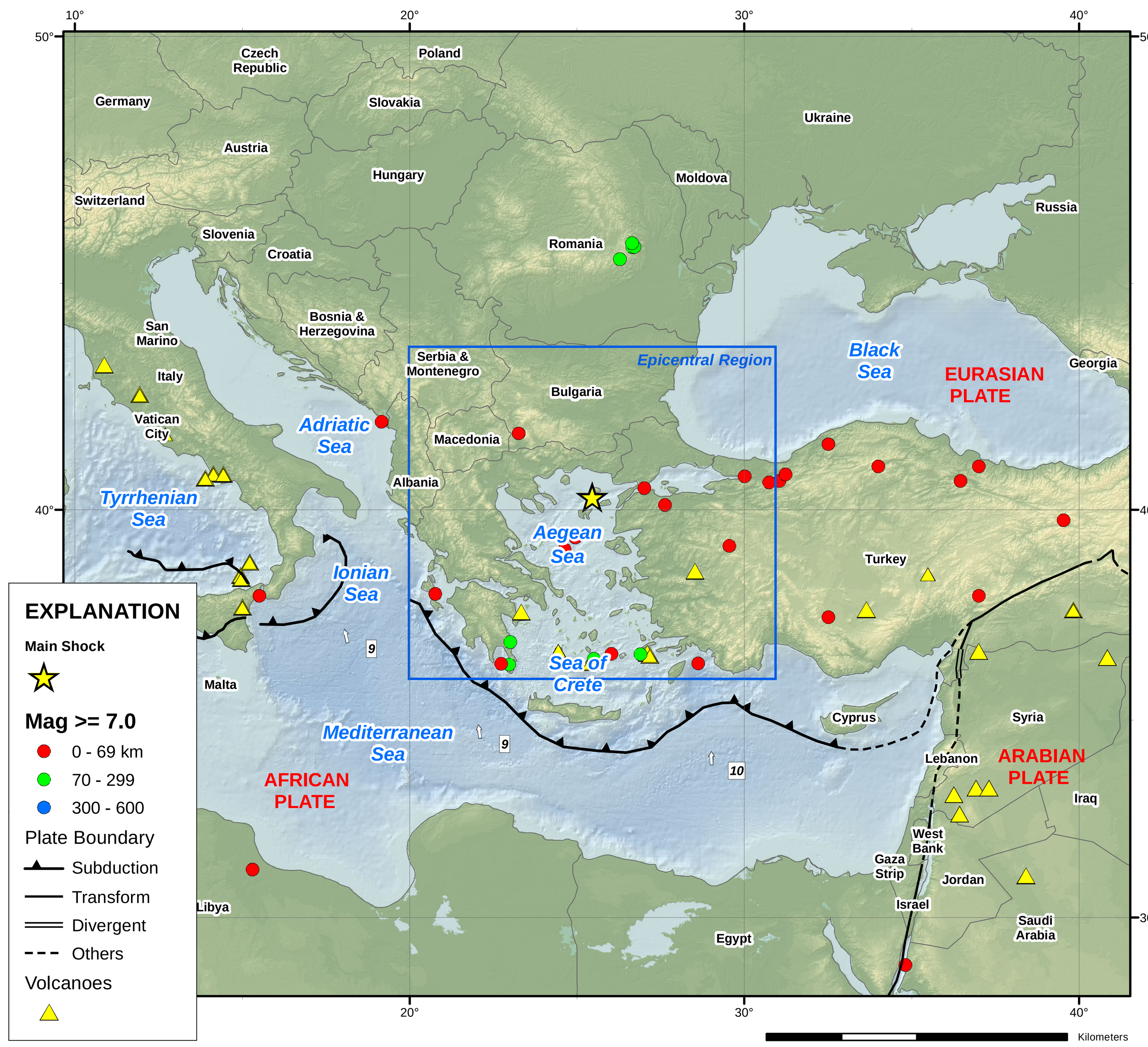
Prepared in cooperation with the Global Seismographic Network

