Note: The notices appearing in several newspapers concerning the article by Chander and Kalpna on Tehri reservoir (Curr. Sci., 1996, 70, 291–299) have led us to the realization that omitting estimates of stress accumulation because of their tentative nature was a mistake. Although the article is complete otherwise and contains due caution regarding the inferences drawn, the press and interested individuals are reading parts of the article out of context. The following note is our attempt to rectify the omission and reemphasize that the small estimate of reservoir-induced stability emerging from the simulation is not a license or a certificate to disregard the natural seismic hazards of the region.

On the transience of the influence of Tehri reservoir load on Garhwal seismicity

The probable influence of the proposed Tehri reservoir on the seismicity of the Garhwal Himalaya has been investigated recently through a deterministic numerical simulation[1]. It transpires that the reservoir should cause small delays in the times of occurrence of great and moderate earthquakes of the region in the period immediately following the impoundment. We quantify the delays in this article in order to emphasize their ephemerality.

On the basis of short-period repeat levelling observations in the Nepal Himalaya, Jackson and Bilham[2] have estimated that earthquake-generating strains may be accumulating in the local upper crust on account of a slip deficit of 13 mm/year on the intracrustal thrust fault which is the seat of great earthquakes of the region[3–5]. Assuming that the fault is at a depth of 18 km in the nucleation zone of these earthquakes, the rate of strain accumulation should be of the order of 0.7×10^{-6}/year. If we assume a nominal value of 5×10^4 MPa for the elastic modulus of crustal materials, the rate of stress accumulation should be 0.035 MPa/year.

In the absence of similar detailed observations for the Garhwal Himalaya, we adopt the value of stress accumulation rate from Nepal in the first instance. Figure 4 of Chander and Kalpna[1] is a display of the stability imparted by the simulated Tehri reservoir load at full pond on different points of the intracrustal thrust fault under the Garhwal Himalaya. If the hypocentre of the next great earthquake of the region is assumed to lie in this fault at a point which is the closest to the Tehri dam under the surface trace of the Main Central Thrust (MCT), then a reservoir-induced stability of 5 kPa may be considered. The value would be lower if the hypocentre were to be located further away from the reservoir along the MCT. The value of stability would be lower also if some pore pressure is induced by the reservoir. Even the stability of 5 kPa would be wiped out in less than the two months at the above rates of stress accumulation due to plate convergence.

The approximate nature of these estimates is acknowledged. But the stress rates estimated and used here have a basic core of observational evidence from an adjoining section of the Himalaya.

In short, the stabilizing influence of the reservoir for great and moderate earthquakes of Garhwal Himalaya is of notional rather than practical value. *It helps us to say that Tehri reservoir will not induce or hasten such earthquakes of the region in the period following the impoundment. But, at the same time, the delay in their occurrence due to its influence will be shortlived, being of the order of a small fraction of an year in each case. Hence as observed by Chander and Kalpna[1] in the last of their conclusions, the concept of reservoir-induced stability may not be used to lower the estimates of seismic hazards to Tehri dam and reservoir due to natural great and moderate earthquakes of plate tectonic origin in the Garhwal Himalaya.*

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