

Multi-sensor System Applied to Monitor Land Deformation in Taiwan

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ABSTRACT:

During 1992-2010 pumping of groundwater caused large-scale aquifer-system compaction and land subsidence in the Choshui River Alluvial Fan (CRAF), especially in the area of Yunlin county. The subsidence impedes surface-water runoff and endangers the operation of Taiwan High Speed Rail (THSR). A multi-sensor monitoring system consisting of continuous GPS stations, a leveling network, multi-layer compaction monitoring wells, groundwater wells and persistent scatterer interferometry (PSI) is deployed to monitor land subsidence and its mechanism in CRAF. The vertical displacements from GPS, PSI and leveling agree to within 1 cm, and are larger than the cumulative compaction detected by the compaction monitoring wells, suggesting that compaction also occurs below 300 m (the depth of the wells). The result from this paper will provide an important reference for a management plan.