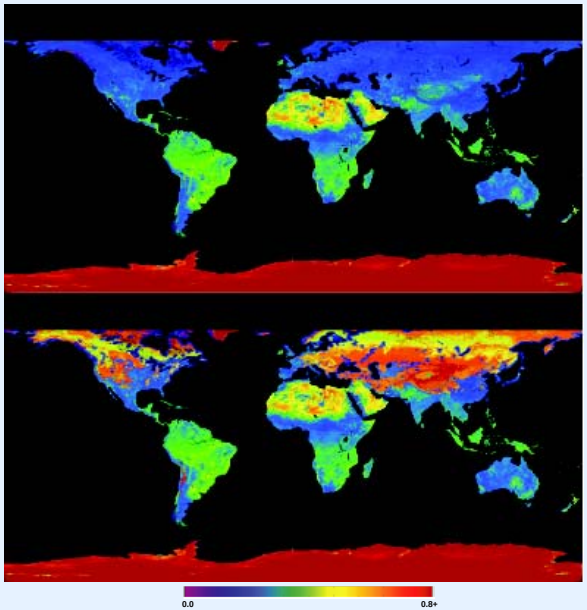
MODIS BRDF/Albedo Products and Applications

C. Schaaf[1], A. Strahler[1], J. Liu[1], Y. Shuai[1], J. Hodges[1], Z. Jiao[1], M. Roman[1], J. Salomon[1], Q. Zhang[1], F. Gao[2], M. King[3] and E. Moody[3]

[1]Department of Geography and Environment, Boston University, [2]ERT Inc., [3]NASA/GSFC

Operational MODIS BRDF/Albedo Products

have been available at a 1km resolution since March 2000 with data from the Terra platform, and as a combined product since July 2002 with data from both the Terra and Aqua platforms. The retrieval algorithm utilizes all high quality, atmospherically corrected, cloud free surface reflectances acquired over a 16 day period and a semi-empirical kernel model to characterize the BRDF of the location and provide intrinsic albedo quantities. For global modeling applications, a snow-free, gap-filled 1 min resolution albedo has been prepared in collaboration with the MODIS Atmosphere Team.



Global gap-filled white-sky albedo 1-16 Jan 2002 snow-free (top), snow-covered (below), 0.86μm

http://www-modis.bu.edu/brdf/

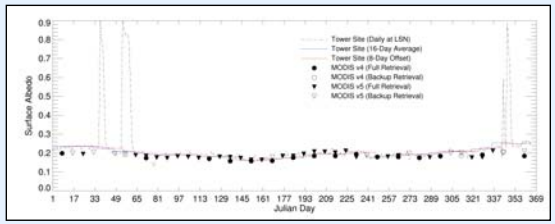
In response to requests from regional modelers, the entire data set is now being reprocessed at a finer spatial resolution (500m) with improved upstream atmospheric correction and cloud masking. Retrievals are also being made every 8 days (based on the last 16 days) to increase the possibility of obtaining high quality results.

ARM Extended Facility #15 (EF-15)

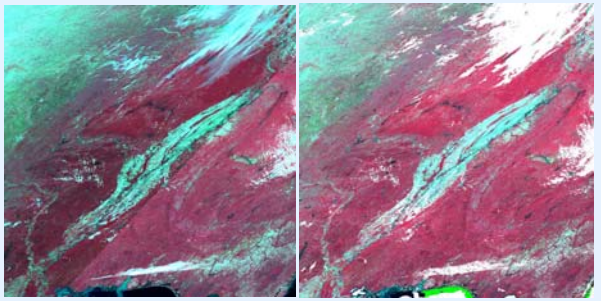
White-sky albedo from the MODIS 1km product, MCD43B3, a true-color image in sinusoidal projection, nominal date 5/9/2003.

1km imagery over Extended Facility #15.

The same location using 500m data.



Initial validation of the 500m product has been successfully accomplished at the Atmospheric Radiation Measurement (ARM) Southern Great Plains site which is also a long term Baseline Surface Radiation Network (BSRN) site.



The consistency of a false color, view-angle-corrected nadir reflectance image (Day 149, 2003) on the right can be compared to the directional surface reflectances from adjoining swaths for the same day (MOD09) on the left.

Direct broadcast users are particularly interested in using the BRDF model retrievals as a means of correcting surface reflectances to a common (usually nadir) view angle. Therefore the direct broadcast algorithm further enhances the operational products by providing a daily rolling product that is tailored to a specific region.