



InSAR time series shows multiple deformation and interaction of gravitational spreading, intrusion and compaction on Hawaii Island

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Hawaii Island comprising some of the world most active volcanoes shows a complex deformation field. The two active volcanoes Mauna Loa and Kilauea are subject to magma emplacement and the islands' flanks are subject to gravitational spreading and landslide process. An island wide deformation analysis, however, and potential interaction of different sources was not systematically elaborated, yet.

Using a newly developed Wavelet based InSAR time series (WAB-InSAR) approach we mapped the spatio-temporal deformation field in the period of 2003 and 2008. In this study we have utilized 30 radar images acquired by ENVISAT satellite in descending mode. The deformation time series shows different episodes of the uplift and subsidence over Mauna Loa and Kilauea volcano. At last to investigate the source of deformation we applied a time dependent non linear multiple source modeling approach based on continuous genetic algorithm. The result of this research show that volcano-tectonic signals are co-occurring, implying complex interaction of various process on Hawaii Island.