

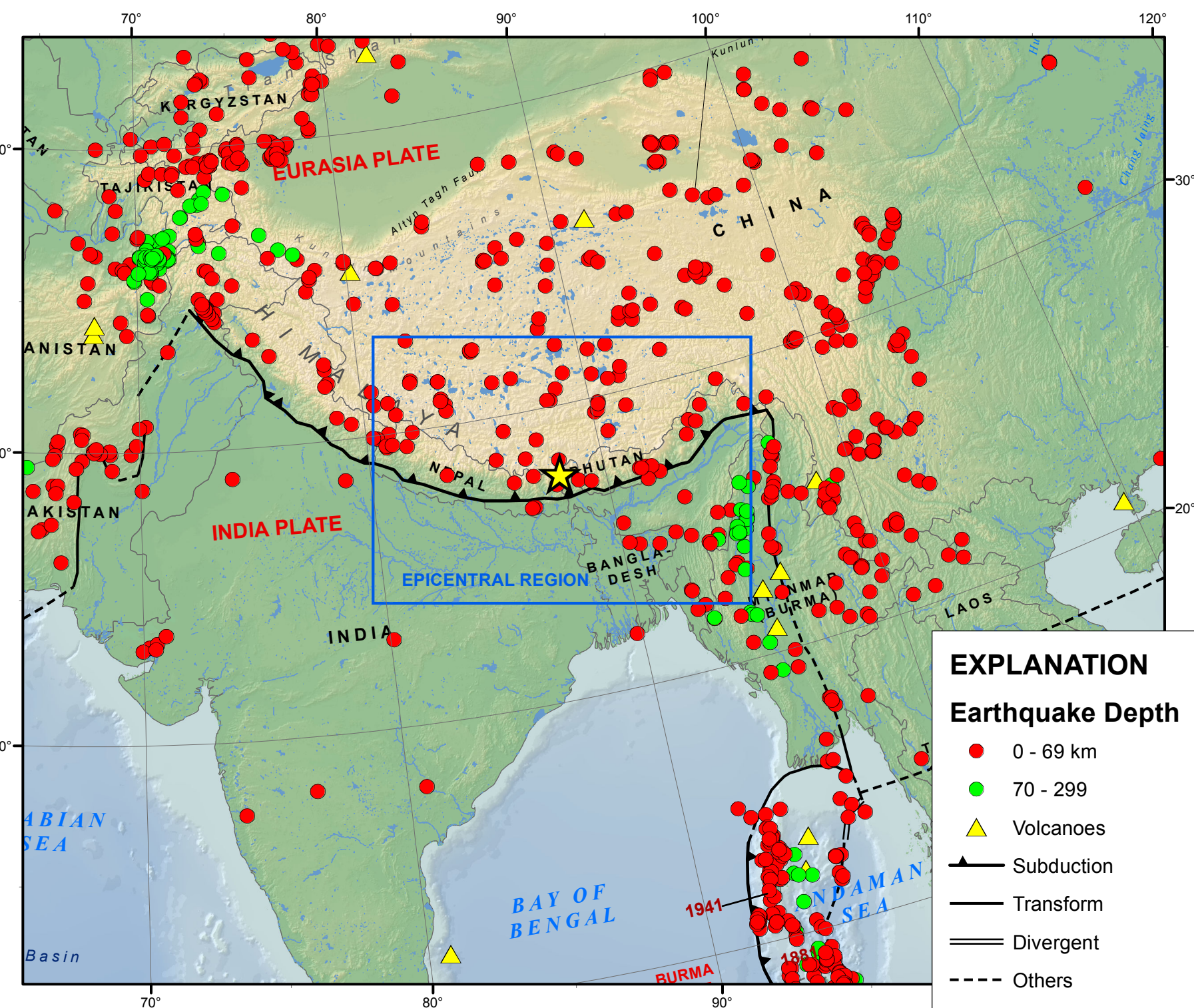
M 6.9 India-Nepal Border Region Earthquake of 18 September 2011



