JABALPUR EARTHQUAKE OF 17 OCTOBER 2000

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Jabalpur is situated in the earthquake-prone Son-Narmada rift zone. A number of earthquakes have occurred in the past with epicentres in and around Jabalpur. These are 1846 (5.0 M), 1903 (5.0 M), 1973 (3.7 M), 1993 (3.8 M) and 1997 (6.0 M).

The 17 October 2000 earthquake was of 5.2 magnitude with epicentre at 23.1° N, 82.2° E and situated 33 km to the ESE of Jabalpur. This epicentre is located 11 km east of the epicentre of 1997 earthquake. The focus is 35 km deep (USGS data). There has been very little damage and no loss of life. However, cracks have developed in the buildings of Primo Pick N Pack Ltd in the epicentral area and also in poorly built houses in some other areas. It is yet another example of intraplate seismicity in the Stable Continental Region (SCR).

It is well known fact that the ENE-WSW trending Son-Narmada South Fault (SNSF), that is 35 to 40 km deep and activated at the crust-mantle boundary is the cause of earthquakes in the Jabalpur region. High strain rate (1.5-1.6) $10^{-8} \varepsilon$ per year and high heat flow (100-180 mWm⁻²) in Saurashtra and Narmada-Son lineament zone also indicate increase in intraplate deformation in the lithosphere of Indian peninsular shield (Rao, 2000).

The 1997 earthquake occurred at the intersection of South Narmada Fault and north-south running Katni-Mandla-Malanjkhand (KMM) Fault. The recent earthquake occurred at the intersection of South Narmada Fault and north-south running Jhamil River Fault which is part of the KMM system. The occurrence of an earthquake of 5.2 magnitude, soon after an earthquake of 6.0 magnitude within three and half years is rather unusual and has created panic amongst the people. It may be continuation of events that started in 1997 but further work is needed to confirm it.

No aftershocks have been recorded in four weeks after the 17 October 2000 earthquake in the network of six microband seismographs temporarily set up by GSI and in the broad-band seismograph centre of Jabalpur. This may be due to lower magnitude and greater depth of focus. Even after 1997 earthquake (6.0 M), only 28 aftershocks of 1.5 or more magnitude were reported, of which just 5 were greater than 3.0 magnitude (Acharyya et al. 1998).

The Jabalpur area is sensitive from the point of view of recurrence of earthquakes. Seismological study of the area through global positioning system is therefore an urgent necessity.

References

ACHARYYA, S.K., KAYAL, J.R., ROY, A. and CHATURVEDI, R.K. (1998) Jabalpur earthquake of May 22, 1997: Constraint from aftershock study. Jour. Geol. Soc. India, v.51, pp.295-304.

RAO, B.R. (2000) Historical seismicity and deformation rates in the Indian peninsular shield. Jour. Seismology, v.4, pp.247-258.

CORRIGENDUM

Deep Crustal Structure of the West Bengal Basin Deduced from Gravity and DSS Data by Manoj Mukhopadhyay (Jour. Geol. Soc. India, v.56, Oct. 2000, pp.351-364)

Owing to drafting error, the seismic velocity values (in km/sec) for the upper and lower crust at two shot points (*see* Fig.8 on p.360) are not correctly written. These are (i) corresponding to SP4 at depths greater than 10 km, the velocity values should read as 6.3; 6.45; 6.65 and 6.85 respectively, instead of 5.3; 5.45; 5.64 and 5.85. The velocity values are however correctly stated in the text, vide section (a), page 359; (ii) the velocity value under SP9 near Satgachia recorded at depths 15-20 km should read as 6.5 instead of 5.5. However, the correct velocity value is stated in the text vide section (b), page 361.