



Can point measurements of surface albedo be approximated by remote-sensed data?

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Satellite data at high spatial resolution provide an ideal tool for computing the subgrid variability of surface albedo within General Circulation Models (GCM) cells. Furthermore, remote-sensed data provide valuable information on the representativity of ground-based albedo measurements. This evaluation study is based on the latest version of the Moderate-Resolution Imaging Spectroradiometer (MODIS)/ BRDF albedo product at 0.05° resolution that provides both direct and diffuse surface albedo for three broadbands ($0.3-0.7\mu\text{m}$, $0.7-5.0\mu\text{m}$, $0.3-5.0\mu\text{m}$) from November 2000 - February 2004.

Intracell surface albedo variations for both the T106 and T42 GCM grids are most pronounced in mountainous (or forested) snow-covered areas, and deserts. In contrast, low intracell variations are typically found over plains with reasonably thick snow decks as well as over snowfree regions where non-forest vegetation predominates.

The spatial correlation between the surface albedo for the MODIS pixel containing any Baseline Surface Radiation Network (BSRN) site and the surface albedo of all other MODIS pixels gives a measure on the representativity of the BSRN surface albedo retrievals. The evaluation shows that albedo measurements at BSRN sites are generally only representative for a limited area. There are, however, quite a few exceptions where the ground-based BSRN surface albedo is representative for relatively large surrounding areas such as Barrow (Alaska) and Rock Springs (USA).