



Soil loss and desertification trends in Mediterranean desert areas through the use of satellite-only data

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Given the significant interest about the water resources management and the availability of soil, also in the light of the Climate Change, a growing attention is devoted to the monitoring of the desertification processes in Mediterranean areas. In order to estimate the dynamics of these phenomena, it is very important to achieve an accurate description of the surface energy balance components (radiation, sensible heat, evapotranspiration). Given the scarcity or the complete lack of ground sensors, the large scale assessment of the state of the desert regions and of the surrounding vegetation requires the use of remote sensing techniques on satellite platforms, with particular reference to the monitoring of the Land Surface Temperature (LST), variable that retains information about the energy budget at the interface between land and atmosphere. In this work the LST assimilation model ACHAB, aimed to the estimation of the fluxes of sensible and latent heat, was employed to assess the energy and water budget through the use of sequences of LST maps from satellite platforms. The LST data were taken from measurements of the MODIS sensor aboard Terra and Aqua satellites, while the auxiliary data at the ground (air temperature, solar radiation, etc.) were estimated basing on a disaggregation of the large scale NCEP reanalysis fields. The resulting maps of evapotranspiration and evaporative fraction were compared with maps of FAPAR (Fraction of Absorbed Photosynthetically Active Radiation) obtained by SeaWiFS platform. The domain of the study consisted in the desert areas of the Mediterranean, namely some of the southern regions of Europe and the Mediterranean Africa, while the period considered was 2003-2006. A discussion of the results, also in terms of maps and trends of desertification, is presented.