



The relation between air pollution data and planetary boundary layer quantities in a complex coastal industrial site nearby populated areas.

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The connection among boundary layer phenomena, atmospheric pollutant dynamics and human health is an established fact, taking many different forms depending on local characteristics, including slope and position of relief and/or coastline, surface roughness, emission patterns.

The problem is especially interesting in complex and coastal terrain, where concurrence of slope and sea induced local circulation interact reciprocally, yielding a complex pattern whose interpretation may go beyond pure modeling, and devise specific measurements among which the planetary boundary layer (PBL) height.

An occasion for studying this important theme has been offered by Regione Molise and Valle del Biferno Consortium (COSIB), for the specific case of the industrial complex of Valle del Biferno, 3 km inland of Termoli, in Central Italy, on the Adriatic coast. The local government, sensitive to air quality and public health in the industrial area, together with COSIB has co-financed a research project aimed at gaining knowledge about local meteorology, PBL phenomena and atmospheric pollutant dispersion in the area. Expected results include new air quality monitoring and control methodologies in Valle del Biferno for a sustainable development in an environmentally respectful manner, at a site already characterized by a high environmental and landscape value.

The research project, developed by ENEA, has began in 2007 and will conclude in December 2010. Project activities involve research group from Europe, the United States of America, and the Russian Federation. Scientific and practical results will be published and presented in occasion of the final workshop to be held on project conclusion.

The scientific interest of Valle del Biferno case stems from the specific local characteristics at site. Given the valley orientation respect to mean synoptic circulation, local effects as sea and slope breezes are dominant, and a complex wind regime develops affecting local transport and diffusion of pollutants emitted in the area of the industrial complex.

All effects studied, although influenced by local conditions, characterize not only this industrial area but all areas located along the coastline. This location is highly frequent in Italy and the World, as most industrial complexes in the World occur at coastal sites, where access to harbors and transport networks are facilitated. The Valle del Biferno case may then yield important data to many industrial sites.