



Paleoseismic and rheological parameter inversion using persistent scatterer Interferometry: the Gazikoy-Saros segment of the North Anatolia fault zone, northwestern Turkey.

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We apply the permanent scatterer (PS) interferometry technique, using 38 radar images from ERS1/2 satellites in descending orbits covering the 1992-2000 time period, to map the interseismic crustal deformation across the Gazikoy-Saros (Ganos) segment of the North Anatolian Fault (NAF), northwestern Turkey. Using an earthquake cycle model incorporating viscoelastic rheology and seismic cycle effects the resultant velocity field is inverted to get insight into the mechanism of deformation at the fault. The inversion suggests that elastic thickness of 8-17 km (95% confidence interval), far-field velocity of 18-24 mm/yr, and asthenospheric relaxation time exceeding 28 years are consistent with surface deformation data. Assuming the average crust-upper mantle shear modulus of 30 GPa, we infer a lower bound of 1×10^{19} Pa-s for the average crust-upper mantle viscosity in the Ganos area.