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Has the Euler Pole of Rotation of Indian Plate with respect to Eurasian Plate shifted due to Sumatra earthquake?

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The devastating earthquake in Sumatra on December 26, 2004 might have shifted the Euler pole of Rotation and the angular velocity of Indian plate with respect to Eurasian plate. Already the pole of the angular velocity vector of India with respect to Eurasia had been estimated to be about a pole of rotation at 29.44 ± 1.2º N, 13.2 ± 7.3º E with an angular velocity of 0.356 ± 0.035º Myr-1. To reevaluate these already estimated values and confirm whether there is any shift in the pole and the angular velocity after this massive Sumatra earthquake, a new global network providing the geographical and azimuthal coverage, which includes all the plates surrounding India was chosen and a rapid data analysis was carried out in ITRF 00 Reference Frame. The network chosen includes Hyderabad IGS GPS Permanent Station (HYDE) and NGRI's second permanent station Mahe besides other IGS stations such as IISC, MALI, COCO, DGAR, SEY1, NTUS, WTZR, LHAS, IRKT, KIT3, SHAO, YAR2, and HRAO.14 days of GPS data from December19, 2004 to January 5, 2005 of all these stations thereby including the data before and after the earthquake were analysed in conjunction with the data from 1995 to mid 2004. The baseline lengths from Hyderabad to other chosen sites and the rate of changes were also estimated. The angular velocity of Indian plate motion with respect to ITRF 00 reference frame and Indo-Eurasia plate pair have also been reevaluated. The global network solution has resulted in the estimation of shift in the pole of the angular velocity vector of India with respect to Eurasia to be about a pole of rotation at 28.66 ± 1.2º N, 19.2 ± 5.3º E confirming a major shift of about 6º E. Interestingly the angular velocity has not shown much of tangible change from the earlier estimated value of 0.356 ± 0.035º Myr^{-1} which was already conforming to the REVEL-2000 Plate motion model but differing considerably from NUVEL-1A and other earlier studies. However this shift in the pole of rotation needs to be verified with longer time span of data from the stations NTUS, DGAR, and MALI and rigorous processing in the global network analysis.

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