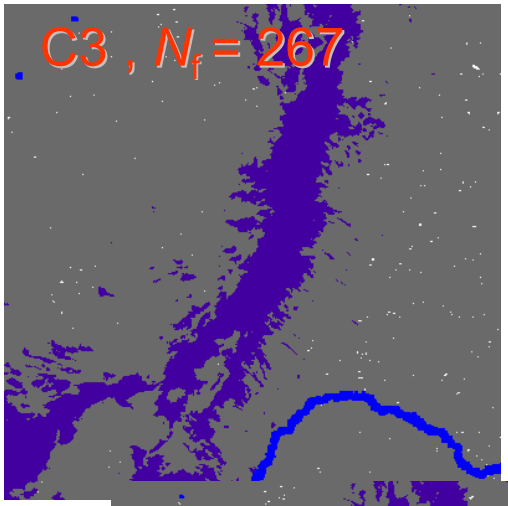
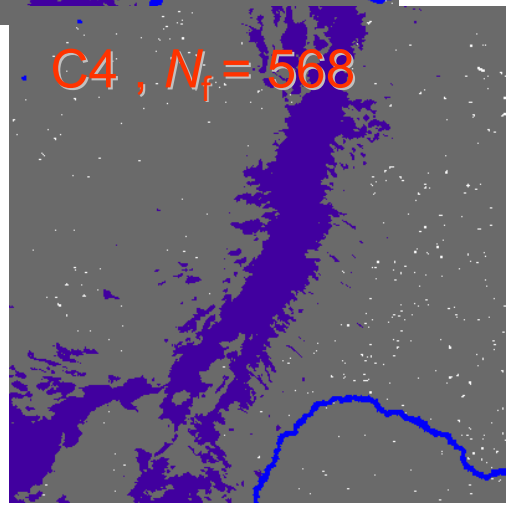
MODIS Land C4 Improvements

- Incremental science improvements accumulated in C3 processing.
- Change the map projection from ISIN to SIN supported by major image processing packages.
- Produce the 250m products globally for the whole data record.
- Benefit from improvements in the Level 1B product: time dependent calibration.

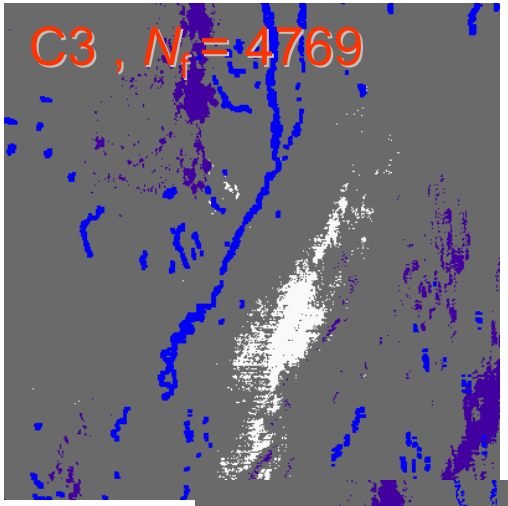
Specific Improvements (1/4)

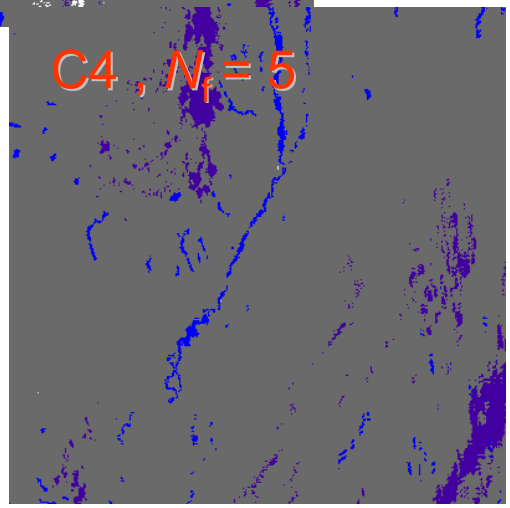
Zaire





Pakistan





Fire Product:

- More robust fire algorithm that detects more small fires and produces fewer false alarms
- Lower sensitivity to inaccuracies in the in-land water mask.

