

EVALUATING POTENTIAL LAND SUBSIDENCE INDUCED BY GROUND WATER WITHDRAWAL FROM THE INDIAN WELLS VALLEY, CA USING INSAR

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The Indian Wells Valley is located in the northern Mojave Desert in southeastern California. The valley receives approximately 5 inches of rain per year and is home to roughly 30,000 residents. For decades, municipal, private, and minor agricultural groundwater use has led to a valley-wide groundwater surface elevation decline of roughly 0.5 – 1.0 feet/year. Previous groundwater investigations in the region have estimated that groundwater production is roughly double the rate of recharge valley-wide.

Interferometric Synthetic Aperture Radar (InSAR) is a proven tool to assess ground surface response to aquifer depletion. InSAR provides a much better spatial coverage than classic surveying techniques. Radar data have been acquired over this area since 1992 and the arid climate of this region is very favorable for InSAR processing. This study attempts to utilize multiple year, stacked Interferometric Synthetic Aperture Radar (InSAR) results to identify portions of the valley that have subsided since 1992 in an effort to better delineate the portions of the local aquifers that are the most heavily stressed by groundwater production.

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