



MODIS Land Report

EDC LP DAAC
Science Advisory Panel Meeting
September 10, 2002

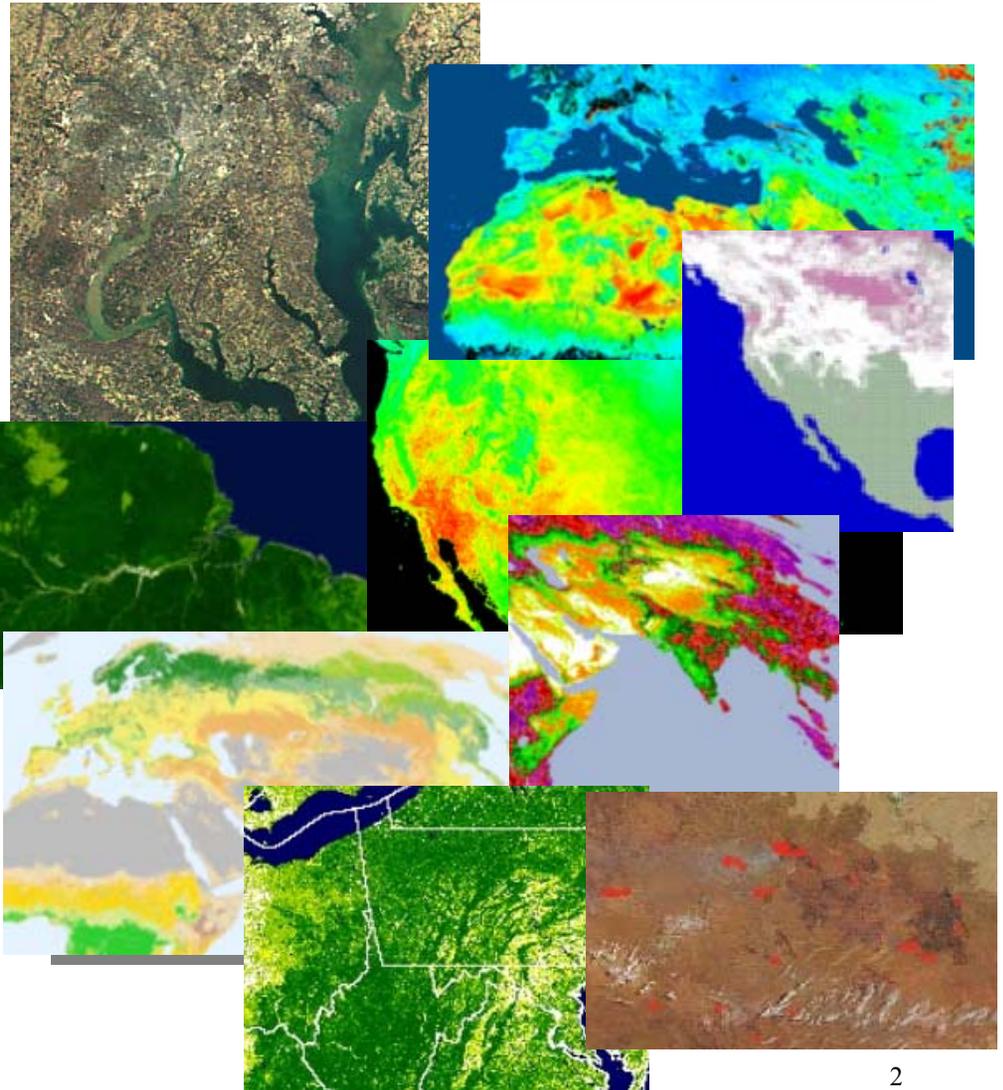
Robert E. Wolfe
NASA GSFC Code 922, Raytheon ITSS





MODIS Land Products

- Energy Balance Product Suite
 - Surface Reflectance
 - Land Surface Temperature, Emmissivity
 - BRDF/Albedo
 - Snow/Sea-ice Cover
- Vegetation Parameters Suite
 - Vegetation Indices
 - LAI/FPAR
 - PSN/NPP
- Land Cover/Land Use Suite
 - Land Cover/Vegetation Dynamics
 - Vegetation Continuous Fields
 - Vegetation Cover Change
 - Fire and Burned Area