Specific Improvements (2/4)

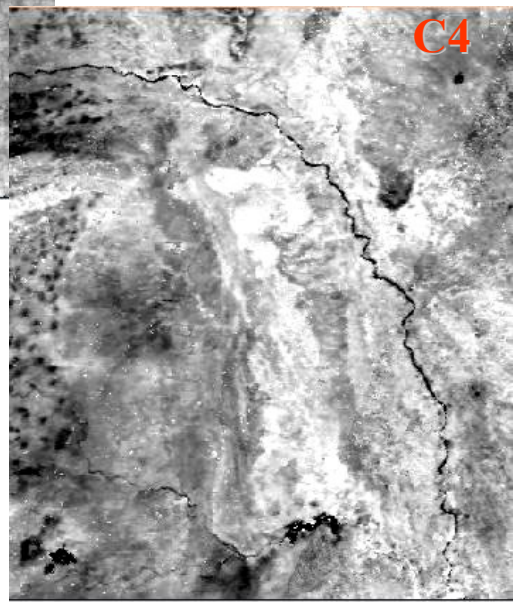
- **Surface reflectance**:
  - Improves cloud detection and implement a geometric cloud shadow mask algorithm
  - Improves aerosol retrieval and interpolation
- **Land surface temperature**:
  - Uses BRDF product
  - Incorporates a split window method in the day/night emissivity retrieval algorithm
  - Lowers the clear sky confidence threshold over lakes to 66% to perform LST retrievals over a larger areas
- **BRDF/Albedo:**
  - Improves the a priori database used in the backup algorithm based on MODIS derived model data
  - Uses new shortwave and NIR narrow-to-broadband conversion factors for pure snow

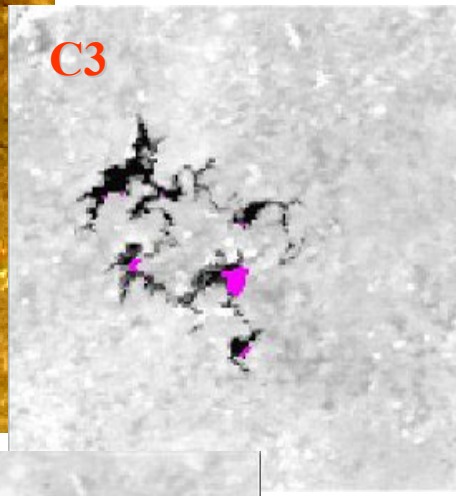
Specific Improvements (3/4)

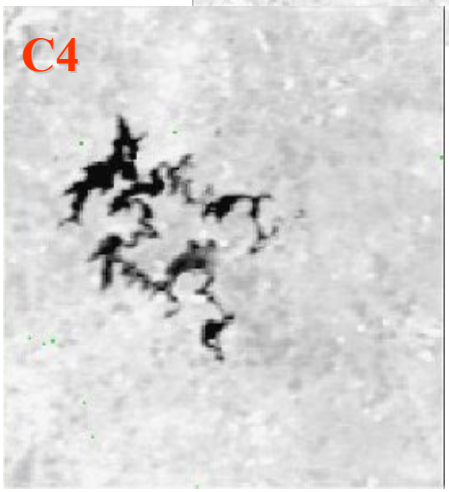
- **LAI/FPAR:**
  - Improves the LUT's in the main and backup algorithms which increased the number of high quality retrievals by 10%, removed the non-physical peak in the global LAI and improved the agreement with ground measurements
  - Uses the MODIS Land Cover product which reduced the uncertainties due to the at-launch land cover
- **VI/EVI:**
  - Weighted average scheme used for daily orbital observations
  - Improves data filtering prior to compositing and use of the aerosol quality flag – results in better spatial consistency

Specific Improvements (4/4)

VI/EVI







Other Collection Version 4 Changes

- New products added
  - Climate Modeling Grids – currently: Land Surface Temperature/Emissivity, BRDF/Albedo; others are in progress
- Aqua Version 4 Algorithms will start in Feb. 2003 (now)
- Browse image roll-out expected soon
- Vegetation Cover Conversion – released
- Vegetation Continuous Fields – being shipped to the DAAC – too be released soon
- Net Primary Production, Burn Scar, Vegetation Dynamics (phenology, interannual change vectors) and Evapotranspiration – under development or evaluation

MODLAND Grid Change

- Science team recently made decision to switch to Sinusoidal Grid (drop the “I”)
- Timing: started with C4 processing
- Small differences in mapped coordinates mean comparisons between C3 (ISIN) and C4 (SIN) 1km products can be made without much loss of fidelity
  - maximum difference at 1km is 0.2 pixels in the column (sample) direction
- Relatively larger differences make inter-comparison of 250m and 500m ISIN and SIN products difficult
  - shift is up to 0.4 of a 500m pixel and 0.8 of a 250m pixel