



Active tectonics of the onshore Hengchun accretionary prism using UAV high resolution topography and ALOS PS-InSAR time series (Southern Taiwan)

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Geometry, characterization and quantification of active faults are major concern in Taiwan, especially following the Chichi earthquake of september 21st, 1999. Among the targets that still remain poorly known in terms of active tectonics, is the Hengchun peninsula (Southern Taiwan). From the geodynamic point of view, the latter corresponds to the outcropping top of the Manila accretionary prism of the Manila subduction zone that runs from Luzon (N. Philippines) to South Taiwan. In order to settle the Hengchun structural sketch map, we needed to up-date the CPC and CGS pre-existing geological maps using GIS mapping and photo-interpretation of both UAV's acquisition : 1). the very high precision (<50cm) and resolution (<10cm) Digital Terrain Model and the 2). the georeferenced aerial photograph mosaic of the studied area. Moreover, the superimposition of the resulting structural sketch map with ALOS-1 multi-temporal SAR Interferometry results (PS and SBAS) helps to give motions, characterisation and quantification of the displacements along LOS during the monitoring time-series (2007-11). We focus herein both on the global tectonic behaviour of the Hengchun peninsula (uplifted left part and eastward tilted plateau) as well as the geometry, the characterization and the quantification of the Hengchun (active highly dipping left-lateral transpressive strike-slip fault), Kenting and Manchou (low active dipping thrusts) and FengGang active faults (active highly dipping right-lateral transpressive thrust ramp). Finally, as the Hengchun ridge face one of the last major earthquake of Taiwan (Hengchun EQ, december the 26th, 2006, depth: 44km, ML=7.0), it is needed to much better constrain the active Hengchun peninsula structures and tectonics in order to prevent major destructions in the near future.