

MODIS BRDF/Albedo Products from Aqua and Terra (MCD43)



Crystal Schaaf(1), Alan Strahler(1), Xiaowen Li(1), Jicheng Liu(1),
Jonathan Salomon(1), Ziti Jiao(1), Yanmin Shuai(1), John Hodges(1), Feng Gao(2) Wolfgang Lucht(3)

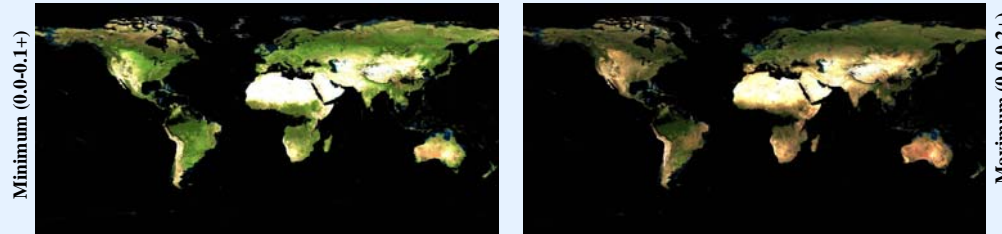
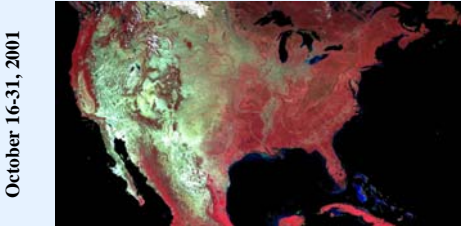
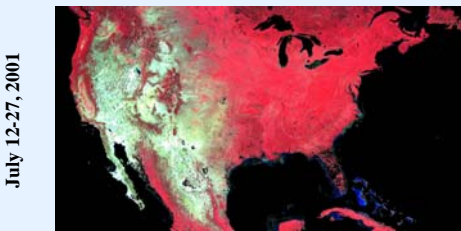
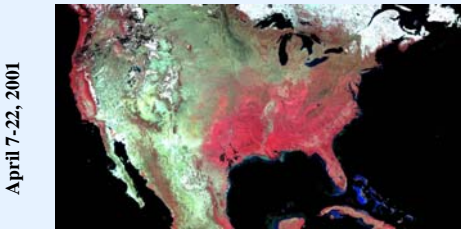
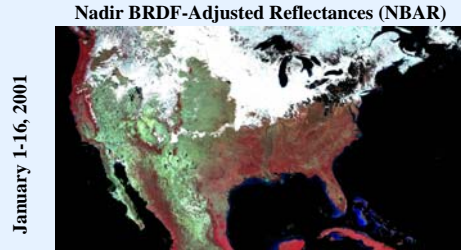
(1) Department of Geography and Center for Remote Sensing, Boston University, Boston, MA 02215, USA; (2) ERT, GSFC, Greenbelt MD, USA; (3) Potsdam Institute for Climate Impact Research, Potsdam, Germany

MODIS BRDF/Albedo Products are available from March 2000 to present. Standard products include BRDF Model Parameters (MOD43B1), Black-sky and White-sky Albedos (MOD43B3), and Nadir BRDF-Adjusted Reflectances (NBAR - MOD43B4). The overall global quality continues to increase with improved atmospheric correction (MOD09), cloud detection (MOD35) and the use of MODIS observations from both Aqua and Terra.

In addition to the 1 km standard products (provided in 10 degree tiles in a sinusoidal projection), the data are also available as global 0.05 degree Climate Modeling Grid (CMG) products in a geographic (lat/lon) projection. The high quality 2001-2003 CMG data have been used to generate average broadband white-sky CMG albedos for predominant IGBP land cover classes. The yearly global minimum and maximum high quality snow-free white-sky spectral albedos for 2001 are given below (red (620 – 670 nm), green (545 – 565 nm), blue (459 – 479 nm)).

