Subsidence and fault hazard maps using PSI and permanent GPS networks in central Mexico

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Abstract We present an example of an integrated displacement and horizontal subsidence gradient analysis derived from an ENVISAT-ASAR Persistent Scatterer interferometric analysis. The study area is the southeastern sector of the Mexico City Metropolitan Area that includes Iztapalapa, Ciudad Nezahualcóyotl and Chalco. Correlation of surface faulting gathered from direct field evidence and spatial distribution of subsidence show that the principal factor for constraining hazardous areas is best determined not by solely using the subsidence magnitude rates, but rather by using a horizontal subsidence gradient analysis. This analysis can then be used as the basis for subsidence and fault hazard mapping.

Key words InSAR; subsidence; fault; Chalco, Iztapalapa, Mexico