

## Detection of creeping around Ismetpasa section of the North Anatolian Fault using geodetic data

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Creeping along the Ismetpasa section of the North Anatolian Fault was noticed over half a century ago. However, its spatiotemporal nature is still poorly known due to lack of geodetic and seismological studies along the fault. Analysis of ERS (C-band) data acquired between 1992 and 2001 suggested an average creep rate of  $9\pm 3$  mm along a fault segment of  $\sim 70$  km long despite the difficulties arising from limited number of images available, atmospheric artefacts and low coherency that are common in classical long-term InSAR studies (Cakir et al., 2005). In addition, these inferences have been supported by a recent study of stacked PALSAR (L-band) interferograms spanning the period between 2007 and 2010 (Fialko et al., 2011). In this study, we analyzed 55 Envisat ASAR images on 2 descending tracks (479 and 207) between 2003 and 2010 using Persistent Scatterer InSAR technique. The results reveal clearly the gradual transition between the creeping and locked segments of the NAF west of Ismetpasa. In contrast, its eastern termination is scarcely detected near west of 33.4E since creep signal is disturbed by the postseismic deformation of the A.D. 2000, Orta earthquake. The length of the creeping section therefore appears to be approximately 112 km. The creep rate is also tightly constrained and found to be in the range of  $8\pm 1$  mm/yr near to Ismetpasa, consistent with the GPS measurements from a small-aperture geodetic network near Ismetpasa and recently reported PALSAR measurements (Fialko et al., 2011). Elastic dislocation modelling suggests shallow creeping depth ( $< 5$  km).