



Surface wind speed retrieval from COSMO-SkyMed SAR data, with application to coastal circulation modeling

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The possibility of retrieving wind fields over the sea from high resolution Synthetic Aperture Radar (SAR) data is of great applicative interest in the modeling of oceanographic processes, for which reliable wind fields are necessary to provide the correct surface momentum fluxes. In this communication preliminary results (obtained within the Italian Space Agency -ASI- project ID 1550) concerning both the capability of retrieving wind speeds from COSMO-SkyMed[©] SAR data and the use of such fields to improve coastal circulation modeling, are presented. COSMO-SkyMed[©] is an ASI Space-Earth Observation Dual Use System constellation consisting of 4 medium-size satellites, each one equipped with a microwave high-resolution SAR operating in the X-band. Wind speeds have been obtained by processing ScanSAR HugeRegion Multi-Look Ground Detected Level 1B VV-polarized X-band COSMO-SkyMed[©] SAR data by means of a SAR Wind Speed retrieval Algorithm based on the azimuth cut-off procedure. The wind speed data thus obtained in a test site located in a Southern Tyrrhenian coastal area are analyzed, also through comparison with the corresponding ECMWF model data. Moreover, surface wind fields are constructed by blending the SAR-derived winds with ECMWF data. The corresponding surface wind stress fields are then used to force the Princeton Ocean Model implemented in the same coastal area. The improvement obtained by using this blended product instead of the classical model data is finally discussed.