



## **Improving flood risk assessment using a satellite stereo-pair high resolution DEM**

Ioannis Tsanis, Ioannis Daliakopoulos, Kostas Seiradakis, and Aristeidis Koutroulis

Technical University of Crete, Environmental Engineering Dept., Chania, Greece (tsanis@hydromech.gr, 0030-28210-37849)

Accurate watershed delineation and stream cross-sections are required in distributed hydrological modeling of flash flood events. This can be accomplished by new high resolution satellite products that can facilitate the extraction of high quality Digital Elevation Models (DEMs). A GeoEye-1 0.5m resolution satellite stereo-pair imagery was used to provide an accurate assessment of the DEM. The ERDAS LPS photogrammetry system was used to analyze the stereo imagery via automatic tie point generation, triangulation refinement, terrain generation, orthorectification and eventually DEM extraction. The variable resolution (1-30m) stereo-pair generated DEMs were compared with Ground Control Points (GCPs) and other available products such as the 90m NASA Shuttle Radar Topographic Mission (SRTM) and 30m (1:5.000) topographical maps. More than 90 GCPs collected in and around the 25 square km watershed of Almirida, in the island of Crete, were compared with the corresponding terrain realizations. Results show that individual point elevations and cross-sections extracted based on the generated high resolution DEM can provide sufficient precision for detailed hydraulic modeling of flash flood events.