Is there a tectonic component to the subsidence process in Morelia, Mexico?

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Abstract Subsidence has been a common occurrence in several cities in central Mexico for the past three decades. This process has caused substantial damage to the urban infrastructure and housing in several cities. Given the observed rates of subsidence and reported damage, it has become a major factor to be considered when planning urban development, land-use zoning and hazard mitigation strategies for the 21st century. In the case of Morelia there is evidence that subsidence is a complex phenomenon, where both soil consolidation and tectonic factors come into play. We present a satellite geodesy analysis of surface deformation in Morelia complemented with Ground Penetrating Radar and Seismic Tomography surveys of the La Colina fault, the most active feature within the urban area. These data provide insight into the tectonic component, which overlaps the groundwater extraction, and soil consolidation processes observed in key areas of the city.

Key words InSAR; fault; subsidence; tectonics; Morelia, Mexico