



Interferometry (DINSAR and SPN) and active folds : the Tainan case example (SW Taiwan)

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Classical DINSAR approach where settled on the Tainan area (SW Taiwan) which give rise to the relative active displacement of the different tectonic structures (Fruneau et al., 2001, Pathier et al., 2003) confirmed by both GPS data (Hu et al. in press) and field works.

The new Stable point Network processor developed by ALTAMIRA INFORMATION, combines a set of ESA ERS SAR data in order to obtain a mean subsidence map and a DEM error. Moreover it gives the atmospheric phase screen (APS) for every SAR and the time series evolution of every pixel in coherent areas. The software can work in two different ways according to the amount of available images (1) If a large number of ERS data are available, the process makes an evolution study of the Stable Points; (2) If there is a reduced number of ERS images, the program makes an interferogram interpretation for isolated coherent areas. The software offers some advantages: interferometric phase unwrapping is not needed and there are no constraints on the image size.

The SPN give the displacement of a huge set of points on each radar scene as soon as a good coherence prevail. The application of this software on the SW Taiwan combine with an offshore seismic reflection profile lead us to re-interpret the tectonic structure

of this active elongated folded area and the geometry of the deformation front and its geodynamic implications on the Taiwan orogen.

refs:

Fruneau, E. Pathier, D. Raymond, B. Deffontaines, C.T. Lee, H.T. Wang, J. Angelier, J.P. Rudant, and C.P. Chang, Uplift of Tainan Tableland (SW Taiwan) revealed by SAR interferometry, Geophys. Res. Lett., Vol. 28, No. 16, p.3071-3074, 2001.

Pathier E., B. Fruneau, B. Deffontaines, J. Angelier, C.C.Pai, Yu S.B., Lee C.T., 2003. Coseismic displacements of the footwall of the Chelungpu fault caused by the 1999, Taiwan, Chi-Chi earthquake from InSAR and GPS data, EPSL, 212, 73-88.