EARTHQUAKE SUMMARY MAP XXX

Prepared in
cooperation
with the Global
Seismographic
Network

Tectonic Setting

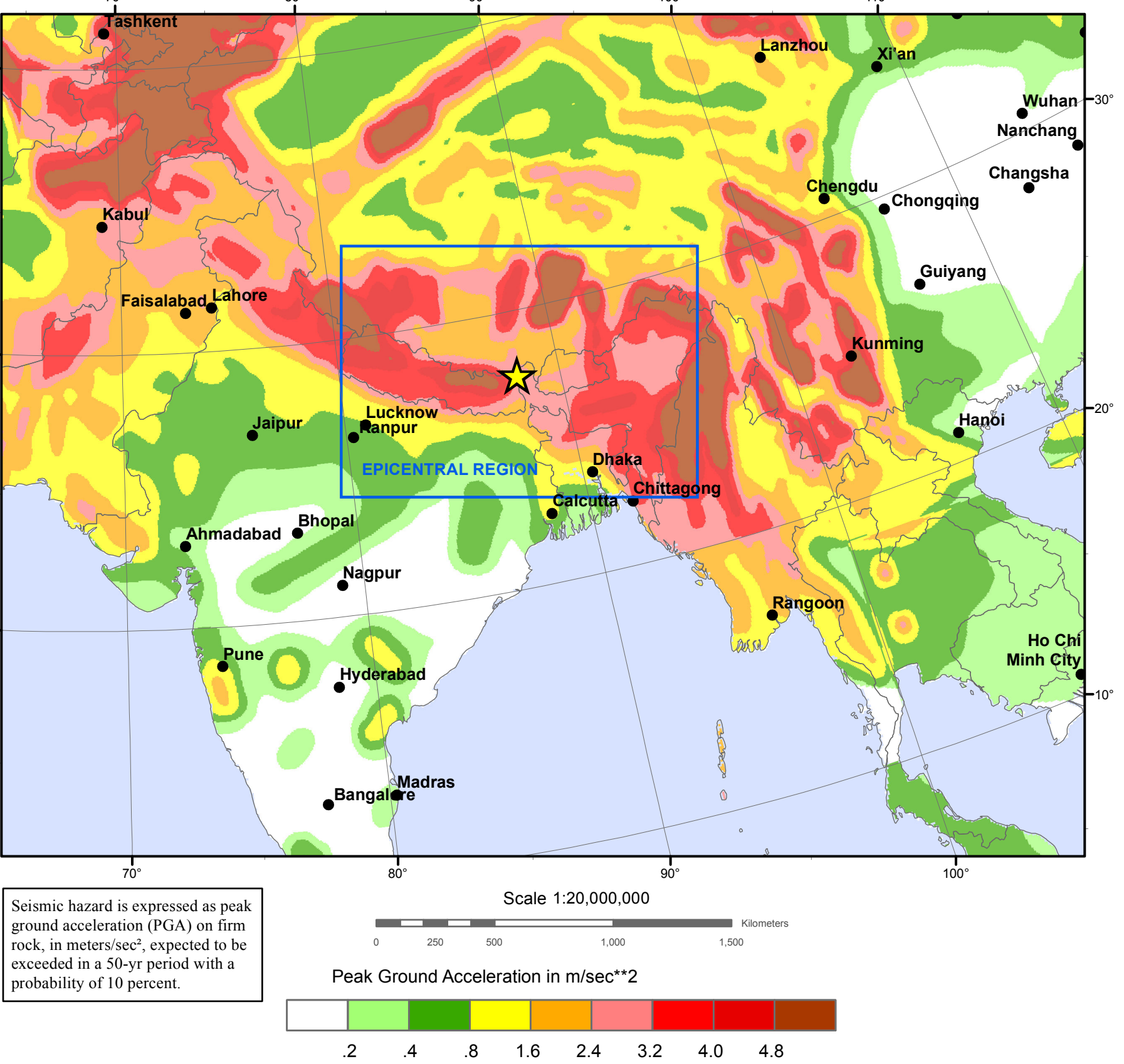


