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Surface deformation in the east Marmara region from 1 year of Sentinel-1a acquisitions within the MARsite project

John Peter Merryman Boncori (1), Alessio Cantone (1), Paolo Pasquali (1), and Semih Ergintav (2)
(1) sarmap SA, Purasca, Switzerland (jmerryman@sarmap.ch), (2) Bogazici University, KOERI, Cengelkoy, Turkey

The Marmara sea region is one of the most closely monitored regions in Europe from the seismic hazard point of view, due to a westward propagation of the seismic ruptures along the North Anatolian Fault (NAF) over the past century, which has increased the probability of an offshore rupture in the proximity of the densely inhabited city of Istanbul. Furthermore, tsunamis could be triggered by the co-seismic displacement itself or by earthquake-induced landslides.
Crustal deformation is one of the key parameters monitored within the FP7 Marmara SuperSite (MARsite) project. High-precision measurements are provided by continuous GPS (cGPS) networks and interferometric processing of long time series of Synthetic Aperture Radar (SAR) images. In this contribution we analyze a subset of the data acquired in the Marmara region by the European Space Agency (ESA) Sentinel-1a SAR mission during the first year of its operation. The area of interest covers a segment of the North Anatolian Fault in the eastern Marmara region. Deformation time-series are derived with the commercial SARScape® software, and the mean velocities compared with co-located cGPS stations.