



## **UAV's for active tectonics : case example from the Longitudinal Valley and the Chishan Faults (Southern Taiwan)**

Benoit Deffontaines (1,2), Kuo-Jen Chang (3,2), Yu-Chang Chan (4), Rou-Fei Chen (5,2,4), and Yu-Chung Hsieh (6)

(1) Lab. LAREG, ENSG/IGN et Lab. LGA UPEM, France (benoit.deffontaines@univ-mlv.fr), (2) Lab Int Assoc LIA 536 ADEPT NSC CNRS France/Taiwan, (3) Department of Civil Engineering, National Taipei University of Technology, Taipei, R.O.C. (epidote@ntut.edu.tw), (4) Institute of Earth Sciences, Academia Sinica, Taipei, Taiwan, R.O.C. (yuchang@earth.sinica.edu.tw), (5) Department of Geology, Chinese Culture University, Taipei, Taiwan, R.O.C. (roufei@earth.sinica.edu.tw), (6) Central Geological Survey, MOEA, Taipei, Taiwan. R.O.C (hsiehyc@moeacgs.gov.tw)

Taiwan is a case example to study active tectonics due to the active NW-SE collision of the Philippine and Eurasian Sea Plates as the whole convergence reaches 10cm/y. In order to decipher the structural active tectonics geometry, we used herein UAV's to get high resolution Digital Terrain Model (DTM) in local active tectonics key areas. Classical photo-interpretation were then developed in order to structurally interpret these data, confirmed by field studies.

Two locations had first been chosen in order to highlight the contribution of such high resolution DTM in SW Taiwan on the Longitudinal Valley Fault (SE Taiwan) on its southern branch from Pinting to Luyeh terraces (Pinanshan) where UAV's lead to better interpret the location of the outcropping active deformations. Combined with available GPS data and PALSAR interferometry (Deffontaines et Champenois et al., submitted) it is then possible to reconstruct the way of the present deformation in this local area. In the Pinting terraces, if the western branch of the fault corresponds to an outcropping thrust fault, the eastern branch acts as a growing active anticline that may be characterized and quantified independently.

The interpretation of the UAV's high resolution DTM data on the Chishan Fault (SW Taiwan) reveals also the geometry of the outcropping active faults complex structural behaviour. If the Chishan Fault acts as a thrusting in its northern tip (close to Chishan city), it acts as a right lateral strike-slip fault north of Chaoshan (Kaohsiung city) as described by Deffontaines et al. 2014.

Therefore UAV's are a so useful tool to get very high resolution topographic data in Taiwan that are of great help to get the geometry of the active neotectonic structures in Taiwan.