



Monitoring surface deformation during the seismic cycle at natural and artificial active continental margins

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Active continental margins are the Earth's principal regions of active deformation and significant earthquake hazard. We apply the enhanced method called Differential Interferometric Synthetic Aperture Radar (DInSAR) technique to quantify active surface deformation in the coastal region of the South American active margin in central Chile between 22° S and 30° S. Here, as in other active margin settings, crustal deformation may reach far inland and affects hundreds of square kilometer wide areas. Such distributed deformation poses a challenge in applying DInSAR because Ground Control Points (GCP), necessary to perform a geometric satellite orbit correction, do not satisfy the criteria of zero displacement. This, together with potential inaccuracy of satellite orbit information may lead to results with little tectonic significance. Here, we show and compare the impact of different types and qualities of satellite orbit information and discuss their usefulness for monitoring surface deformation in active margin settings.