GSN

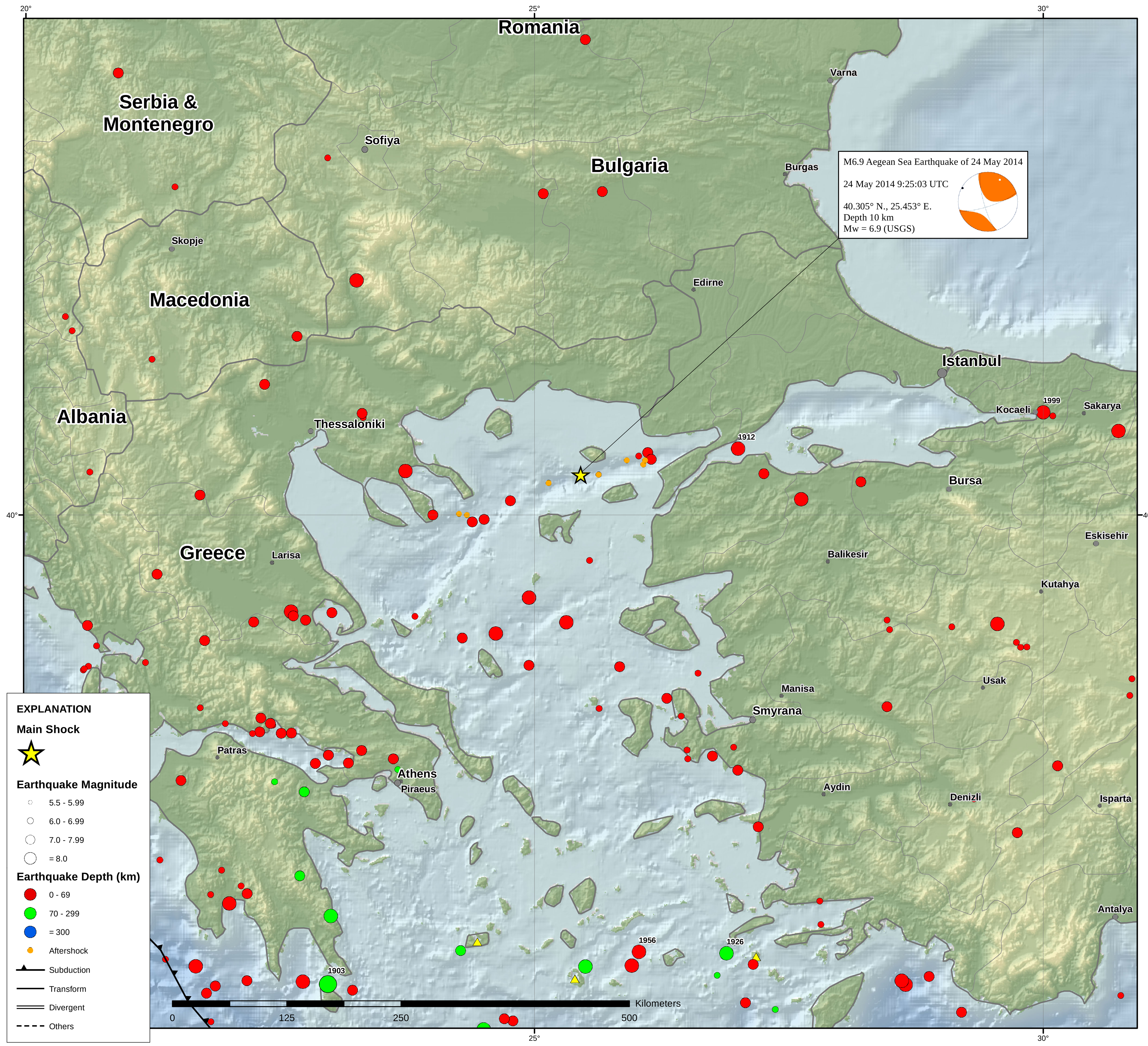
M6.9 Aegean Sea Earthquake of 24 May 2014



