MODIS Land Collection 5 Changes

- Used improved Land/Water mask and new Land Cover map based on 3 years of Collection 4 data
- Refined surface reflectance by adopting a dynamic aerosol model in atmospheric correction and implementing BRDF coupling and adjacency effect correction schemes
- Improved quality of the Land Surface Temperature by revising the day/night algorithm and improving the detection and filtering of cloud contaminated observations
- Increased resolution of BRDF/Albedo products to 500m
- Improved ancillary data interpolation to remove artifacts in the NPP product
- Refined LAI/FPAR LUTs to improve numerical accuracy of the radiative transfer simulations
- Added fractional snow algorithm in the snow product
- Burned area product added
- Also: Improved instrument calibration and geolocation accuracy.

LAI/FPAR

Collection 5 has refined Lookup Tables (LUTs) for all biomes to improve numerical accuracy of radiative transfer simulations and to better match simulated reflectances and MODIS observations.

Examples of resulting improvements are a reduction in over-stimulation of LAI and FPAR for needle leaf forest (below) and an increase in the rate of best quality retrievals.

Comparison of Collection 4, Collection 5 and CCRS (Canadian Center of Remote Sensing) LAI and FPAR over Canada. MODIS data are for data-days 201-208, 2003

(Source: Nikolay Shabanov, BU)

MODIS Land Collections

<table>
<thead>
<tr>
<th>C1 Terra</th>
<th>C3 Aqua</th>
<th>C4 Terra</th>
<th>C5 Aqua</th>
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<tr>
<td>2000</td>
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Each collection represents an improvement in science quality

Surface Reflectance

The Collection 5 surface reflectance algorithm retrieves the aerosol model along with the aerosol optical thickness.

This leads to less overcorrection in the surface reflectance product as illustrated in this example.

(Source: Eric Vermote, UMD)

BRDF/Albedo

The Collection 5 BRDF/Albedo product will be produced at a resolution of 500m which provides better spatial detail and will allow the production of a global Land Cover at 500m.

Collection 5 White Sky Albedo products in New England area at different resolutions

(Source: Crystal Schaaf, BU)

Burned Area

Collection 5 includes a monthly burned area product produced at 500m from Terra and Aqua.

Burned Area 2003 dry season in Australia (March-November)

(Source: David Roy, SD State)