Clouds and radiative balance over Antarctica plateau: a multisensor case study.

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Dome C, Antarctica (75 S, 123 E; 3250 meters) is one of the coldest and driest places on Earth, with exceptionally low winds throughout the atmosphere. For this reason it is one of the best sites in the world for astronomical observations. It is also an excellent site for the validation of satellite instruments.

The purpose of this study is to analyze signals related to cloud cover by comparing pyranometer (0.3-3.0 μm) and pyrradiometer (0.3-60 μm) ground-based observations with the most advanced satellite remotely-sensed data presently available over Antarctica.

In particular Terra and Aqua satellite sensors provide many VIS-IR (MODIS-Moderate Resolution Imaging Spectroradiometer) derived products related to cloud properties and radiative energy fluxes, generating an invaluable dataset of new spatialized information on the microphysical properties of clouds over Antarctica.

We focus on the 2003-2004 Antarctica austral summer campaign, by means of Pyranometer and Pyrradiometer data to study the influence of cloud type and cloud cover on the surface radiative balance and to compare and validate MODIS cloud cover data

products.

Moreover, radiosondes data are used to retrieve the atmospheric profile and to study the cloud type and the height of the bottom of the cloud. In particular, these data are also used as input to the Libradtran program for the radiative transfer calculations.