



One year of vertical wind profiles measurements at a Mediterranean coastal site of South Italy

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In order to develop wind farms projects is challenging to site them on coastal areas both onshore and offshore as suitable sites. Developing projects need high quality databases under a wide range of atmospheric conditions or high resolution models that could resolve the effect of the coastal discontinuity in the surface properties.

New parametrizations are important and high quality databases are also needed for formulating them. Ground-based remote sensing devices such as lidars have been shown to be functional for studying the evolution of the vertical wind structure coastal atmospheric boundary layer both on- and offshore.

Here, we present results from a year of vertical wind profiles, wind speed and direction, monitoring programme at a site located in the Italian Calabria Region, Central Mediterranean, 600m from the Thyrrenian coastline, where a Lidar Doppler, ZephIr (ZephIr ltd) has been operative since July 2013.

The lidar monitors wind speed and direction from 10m up to 300m at 10 vertical levels with an average of 10 minutes and it is supported by a metmast providing: Atmospheric Pressure, Solar Radiation, Precipitation, Relative Humidity, Temperature, Wind Speed and Direction at 10m.

We present the characterization of wind profiles during one year period according to the time of the day to transition periods night/day/night classified relating the local scale, breeze scale, to the large scale conditions.

The dataset is also functional for techniques for short-term prediction of wind for the renewable energy integration in the distribution grids. The site infrastructure is funded within the Project "Infrastructure of High Technology for Environmental and Climate Monitoring" (I-AMICA) (PONa3_00363) by the Italian National Operative Program (PON 2007-2013) and European Regional Development Fund. Real-time data are show on http://www.i-amica.it/i-amica/?page_id=1122.