

5 November 2012

MODIS/Terra Collection 6 Level 1, Cloud Mask and Atmospheric Profile Products Released

The MODIS science team has completed and released the Collection 6 (C6) reprocessing of the Terra Level 1 (L1), Cloud Mask and Atmospheric Profile products. MODIS/Terra C6 products have improvements based on the long-term calibration and characterization of MODIS Terra as well as improvements to the cloud mask and atmospheric profile algorithms. Summaries of these changes as well as the C5/6 production schedule are given below.

Calibrated Radiance and Reflectance Updates

The MODIS Characterization Support Team (MCST) implemented several improvements in calibration methodology for the C6 L1 product (MOD01). For the Reflective Solar Bands (RSBs), the major change for C6 is a revised methodology that supplemented the performance trending of the on-board calibrator observations (Solar Diffuser and moon) with long-term trending of selected pseudo-invariant Earth targets. This change removes a long-term drift observed in the C5 dataset and improves the characterization of the angle dependence of the scan mirror reflectivity. For the Thermal Emissive Bands (TEB), a revised approach for derivation of the offset and nonlinear calibration coefficients improves retrievals for cold scenes. The uncertainties for both RSB and TEB were updated, and time-dependent Look Up Tables (LUTs) are included for the first time.

Details:

http://mcst.gsfc.nasa.gov/calibration/collection_6_info

Geolocation Updates

MODIS Terra Geolocation (MOD02) has been updated with an improved C6 algorithm, ancillary data and look-up tables. Geolocation updates include the use of an improved 500 m land/water mask and global elevation model, a new 500 m geolocation offsets, a new 1 km water fraction field and an improved 1km geolocation in rapidly varying terrain. For improved geolocation accuracy, C6 also includes updated geometric parameters and improvements in the long-term trend based on the entire Terra record.

Details:

http://mcst.gsfc.nasa.gov/sites/mcst.gsfc/files/meetings_files/STM2012_Cal_Wolfe.pdf

Cloud Mask and Atmospheric Profile Updates

MODIS Terra Cloud Mask (MOD35_L2) and Atmospheric Profile (MOD07_L2) products have been updated with C6 algorithms.

Cloud Mask updates include use of NDVI background maps to fine-tune classifications over desert and vegetated surfaces. The C6 product adds a "cloud adjacency flag" and adjusts night classifications to use thresholds based on total precipitable water. The new

product better detects transmissive cirrus and reduces "probably cloudy" retrievals in very humid tropical conditions. Thick smoke and aerosols are also better distinguished from cloud by the new algorithm.

Atmospheric Profile updates include use of a new layer scheme for total precipitable water and application of spectral shifts with some adjustment seen in dry cases. Spectral adjustments and new radiative transfer modeling have improved Total Ozone retrieval comparisons against OMI and surface measurements.

Details:

http://modis-atmos.gsfc.nasa.gov/_docs/MODIS_Terra_C6_Cloud_Mask_Updates.pdf
http://modis-atmos.gsfc.nasa.gov/_docs/MODIS_C6_Atmos_Profile_Updates.pdf

Production Schedule

MODIS/Terra C6 L1, Cloud Mask and Atmospheric Profile forward production has started and will continue in parallel with MODIS/Terra C5 L1 forward production. A similar MODIS/Aqua C6 L1, Cloud Mask and Atmospheric Profile reprocessing was released in July 2012 and the MODIS Aqua C6 change are also in forward production. The C6 atmosphere reprocessing is expected to complete in Jan/Feb 2013 and the C6 land reprocessing is expected to be completed Fall 2013.

To enable the MODIS community to evaluate and gracefully switch over to the C6 products, the C5 forward processing will continue at least one year after the reprocessing of the corresponding C6 products completes. In addition, the C5 products will be kept in the on-line archive for another year after the C5 forward processing ends. At that time, a golden data set of the C5 data will be kept on-line (as was done for prior collections).