MODIS Calibration Summary

- Terra MODIS has been stable for about 3 years
 - Deep-space maneuver was performed to better characterize angle-of-incidence (AOI) response
 - Current Geolocation is very accurate (~50 m)
- Aqua MODIS has been performing very well
 - Geolocation accuracy (~65m) is near science goal



Terra Collection Version 4 (C4)

- Started reprocessing Dec. 2002 – expected to finish in mid-Oct. 2003
 - 87% of the data has been reprocessed (28 of 32 months)
- Reprocessing from first-light (Feb. 2000)
- Achieving 3.4x reprocessing rate (requirement is 2x, goal is 3.6x)
- Forward processing started Jan. 2003
- LP DAAC ingesting and archiving 1.7TB/day – includes both Terra C4 forward processing and reprocessing, and Aqua C3 forward processing (well above requirement)
- Science team changes carefully controlled to minimize disruption to time-series
 - Science test system used to evaluate significant changes (including upstream algorithm changes)
- Browse image roll-out started (Surf. Refl. done, VI next, then the rest)

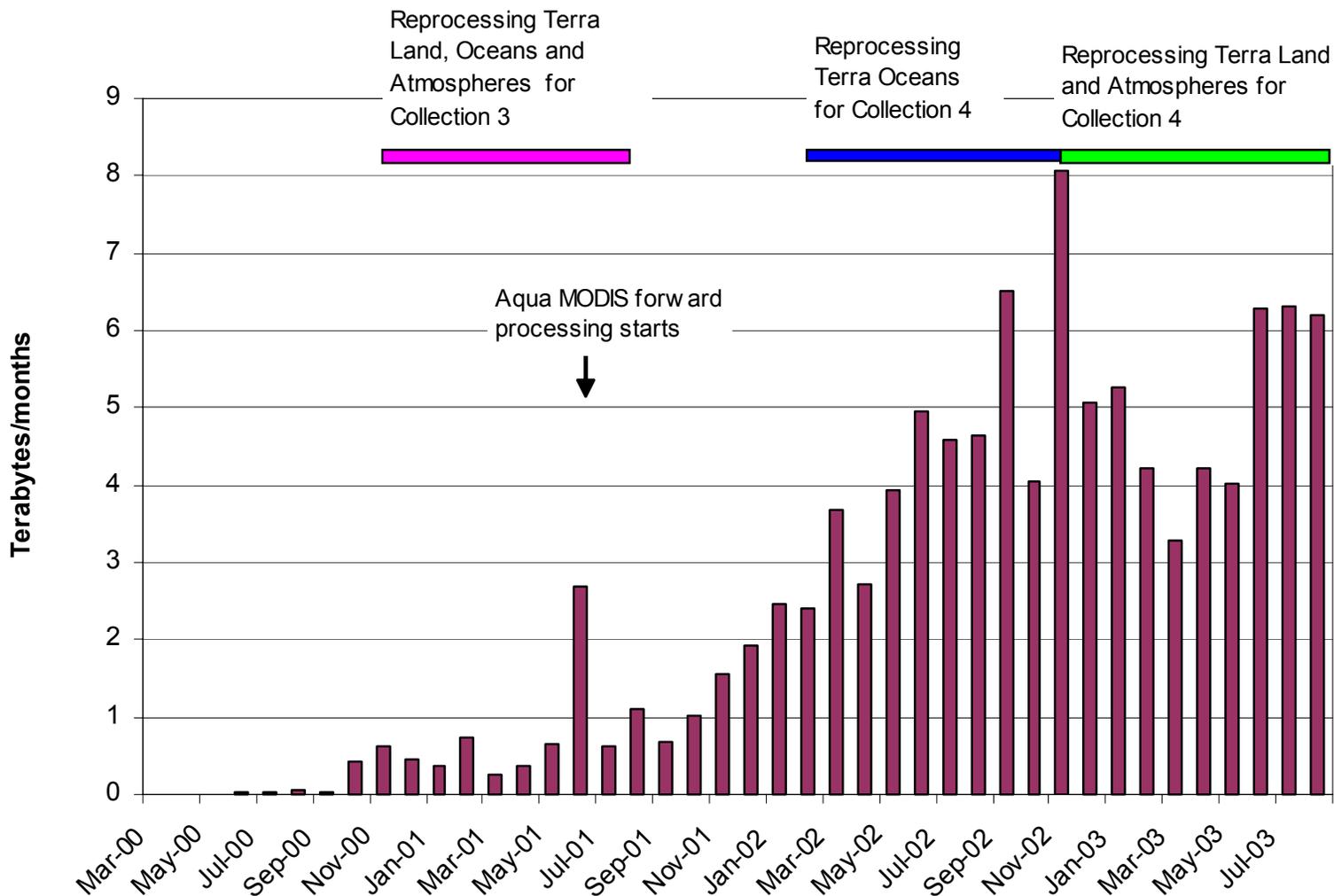


Remaining Product Releases

- BRDF/Albedo – Combined Terra/Aqua product release expected soon
- LAI/FPAR – Aqua release expected soon
- NPP/PSN – Terra C4 release expected soon; Aqua under evaluation
- Land Cover – Terra C4 being processed; Combined under development
- Vegetation Dynamics – Terra C4 under evaluation; Combined under development
- Vegetation Cover Conversion – Terra C4 under evaluation; Aqua under development
- Vegetation Continuous Fields – Terra C4 under evaluation; Aqua under development
- Burn Scar – Terra C4 under evaluation; Aqua under development
- Evapotranspiration – Aqua under development

