

SAR Interferometry for Monitoring Neotectonic Movement

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ABSTRACT

There are several well established and recognised geophysical techniques to comprehend the processes related to seismotectonic activities. It has been recently reported that global positioning system (GPS) can aid in monitoring active fault regions. More recently a new technique based on microwave remote sensing known as SAR Interferometry (INSAR) has been emerging as a viable and potential tool for crustal deformation studies.

Through SAR Interferometry, it is possible to estimate topography of the ground with an accuracy of about five meters. Differential INSAR technique involving phase information from three SAR scenes has the capability to detect very small movement of surface features caused by crustal deformation and to monitor changes in surface geophysical parameters.

To simulate the earth crust movement, a series of experiments were conducted near Bhavnagar, Gujarat, India for a period three months during the tandem operation of ERS-1 and ERS-2 (from April to July 1996). For this purpose six corner reflectors were deployed in the field. The corner reflectors were mounted on a specially designed stands which has the facility to rotate along azimuth and elevation directions. It can also be lifted up and down with very high accuracy of reproducibility. The whole set-up was installed on a cement base so that the soil swelling can be eliminated. The details of these experiments and the other developments on SAR Interferometry will be discussed in this paper