

## **Crustal Deformation Study across the Chite Fault Using GPS Measurements in North East India along the Indo Burmese Arc**

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**Abstract :** North East India is seismically one of the six most active regions of the world. It is placed in Zone V, the highest zone in the seismic zonation of India. It lies at the junction of Himalayan arc to the north and the Burmese arc to the east. The region has witnessed at least 18 large earthquakes including two great earthquakes Shillong (1987, M=8.7) and the Assam Tibet border (1950, M=8.7). The prominent Chite fault lies at the heart of Aizawl, the capital of Mizoram state and this hilly city is the home to about 2 million people. Geologically the area is a part of the Indo-Burmese Wedge and is prone to natural and man-made disasters. Unplanned constructions and urban dwellings on a rapid scale have lead to numerous unsafe structures adversely affecting the ongoing development and welfare projects of the government and they pose a huge threat for earthquakes. Crustal deformation measurements using campaign mode GPS were undertaken across this fault. Campaign mode GPS data were acquired and were processed with GAMIT-GLOBK software. The study presents the current velocity estimates at all the sites in ITRF 2008 and also in the fixed Indian reference frame. The site motion showed that there appears to be no differential motion anywhere across the fault area, thus confirming presently the fault is neither accumulating strain nor slipping aseismically. From the geological and geomorphological evidence, supported by geodetic measurements, lack of historic earthquakes, the Chite fault favours aseismic behaviour in this part of the Indo Burmese Arc (IBA).

**Keywords :** Chite fault, crustal deformation, geodesy, GPS, IBA

**Conference Title :** ICGG 2018 : International Conference on Geology and Geophysics

**Conference Location :** Barcelona, Spain

**Conference Dates :** February 27-28, 2018