



## **Seasonal and yearly polarimetric time series analysis of Radarsat 2 quad pol data over the area around Rome**

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A study is being carried out to analyse the potential of high resolution polarimetric SAR data to detect seasonal and yearly changes for archaeological applications. The area under study includes the city of Rome and the area to the south east of the city, towards the Alban Hills. The data comprises Radarsat 2 Fine Quad data of various beams, from FQ2 to FQ19, acquired throughout 2008 and 2011, and provided within the Science and Operational Application Research for RADARSAT-2 program SOAR Project 1488 and SOAR-EU Project 6795. Two different analyses are performed: One is a seasonal analysis, investigating changes taking place on a monthly basis in 2008; the other is an analysis of changes taking place between 2008 and 2011. The processing chain involves the following: multilooking, extraction of the T3 matrix, speckle filtering, geocoding, and finally the application of a range of coherent and incoherent polarimetric decompositions. The software NEST and PolSARPro (both ESA OS software) are used for this processing chain. Different change detection techniques are then discussed for analysis of the dataset to detect potential changes in the time series.