RELATIVE PLATE MOTIONS

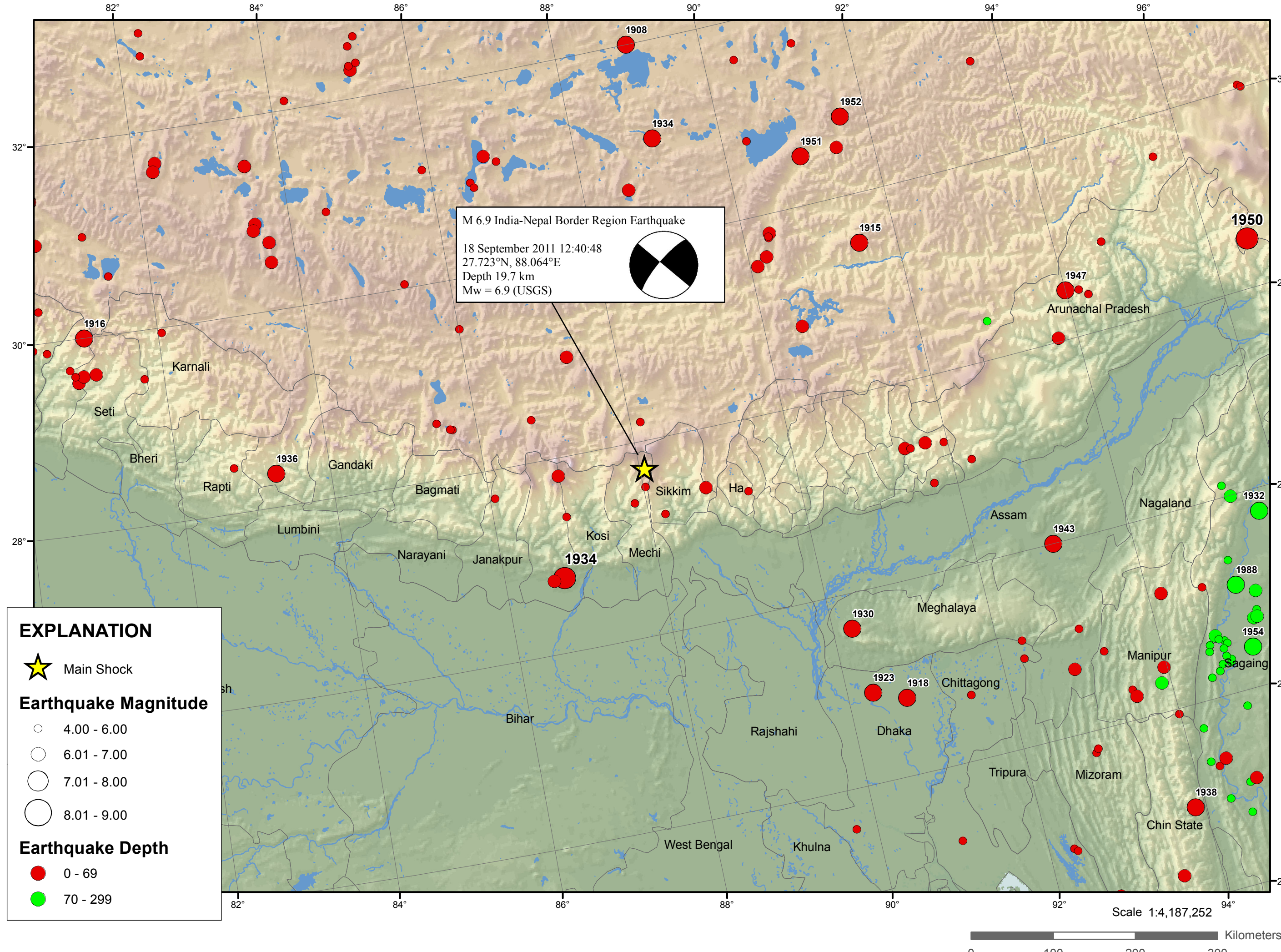
The motion of the India Plate is generally 40 - 50 mm/yr northward with respect to the Eurasia Plate.