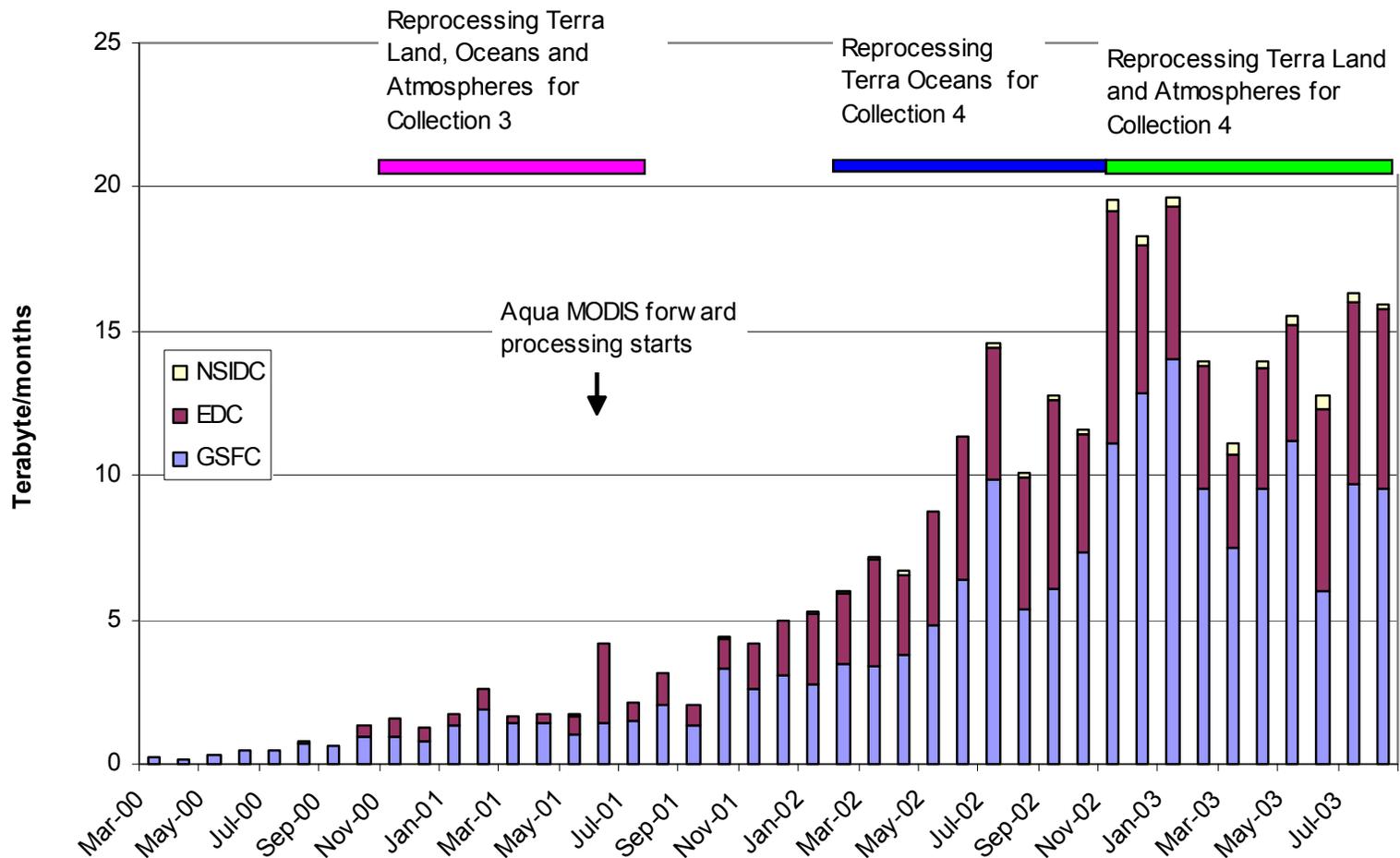


MODIS LP DAAC Distribution





MODIS Overall Distribution





Other Processing

- Terra C4 cleanup from late-Oct. to Dec.
 - will correct some problems discovered after reprocessing started
 - will replace some lost files
- Aqua C4 reprocessing
 - land/atmos will start Jan. 2004
 - expected finish date is late June 2004
 - will include combined BRDF/Albedo product
 - Terra C4-like algorithms – consistent time series
- Terra, Aqua and Combined C5 reprocessing
 - will start fall 2004
 - science team competition underway – may (will) impact C5 algorithms
 - could include new science algorithms
 - expect addition of more products at 500m and volume reduction (27%)
 - ~7 mission years to be processed (7x needed to process in 12 months)