Tectonic Setting



Epicentral Region



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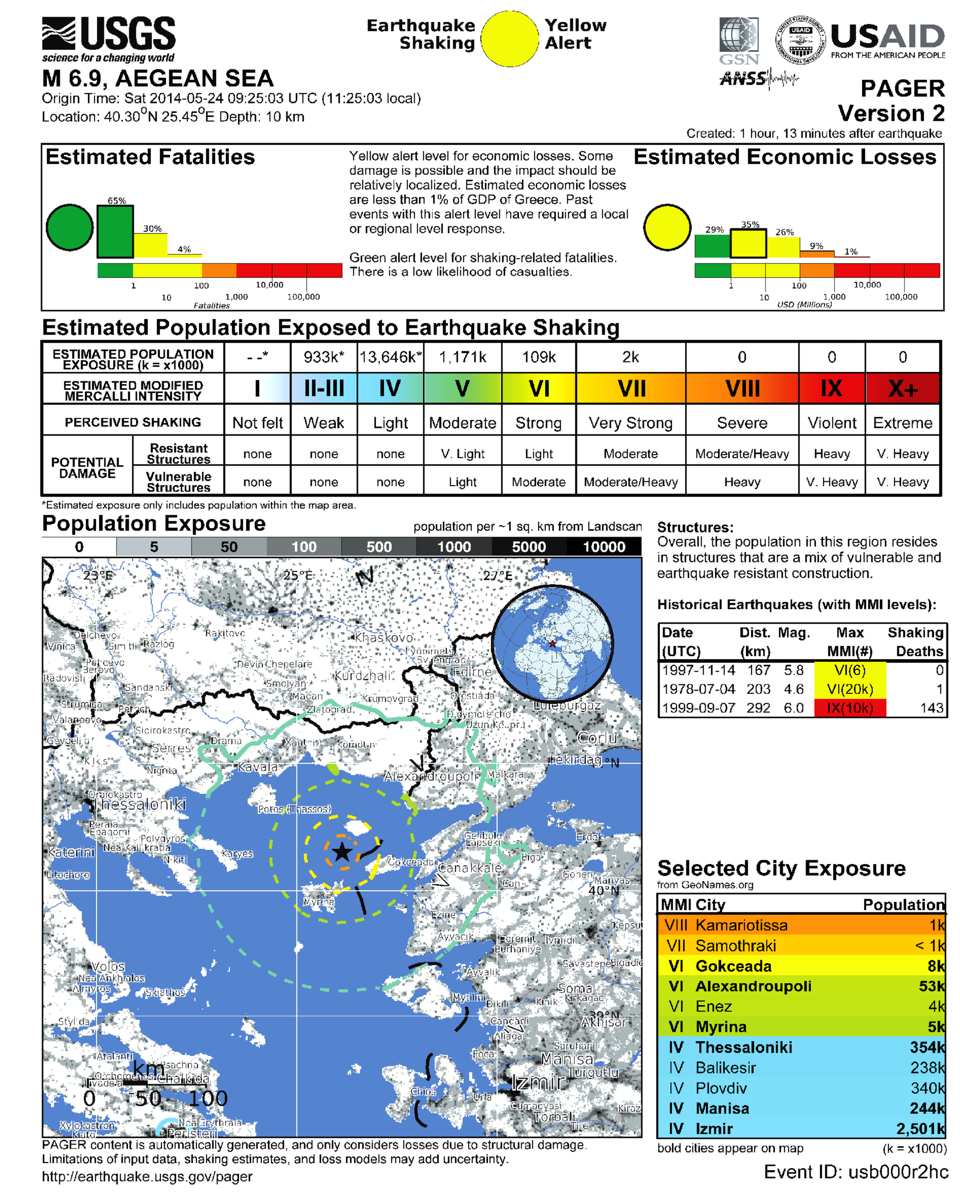
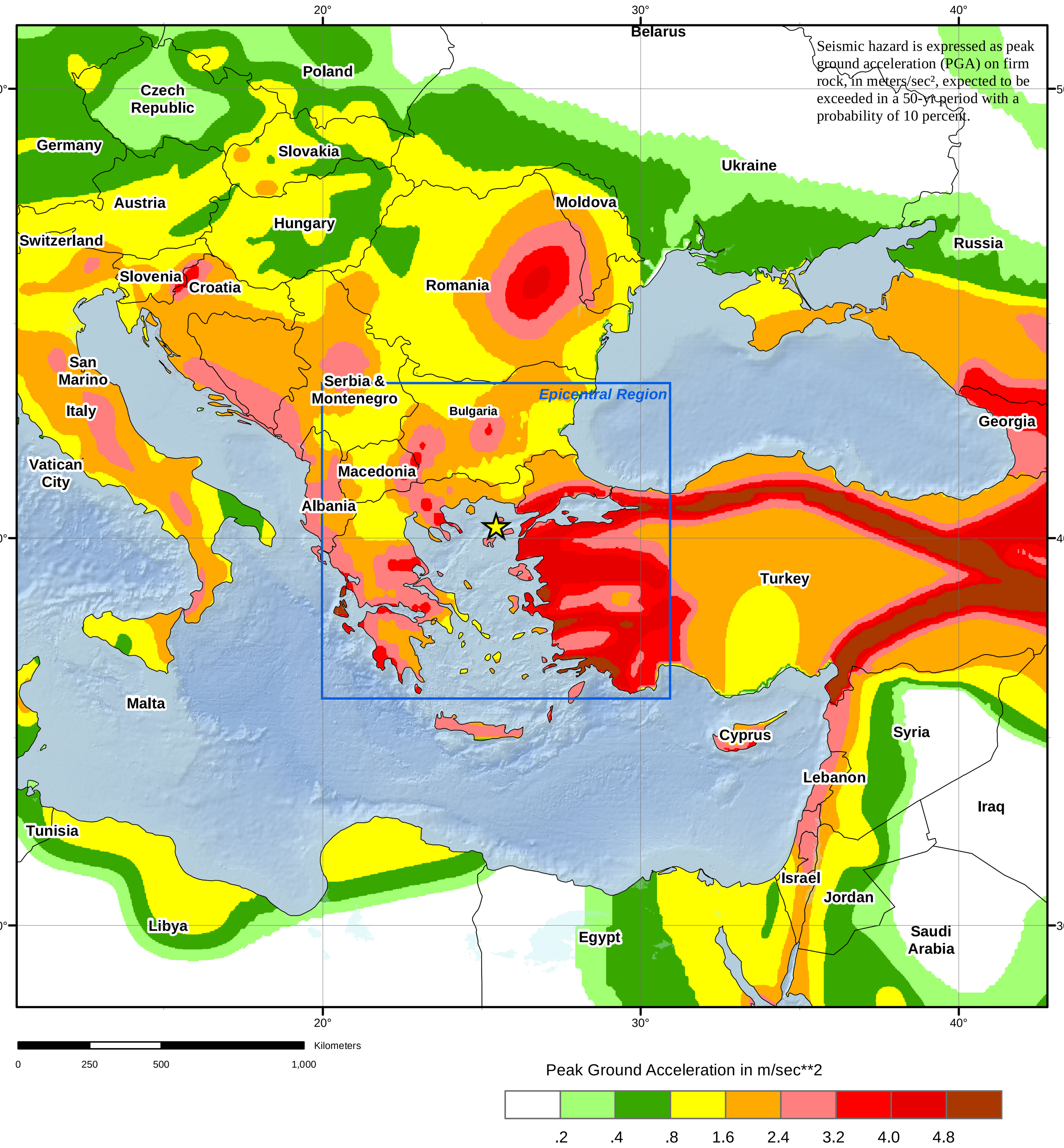
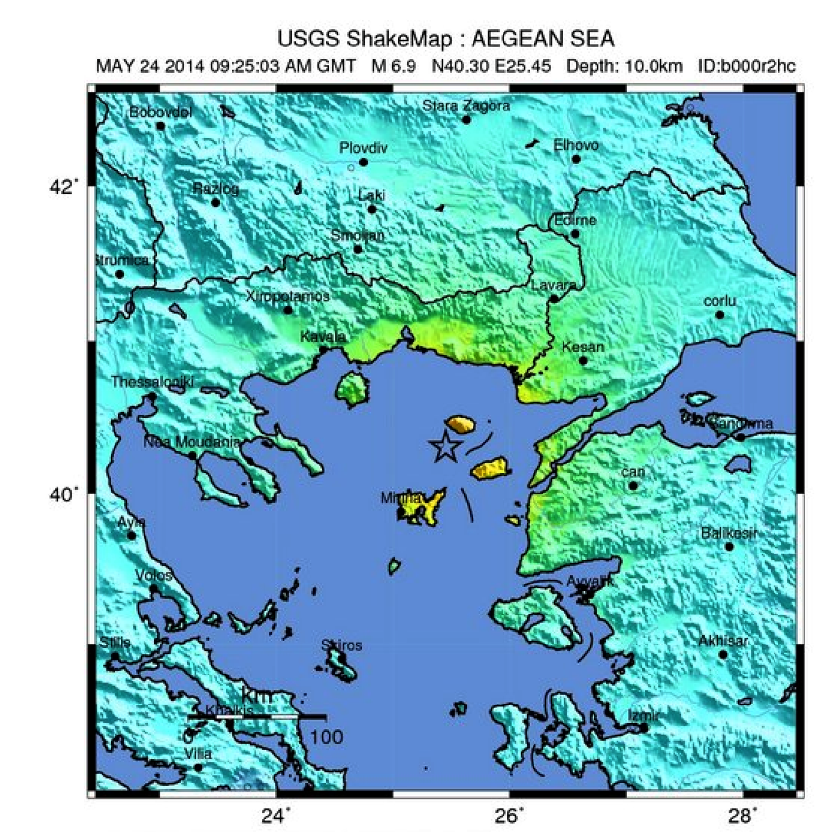


