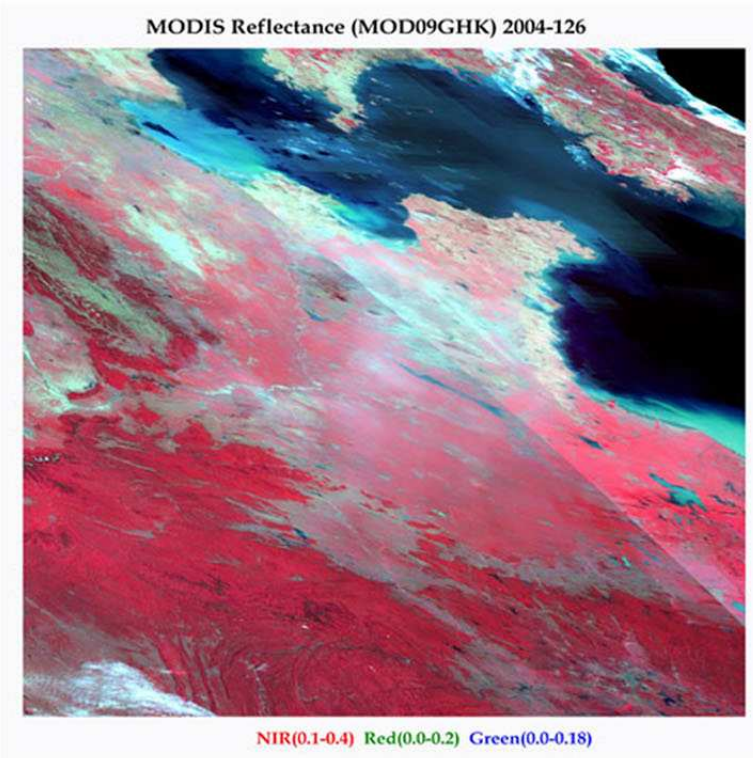
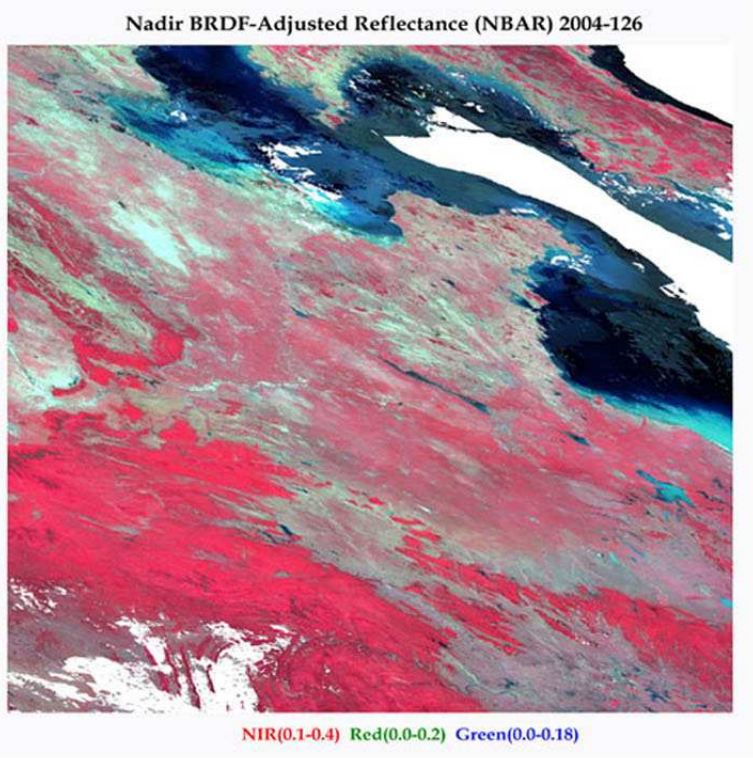
MODIS Reflectance
Albedo and Reflectance Anisotropy

Crystal Schaaf, Alan Strahler, Yanmin Shuai, Jicheng Liu
Department of Geography and Environment,
Center for Remote Sensing, Boston University
Robert Wolfe,
Terrestrial Information Systems Branch (614.5) NASA/GSFC
David Roy, Junchang Ju
Geographic Information Science Center of Excellence,
South Dakota State University

NBAR



MOD09GHK. View Angular effects between two swaths (North China Plain)



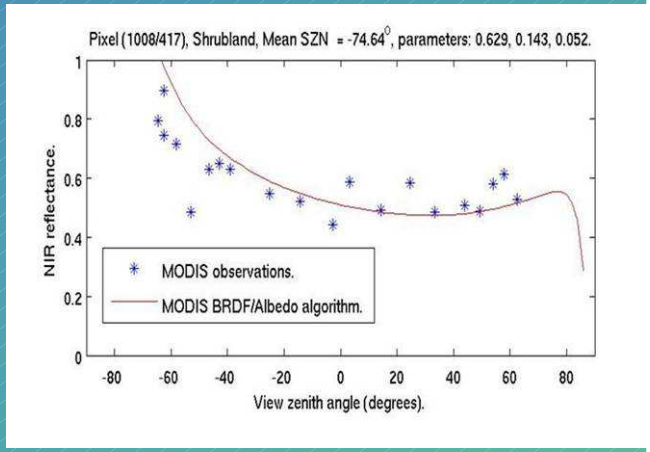
Nadir BRDF-Adjusted Reflectance (NBAR). Angular effect is removed (North China Plain)

Albedo and Reflectance Anisotropy

- The MODIS BRDF/Albedo operational algorithm uses MODIS surface observations from both Terra and Aqua to provide global BRDF model parameters, surface albedo measures, and nadir BRDF-adjusted surface reflectances (NBAR) at a 500m resolution.
- The V005 data are produced globally every 8 days based on the last 16 days worth of surface reflectances.
- The operational algorithm has been translated to a stand alone package that handles the gridding and BRDF model parameter retrieval for albedo, NBAR, and burned area estimation.
  - 7 MODIS land bands plus 3 broadbands
  - Daily rolling retrievals possible
  - Regional tuning possible

MODIS Anisotropy and Albedo

- **Inputs**
  - Cloud-free, atmospherically-corrected, spectral surface reflectances from Aqua and Terra (MOD09/MYD09 BRFs) to sample the surface anisotropy over a 16 day period.



- **Output**
  - High quality full inversions provide well-sampled, best-fit anisotropy models of global land surfaces.
    - Ross Thick Li Sparse Reciprocal semi-empirical model captures volumetric and geometric-optical scattering.
  - Lower quality back-up algorithm performs magnitude inversions by coupling available reflectances with an *a priori* BRDF database

MODIS Anisotropy and Albedo