Scale 1:20,000,000

Seismic Hazard



Epicentral Region



TECTONIC SUMMARY

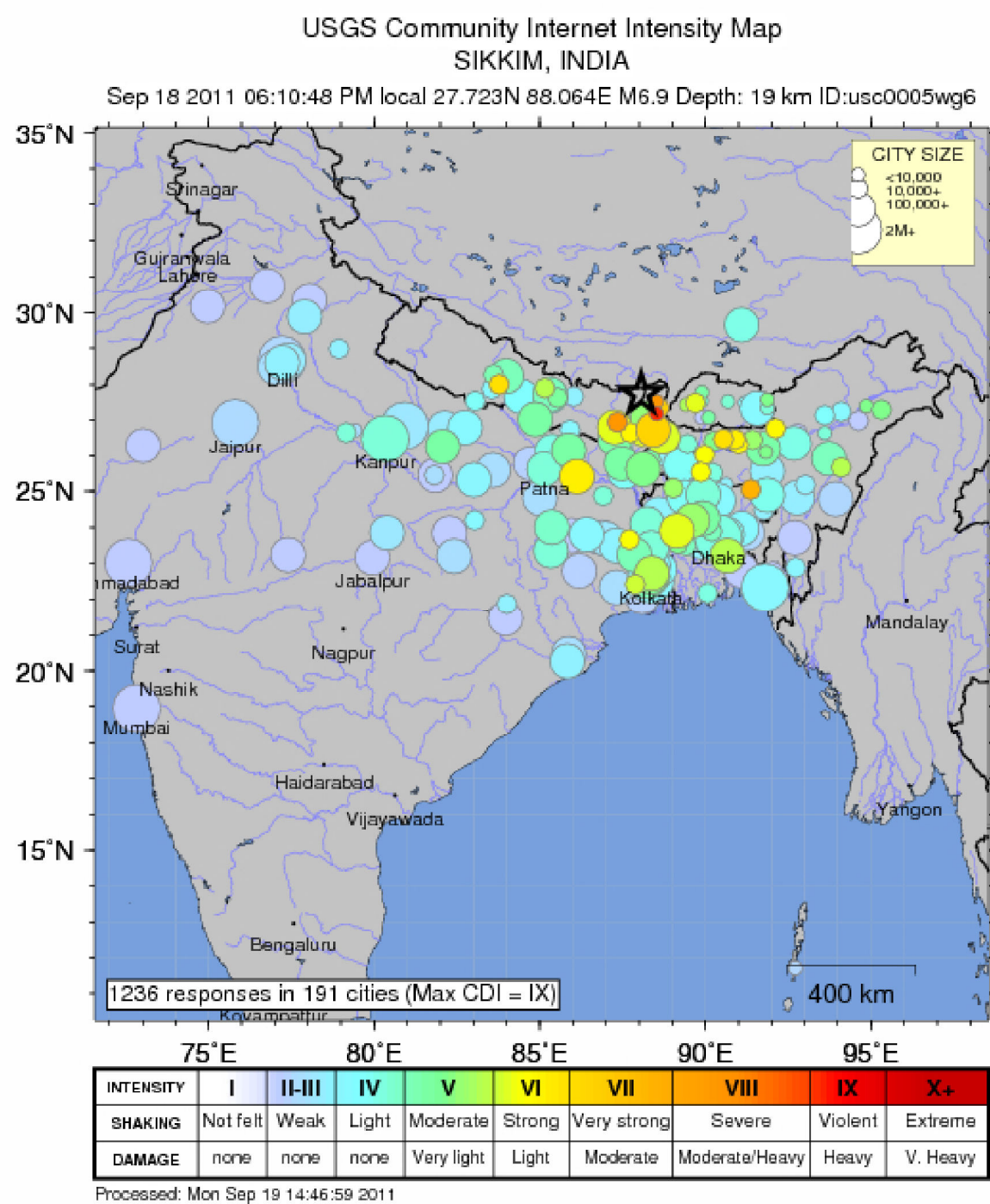
The September 18, 2011 India-Nepal border region earthquake occurred near the boundary between the India and Eurasia plates, in the mountainous region of northeast India near the Nepalese boarder. Initial analyses suggest the earthquake was complex, likely a result of two events occurring close together in time at depths of approximately 20 km beneath the Earth's surface. At the latitude of the September 18 earthquake, the India plate converges with Eurasia at a rate of approximately 46 mm/yr towards the north-northeast. The broad convergence between these two plates has resulted in the uplift of the Himalayas, the world's tallest mountain range. The preliminary focal mechanism of the earthquake suggests strike slip faulting, and thus an intraplate source within the upper Eurasian plate or the underlying India plate, rather than occurring on the thrust interface plate boundary between the two.

