

Assessing the quality of low-spatial resolution remote sensing data and products by independent large-scale estimations at the Valencia and the Alacant Anchor Stations

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The fundamental objective of the Valencia and the Alacant Anchor Stations is to develop scientific activities addressed towards the validation of low-spatial resolution remote sensing data and products in the framework of Earth Observation Missions such as GERB (Geostationary Earth Radiation Budget), SMOS (Soil Moisture and Ocean Salinity), EarthCARE (Earth Clouds, Aerosols and Radiation Explorer).

Both Anchor Stations are similar and are located in natural regions where the land uses are also similar (vineyards, matorral and shrubs, and some olive, pine and almond trees). However, both stations belong to two different climate areas. On the one hand, the Valencia Anchor Station (representative area of about 50 x 50 km²) has a continental type of climate with Mediterranean influences and the mean annual precipitation is about 450 mm. On the other hand, the Alacant Anchor Station (representative area of about 10 x 10 km²) has a Mediterranean semi-arid type of climate where the annual mean precipitation is about 250 mm. Moreover, the Alacant Anchor Station was chosen on the most degraded crop area of the Valencia Region, in the Eastern part of Spain. Monitoring and comparing meteorological parameters from both Anchor Stations is of great interest to study the interactions between desertification and climate.

The satellite missions above mentioned are addressed to the estimation of net radiation at the top of the atmosphere (GERB, already operational) and of soil moisture content (SMOS, to be launched in September 2007). Our interest is the derivation of net radiation at the surface from top of the atmosphere GERB measurements in order to derive the surface energy fluxes. For that, SMOS soil moisture measurements are of paramount importance. Monitoring and comparing surface energy fluxes from both Anchor Stations will help us to deep in the study above mentioned on the interactions between desertification and climate.

We have developed a methodology to derive, from ground and atmospheric measure-

ments, independent surface values which are scaled up to be compared to top of the atmosphere remote sensing measurements, and this has been set up and validated by using measurements from the CERES (Clouds and the Earth's Radiant Energy System) instrument onboard the NASA EOS Terra and Aqua satellites, exclusively obtained over the validation area thanks to the special CERES Programmable Azimuth Plane Scanning (PAPS) observation mode. A first objective of this paper is to show these comparisons using measurements obtained during the Second GERB Ground Validation Campaign at the Valencia Anchor Station reference area in February 2004.

We are also developing a strategy to obtain large scale soil moisture estimations with the purpose of validating SMOS soil moisture estimations when they become available. The second objective of this paper is to show the work carried out for this purpose, both by developing a network of ground measurements representative of a large area, and by carrying out L-band radiometric measurements to characterise the main surface types at this wavelength, especially matorral and shrubs.