Seismic Hazard



ShakeMap



Map Version 2 Processed Sat May 24, 2014 04:35:37 AM MDT

PERCEIVED SHAKING	Not felt	Weak	Light	Moderate	Strong	Very strong	Severe	Violent	Extreme
POTENTIAL DAMAGE	none	none	none	Very light	Light	Moderate	Mod./Heavy	Heavy	Very Heavy
PEAK ACC.(%g)	<0.05	0.3	2.8	6.2	12	22	40	75	>139
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+

Scale based upon Worden et al. (2011)

TECTONIC SUMMARY

The May 24, 2014 M 6.9 earthquake south of the island of Samothraki, Greece, occurred as the result of strike-slip faulting at shallow depths beneath the northern Aegean Sea. Preliminary faulting mechanisms for the event indicate slip occurred on either a SSE-NNW trending left-lateral fault, or on a WSW-ENE trending right lateral structure. The location of the earthquake and orientation of the WSW-ENE nodal plane are consistent with right-lateral faulting within the North Aegean Trough. Right-lateral strike-slip faults within this trough (also called the Saros Trough at its eastern extent) and the surrounding region accommodate the westward motion of Turkey and associated southwestward motion of the Aegean region with respect to Eurasia. Faults within the North Aegean Trough represent the northern branch of the North Anatolian fault system, the major transform faulting structure in northern Turkey accommodating the westward motion of the Anatolian microplate with respect to Eurasia, at a rate of approximately 25 mm/yr.

The northern Aegean Sea hosts fairly frequent moderate-to-large earthquakes; there have been 21 events of M 6 or greater within 250 km of the May 24, 2014 earthquake since the beginning of the 20th century. Several of these are located along the trend of the North Aegean Trough, including M 6.6 and 6.7 earthquakes in January 1982 and August 1983, approximately 65 and 100 km to the southwest of the May 24 2014 event, respectively, and an M 6.7 earthquake in March 1975, 55 km to the northeast. The largest nearby earthquake was an M 7.6 event in August 1912 near the western end of the Sea of Marmara, 135 km east-northeast of the May 24, 2014 earthquake. The 1912 event is thought to have caused approximately 200 fatalities.