This region has experienced relatively moderate seismicity in the past, with 18 earthquakes of M 5 or greater over the past 35 years within 100 km of the epicenter of the September 18 event. The largest of these was a M 6.1 earthquake in November of 1980, 75 km to the southeast.

DISCLAIMER

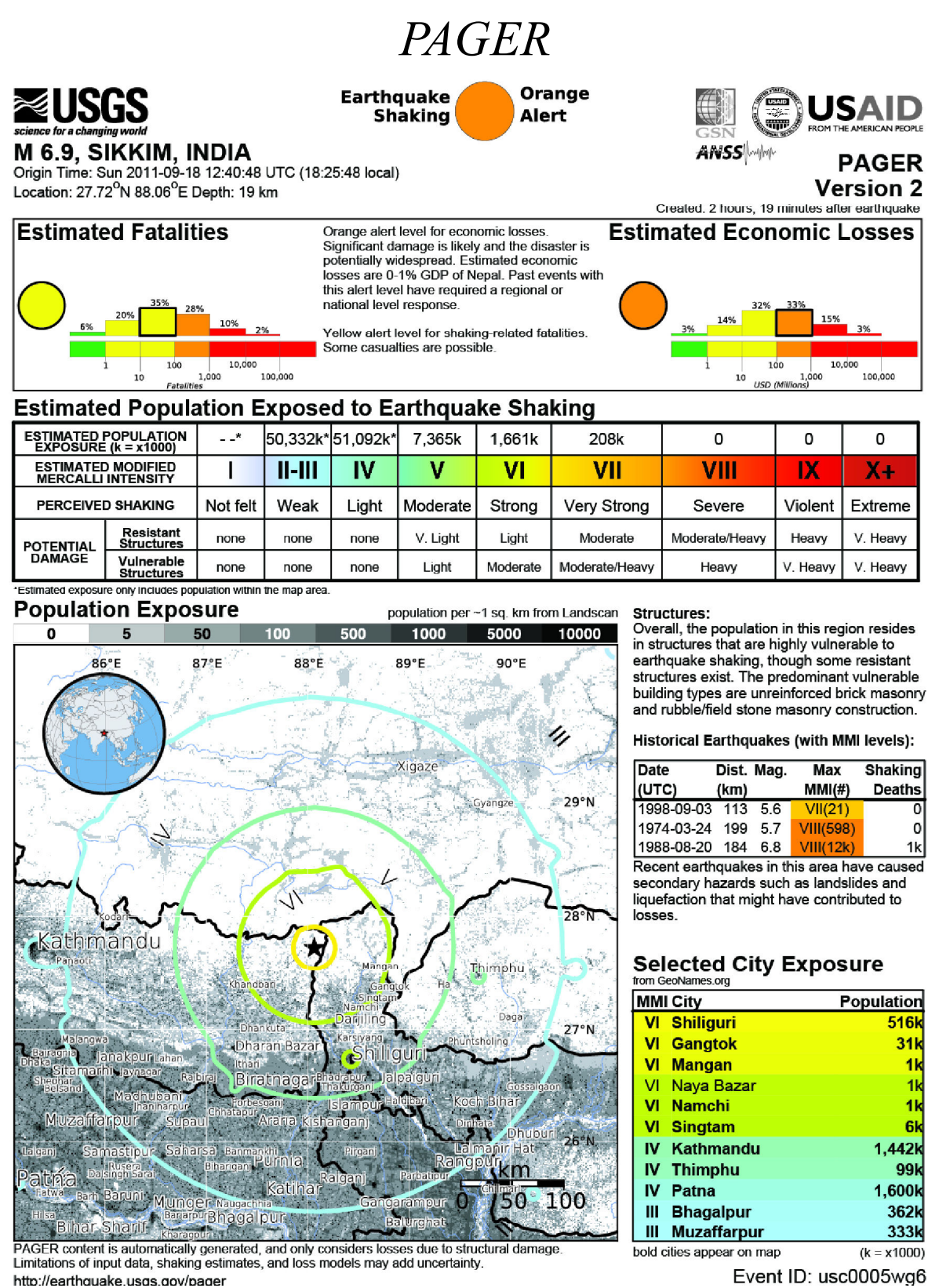
Base map data, such as place names and political boundaries, are the best available but may not be current or may contain inaccuracies and therefore should not be regarded as having official significance.

