



Atmospheric laboratories on the Tyrrhenian coastline

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Despite the wide use of models and parameterizations, measurements constitute the only way to grasp the most complex atmospheric processes. Measurements allow to verify the limits of the formulated parameterizations, and to establish the minimum number of measurements required for a satisfactory description of the observations. Having this in mind, two atmospheric laboratories located at a distance of about 25 km, but in completely different environmental contexts, were settled along the Tyrrhenian coast. One is the LACOST (Laboratorio Atmosferico COstiero Saline Tarquinia), realised in the proximity of the coastline of the Tyrrhenian Sea nearby the protected area of the Saline of Tarquinia (Lazio, Italy) for the long-term monitoring of the coastal planetary boundary layer. The other one, SMART (Sistema Monitoraggio Atmosferico Realttime Torrevadliga), is close to the Torrevadliga North power plant, one of the biggest in Europe, and to the large harbour of Civitavecchia. After a period of test, SMART will be used to feed the dispersion models of the pollutants from the chimney of the power plant. Both SMART and LACOST want to be a tool for the atmospheric research and the management of the environment by local administrations. For LACOST, a website (<http://lacost.artov.isac.cnr.it/>) with near real-time measurements is available, and a daily bulletin is automatically made with all the observations and the main outputs by mesoscale and synoptic models. LACOST and SMART include ground-based remote sensing (triaxial Doppler SODAR) and in situ sensors. Observations are made without interruption for monitoring the wind field, the thermal structure of the atmosphere, the height of the mixed layer, the turbulent fluxes of heat and momentum, the atmospheric radiation and precipitation. The two laboratories are presented together with some preliminary results on the behaviour of the coastal boundary layer.