Significant Earthquakes Mag >= 6.5

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1903	08	11	0432	36.360	22.970	80	8.3
1904	04	04	1026	41.750	23.250	0	7.1
1905	11	08	2206	40.000	24.000	0	6.8
1908	05	17	1230	35.000	24.000	100	6.8
1910	02	18	0509	36.000	24.500	150	6.9
1911	04	04	1543	36.500	25.500	140	7.0
1912	01	24	1623	38.000	20.500	60	6.8
1912	08	09	0129	40.500	27.000	0	7.6
1913	06	14	0933	43.500	25.500	0	6.8
1914	10	03	2206	37.500	32.500	0	7.1
1922	08	13	0009	35.325	27.373	35	6.8
1923	08	01	0816	34.715	24.974	35	6.7
1926	03	18	1406	35.787	29.246	35	6.9
1926	06	26	1946	36.605	26.888	101	7.7
1926	08	30	1138	36.901	22.996	85.2	7.1
1927	07	01	0818	36.381	22.723	35	7.0
1928	04	14	0900	42.402	25.667	15	6.8
1928	04	18	1922	42.386	25.087	15	6.8
1930	02	14	1838	36.067	24.789	35	6.8
1931	03	08	0150	41.337	22.666	25	6.8
1932	09	26	1920	40.333	23.732	35	6.9
1933	04	23	0557	36.516	27.150	35	6.8
1935	02	25	0251	36.084	24.703	35	6.8
1944	02	01	0322	41.500	32.500	0	7.2
1947	10	06	1955	37.000	22.000	0	6.9
1948	02	09	1258	35.500	27.000	40	6.9
1949	07	23	1503	38.600	26.300	0	6.8
1953	03	18	1906	40.120	27.621	15	7.2
1953	08	11	0332	38.300	20.800	0	6.8
1953	08	12	0923	38.046	20.766	15	7.2
1954	04	30	1302	39.187	22.239	25	6.8
1955	07	16	0707	37.600	27.200	0	6.8
1956	07	09	0311	36.617	26.026	35	7.8
1956	07	09	0324	36.508	25.956	35	6.9
1957	03	08	1214	39.201	22.750	10	6.8
1957	03	08	1221	39.267	22.607	10	6.9
1957	04	24	1910	36.356	28.649	58.7	6.9
1957	04	25	0225	36.387	28.609	63.4	7.0
1957	05	26	0633	40.672	31.042	15	7.2
1959	11	15	1708	37.751	20.508	25	6.8
1962	08	28	1059	37.874	22.737	107	6.8
1967	03	04	1758	39.099	24.618	8.7	7.1
1967	07	22	1656	40.632	30.740	4.2	7.4
1968	02	19	2245	39.372	24.946	8.1	7.2
1970	03	28	2102	39.172	29.550	24.2	7.4
1975	03	27	0515	40.420	26.147	3.4	6.7
1976	05	11	1659	37.411	20.418	8.2	6.5
1979	04	15	0619	42.001	19.154	15	7.0
1980	07	09	0211	39.257	23.009	17.2	6.6
1981	02	24	2053	38.160	22.974	16.9	6.6
1981	12	19	1410	39.184	25.313	10	6.9
1982	01	18	1927	39.948	24.388	15	6.6
1982	01	18	1931	39.966	24.506	50	6.8
1983	01	17	1241	38.015	20.324	6	6.9
1983	08	06	1543	40.107	24.763	10	6.7
1995	05	13	0847	40.151	21.713	14	6.6
1995	06	15	0015	38.448	22.310	14	6.5
1997	11	18	1307	37.481	20.777	22.9	6.6
1999	08	17	0001	40.773	30.002	13.3	7.6
1999	11	12	1657	40.821	31.227	11	7.2
2001	07	26	0021	39.064	24.291	6.1	6.5
2002	02	03	0711	38.452	31.206	40.1	6.5
2006	01	08	1134	36.311	23.212	66	6.7
2008	02	14	1009	36.501	21.670	29	6.9
2008	02	14	1208	36.345	21.863	28	6.5
2014	05	24	0925	40.305	25.453	10	6.9

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)
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)
Hayes, G. P., Wald, D. J., and Johnson R. L., 2012, A three-dimensional model of globalsubduction zone geometries: Journal of Geophysical Research, v. 117, B01302, doi:10.1029/2011JB008524.
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

REFERENCES

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

Engdahl, E.R., and Villasenor, 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 signifiance.

Map updated by U.S. Geological Survey National Earthquake Information Center
24 May 2014
http://earthquake.usgs.gov/
Map not approved for release by Director USGS