IGBP Class	700-800nm			600-600nm			500-500nm		
	Mean	25th	75th	Mean	25th	75th	Mean	25th	75th
1. EverNadir	0.097	0.249	0.087	0.258	0.092	0.241	0.096	0.227	—
2. DecNadir	0.112	0.357	0.114	0.368	—	—	—	—	—
3. DecNadir	—	—	—	0.142	—	—	0.131	—	—
4. Mixed	0.115	0.243	0.128	0.268	0.116	0.240	0.101	—	—
7. Grass	0.137	0.301	0.130	0.672	0.221	0.694	0.242	0.742	—
8. Wetlands	0.100	0.357	0.096	0.366	—	—	0.128	—	—
10. Grasslands	0.106	0.301	0.108	0.721	0.187	0.729	0.168	0.711	—
12. Croplands	—	—	0.153	0.690	0.162	0.690	0.174	0.607	—
14. C. Wetlands	—	—	0.179	0.702	0.168	0.618	0.156	—	—

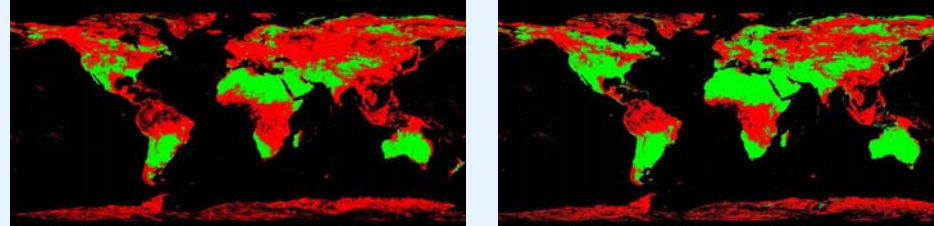
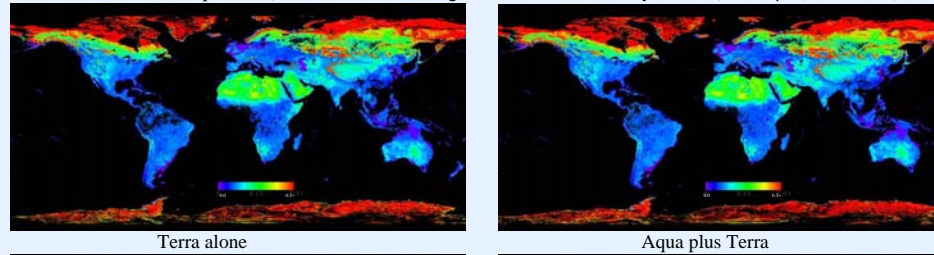
Evaluation and validation continues at Baseline Surface Radiation Network (BSRN) sites worldwide. Examples of Terra alone and Aqua+Terra products over the SURFRAD sites below (the US component of BSRN) demonstrate the consistency of the Aqua+Terra combined products (MCD43).



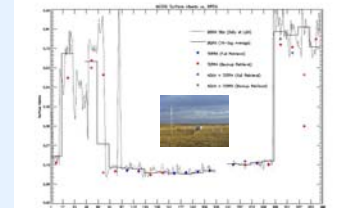
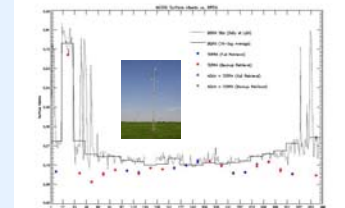
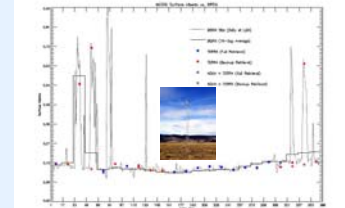
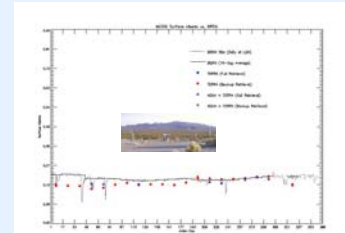
The V005 reprocessed data will include 500 m BRDF/Albedo products (as well as the 1 km standard and 0.05 degree CMG products) for use by the resource management, biogeochemical and hydrological communities.



The global number of high quality retrievals increases significantly when observations from both Aqua and Terra are used in the combined MCD43 product (here the CMG 0.05 degree broadband white-sky albedo (0.3-5.0µm) June 2001).



Green: High Quality Red: Poorer Quality Black: No Data



SURFRAD field data provided by the CERES ARM Validation Experiment (CAVE) <http://www-cave.larc.nasa.gov/cave/>
Site pictures from <http://www.srb.noaa.gov/surfrad/sitepage.html>