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Remote sensing for wind and solar resource assessment in port area in South Italy

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To date, the reduction policies of Greenhouse Gas emissions, are also focused on construction of port facilities emissions, zero energy cost.
The main goal of the work is to define a methodology within the context of the Calabria Region, which could be the port of Crotone, and define for it a model for the integrated management of energy from renewable sources and energy efficiency in the port area, by estimating the environmental parameters of the weather character identified in the port area in order to determine the potential in terms of wind and solar energy.
In the Mediterranean, there is a lack of available data because the buoys are sparsely spread and with a large amount of missing data, therefore the mapping of the wind and solar radiation has need of alternative data sources including spatial remote sensing.
In this study we computed potential solar energy using as input DSSF (Down-welling-Surface Short-wave-Flux) data products from MSG-SEVIRI (Meteosat Second Generation Spinning Enhanced Visible and Infrared) instrument. We show the maps at the Crotone port of the electrical reproducibility using a theoretical PV Plant. In order to understand the satellite limitation with respect to local weather conditions we show the BIAS in cloud and clear sky at the port area.
We retrieved wind speed in the Mediterranean from March 2002 to April 2012 using ENVISAT ASAR scenes acquired in Wide Swath Mode. The ANSWRS 2.0 software produces per default wind speed fields initialized using wind directions determined by the Navy Operational Global Atmospheric Prediction System (NOGAPS) models interpolated in time and space to match the satellite data. Results are compared with hourly measurements of 10m mast, located at the coastline and, belonging to the marine network of sensors of ISPRA (Institute for Environmental Protection and Research).