

Mechanisms of natural surface movement in the Surat Basin

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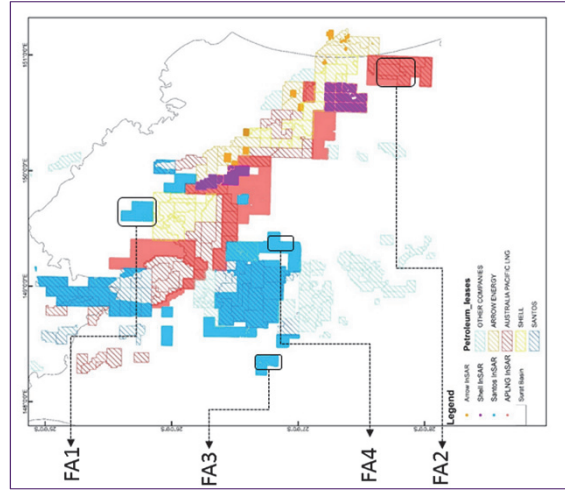
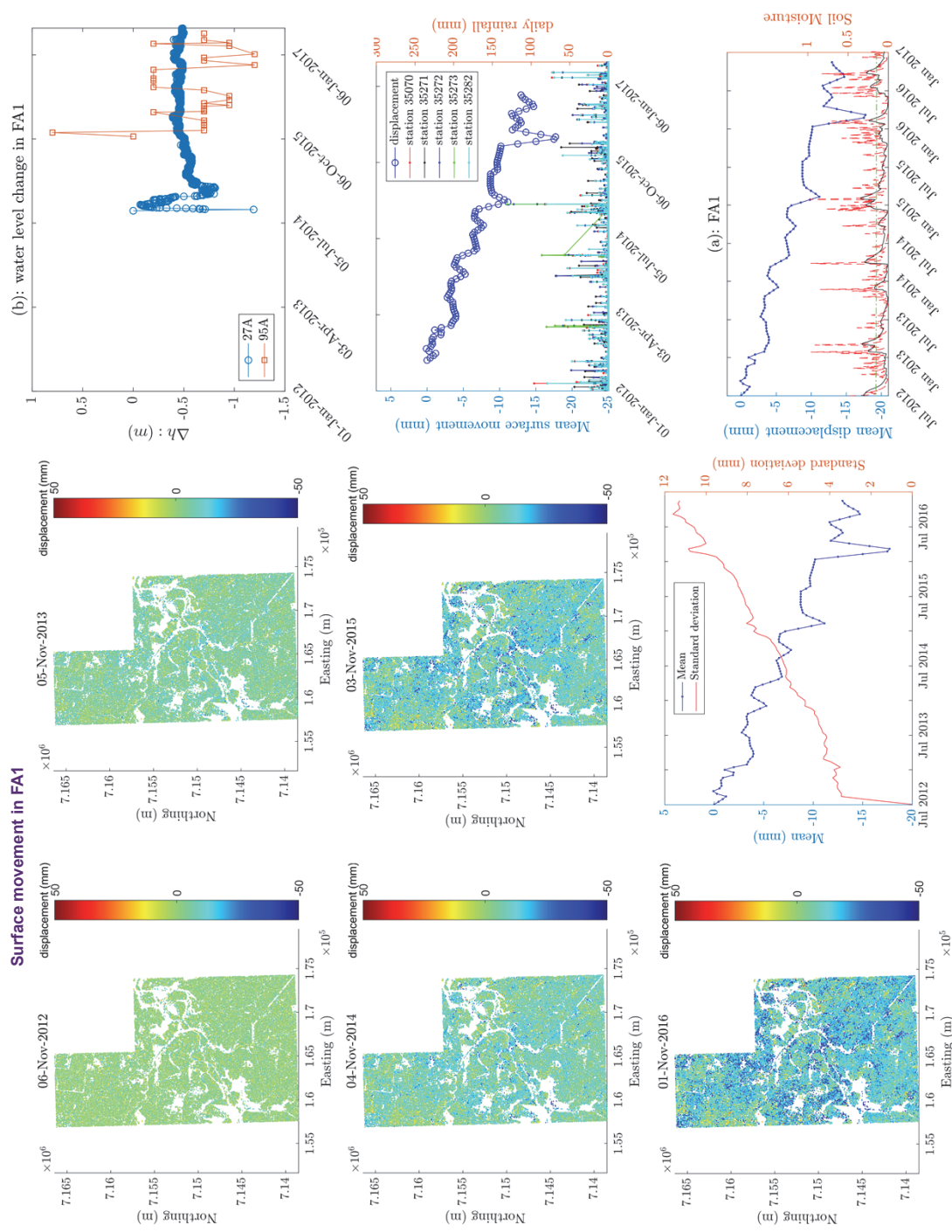
Summary

Ground surface movement can be due to natural processes and human activities. This project aims to understand the mechanisms of ground surface movement and their individual contributions to net movement.

A large Interferometric Synthetic Aperture Radar (InSAR) dataset covering the Surat Cumulative Management Area was analysed, focusing on areas where there are no active coal seam gas (CSG) wells. These non-production areas have been examined to develop an understanding of background surface movement.

Four focus areas, showing measurable changes over time, exhibited an overall downward surface movement (subsidence). Three focus areas showed cycles of subsidence and uplift that appear to be closely correlated with rainfall events – as shown in the results for FA1. The soil types in these three areas were found to be in agreement with the hypothesis that the observed surface movement is due to rainfall infiltration-induced consolidation of the shallow soil layers and also subsequent moisture-induced shrinkage and swelling.

This investigation has provided a foundation for further research into the complex problem of surface movement, and in particular, the deconvolution of the various contributions that occur at different depths, length and time scales.



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