



Study strong wind events with erosional effect at coastal areas in Southern Italy comparing SAR vs METMAST vs High Resolution Mesoscale Model Output

Rosamaria Calaudi, Elenio Avolio, Daniel Gulli, Teresa Lo Feudo, and Claudia Calidonna
Institute of Atmospheric Science and Climate, C.N.R., Lamezia Terme (CZ), Italy

This study focus on evaluating the use of Synthetic Aperture Radar (SAR) together with experimental data, and output of High Resolution Mesoscale Model for evaluation of coastal erosional effect in Southern Mediterranean areas, where spatial wind information is only provided by sparse buoys, often with long periods of missing data. Since in Mediterranean seas there are limited offshore experimental data, we have performed a qualitative analysis of satellite observations comparing SAR with the available experimental data from the Calabrian Regional Environmental Protection Agency (Functional Multirisk Center) for the case study of Lamezia Terme for the period of 2011-2012.

Wind climate for the coastal waters off South Italy were made based on images from March 2002 to April 2012 of the Advanced Synthetic Aperture Radar (ASAR) onboard the ENVISAT satellite. Wind speed fields were derived from the SAR images using the Johns Hopkins University, Applied Physics Laboratory (JHU/APL) software APL/NOAA SAR Wind Retrieval System (ANSWRS version 2.0) with the geophysical model function CMOD5.N. Mean wind speed and energy density were estimated using the Weibull distribution function.

This new technique is seen as a supplement to classical wind sampling and modelling efforts, not as a stand-alone alternative.

Some evidence on test cases of wind storm, in the considered region, will be described regarding some events happened in winter 2011-2012 comparing data from SAR, Metmast and Output of High Resolution Mesoscale Model.