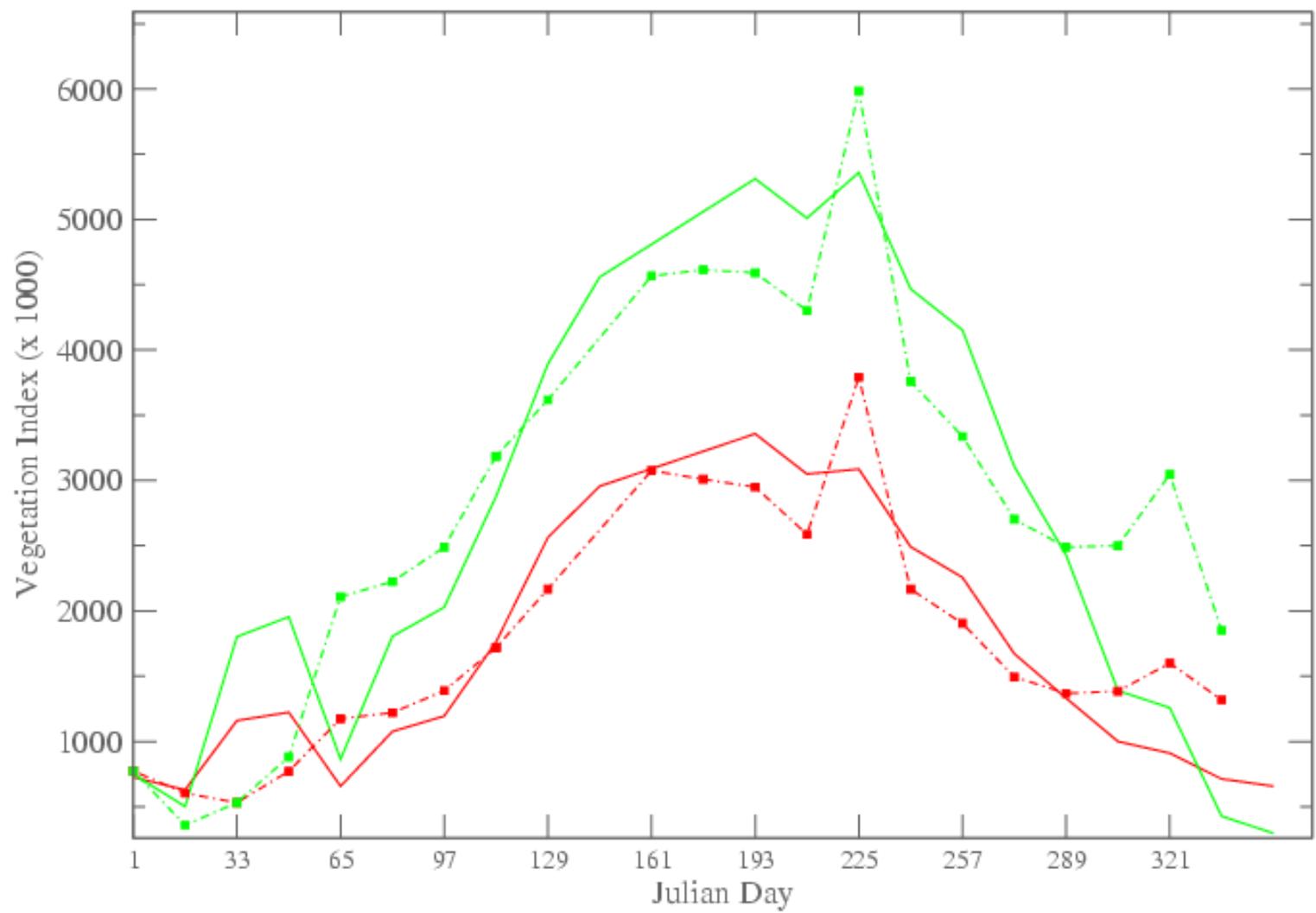


Quality Assurance

- MODLAND Tools developed with LP DAAC
 - new version available
 - 215 users reg.
- Global browse reworked
 - new LUTs, combined products
 - time series animations
 - expect further enhancements
- Time series
 - now 9 tiles, both Aqua and Terra

MOD13A2 h24v04 (Northwestern China) Broadleaf_Crop_Biome

Terra, Collection 3, Year 2001 vs 2002 (2002 data dash line with square)