DYFI

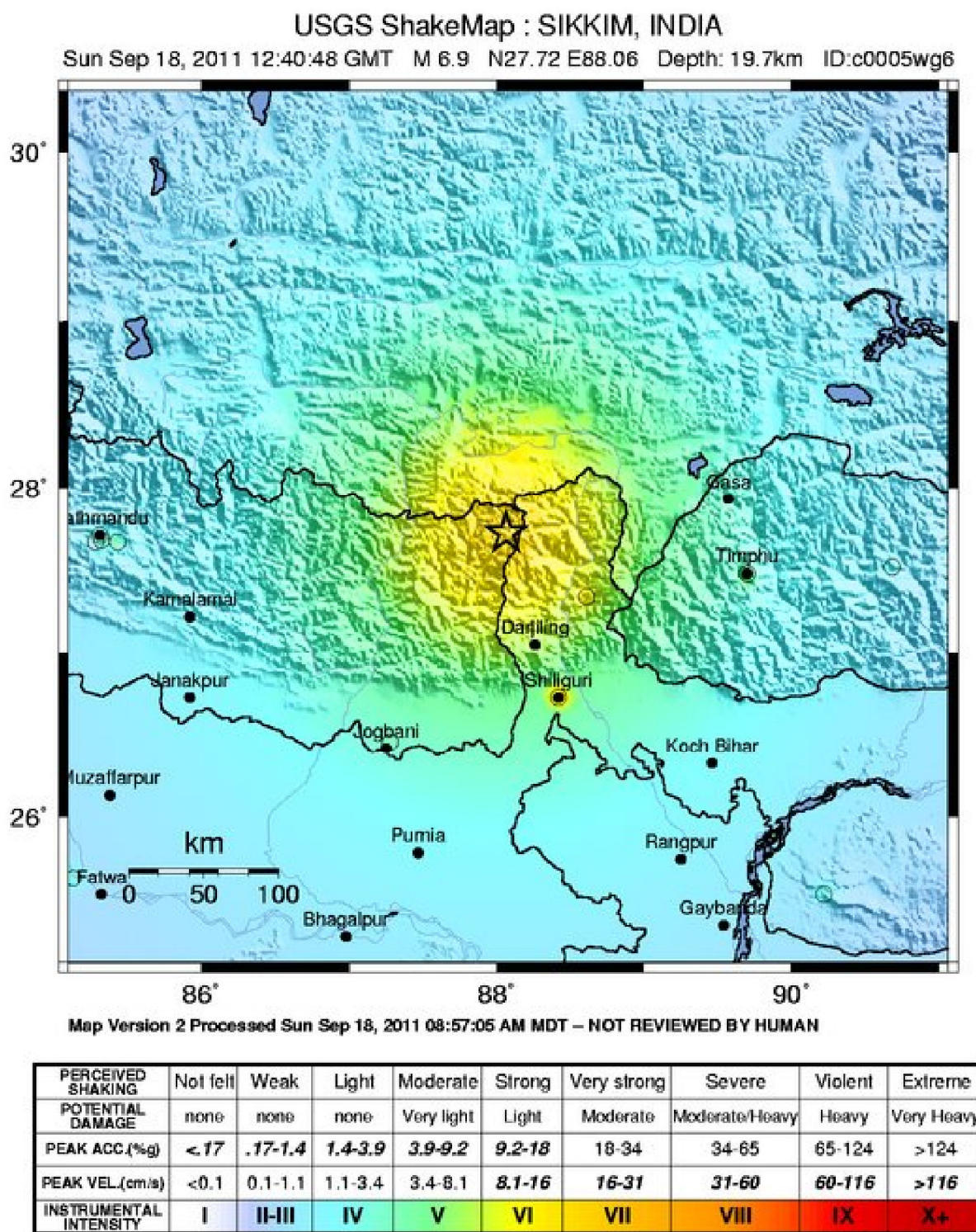


Earthquakes Mag >= 6.5

Year	Mon	Day	Time	Lat	Long	Dep	Mag
1901	04	21	0000	29.500	90.100	0	6.8
1905	02	17	1142	26.000	96.000	0	6.8
1906	08	31	1457	27.000	97.000	100	6.7
1908	08	20	0953	32.000	89.000	60	7.0
1908	12	12	1254	26.500	97.000	0	7.0
1909	08	04	0000	28.800	90.500	0	6.5
1911	10	14	2324	31.000	80.500	0	6.8
1915	12	03	0239	29.500	91.500	0	7.0
1916	08	28	0639	30.000	81.000	0	7.2
1918	07	08	1022	24.809	90.725	15	7.5
1923	09	09	2203	24.943	90.320	35	7.1
1930	07	02	2103	25.641	90.245	35	7.1
1931	01	27	2009	25.675	96.755	35	7.6
1932	08	14	0439	25.765	95.655	143	7.0
1934	01	15	0843	26.773	86.762	35	8.1
1934	12	15	0157	31.013	89.800	35	7.1
1936	05	27	0619	28.345	83.283	35	7.0
1938	04	14	0116	23.372	94.407	35	6.8
1938	08	16	0427	22.957	93.884	35	7.1
1939	05	27	0345	24.461	93.955	46.9	6.8
1941	01	21	1241	27.339	91.714	15	6.8
1943	10	23	1723	26.000	93.000	0	7.1
1944	10	17	1836	31.500	83.500	0	6.8
1944	10	29	0011	31.500	83.500	0	6.8
1946	09	12	1517	23.500	96.000	0	7.3
1946	09	12	1520	23.500	96.000	0	7.7
1947	07	29	1343	28.500	94.000	0	7.3
1950	08	15	1409	28.500	96.500	0	8.6
1951	11	18	0926	30.500	91.500	0	6.8
1951	11	18	0935	30.500	91.000	0	7.7
1952	08	17	1602	30.797	91.648	10	7.7
1954	03	21	2342	24.420	95.104	186	7.4
1957	07	01	1930	24.308	93.880	78	6.8
1966	03	06	0215	31.453	80.469	41.1	7.0
1980	07	29	1458	29.616	81.100	13.8	6.6
1988	08	06	0036	25.090	95.108	90.5	7.3
1988	08	20	2309	26.758	86.624	57	6.9
1991	01	05	1457	23.582	95.878	17.7	7.0
2008	08	25	1321	30.901	83.520	12	6.7
2011	09	18	1240	27.723	88.064	19.7	6.9



ShakeMap



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)

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 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.

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.

Map prepared by U.S. Geological Survey National Earthquake Information Center 19 September 2011 Map not approved for release by Director USGS