



Studies of aerosols advected to coastal areas

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Characterizing aerosols involves the specification of not only their spatial and temporal distributions but their multi-component composition, particle size distribution and physical properties as well. Due to their light attenuation and scattering properties, aerosols influence radiance measured by satellite for ocean color remote sensing making them highly relevant for the ocean color atmospheric correction.

This paper presents the results of the studies of aerosol optical properties measured using lidars and sun photometers. We describe two case studies of the combined measurements made in two coastal zones, in Crete in 2006 and in Rozewie on the Baltic Sea in 2009. The combination of lidar and sun photometer measurements provides comprehensive information on both the total aerosol optical thickness in the entire atmosphere as well as the vertical structure of aerosol optical properties. Combination of such information with air mass back-trajectories and data collected at stations located on the route of air masses provides complete picture of the aerosol variations in the study area both vertically and horizontally. We show that such combined studies are especially important in the coastal areas. Additionally, aerosol particle direct and indirect radiative effects have been identified as key uncertainties for the prediction of the future global climate.

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