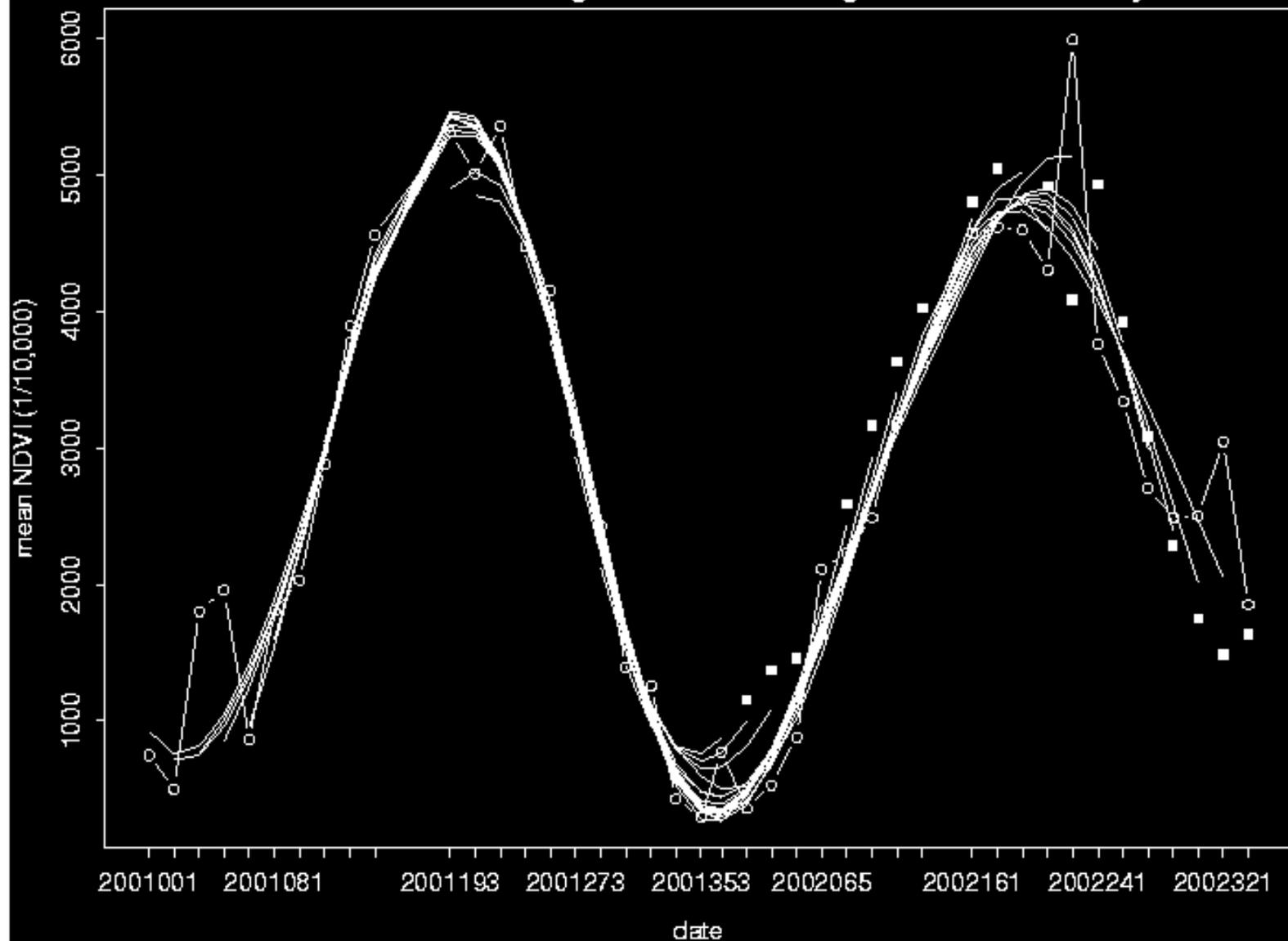


Time Series R&D

- Prototype “alarm” methodology
 - assist identification of outliers and spurious time series statistics in near-real time
 - to guide product sampling for more conventional QA
 - by comparison of statistics from most recent production with previous production
- May also
 - capture changes in instrument characteristics and calibration (link to Vermote desert calibration time series analyses)
 - provide a more general CDR consistency checking methodology
 - capture algorithm sensitivity to surface, atmospheric and sensing characteristics that change temporally
- Preliminary prototyping ... initially VI time series

David Roy, MODIS Land Workshop, July 2003

Broadleaf Cropland Biome h24v04 MOD13A2 1_km_16_days_NDVI
order 2 sinusoidal regression, moving window 365 days





Animation

- [Africa_Fire_NDVI_2001.mp4](#)

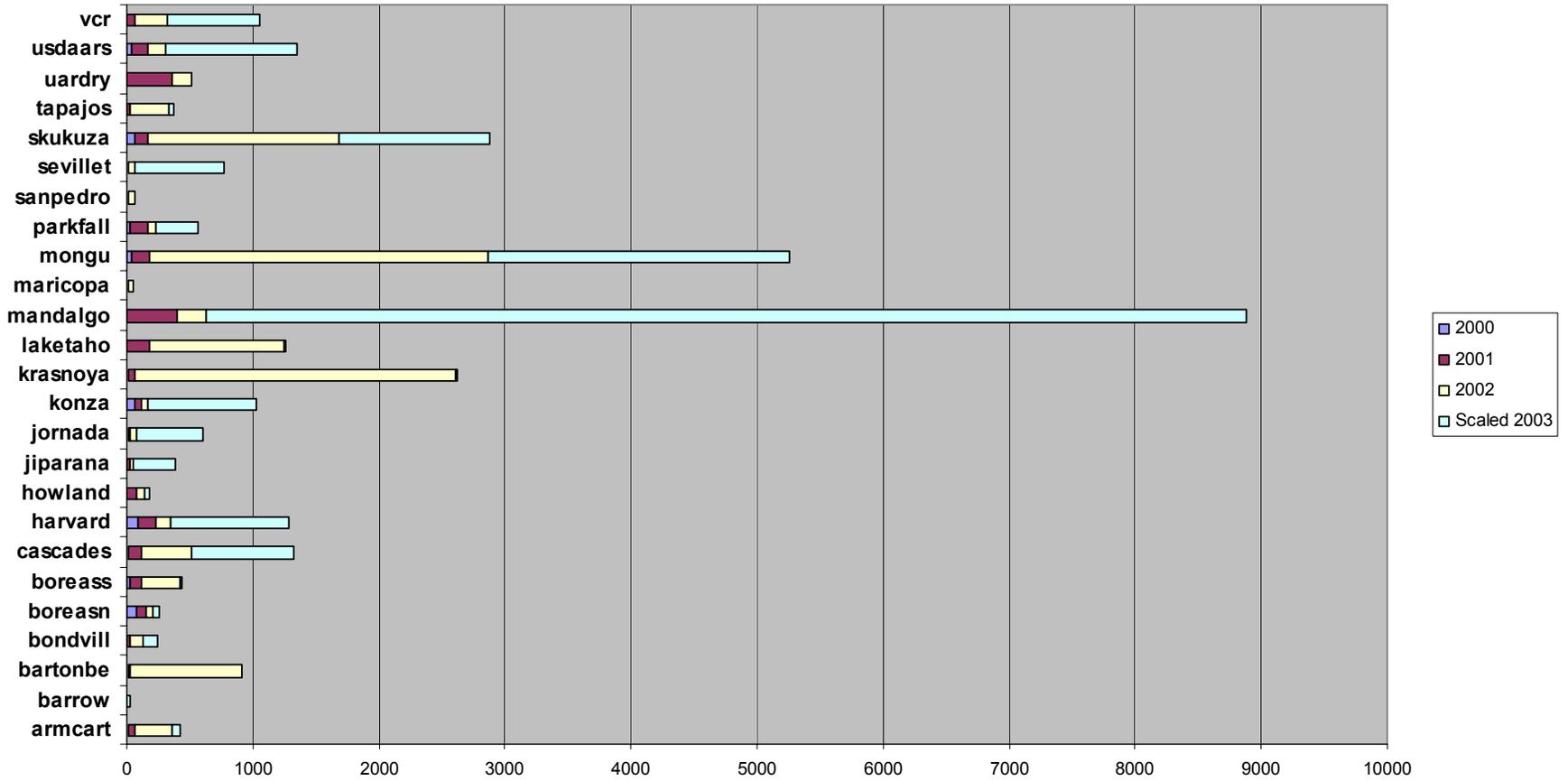


Validation

- Most products are in process of Stage 2 validation
 - product accuracy has been assessed by a number of independent measurements, at a number of locations or times representative of the range of conditions portrayed by the product
- Land Product Validation (LPV) upcoming topical workshops
 - LAI-intercomparison (UMt)
 - follow-up Land Cover/Change at (BU)
 - Albedo/BRDF in conjunction with next BSRN resulting in a case study of combining BSRN and MODIS
 - Fire and Burn scar (TBD)
- ORNL MODIS ASCII Subsets
 - 9 Terra MODIS products
 - expanded from 25 to 274 sites
- LP DAAC subsets over 24 core sites



LP DAAC: MODIS validation subsets downloads





Other

- Land Rapid Response
 - Demonstration of an operational application for MODIS (Rapid Fire)
 - High visibility
 - Provides key outreach using Earth Observer
 - Demonstrating additional applications (military, etc.)
- Direct Broadcast
 - All MODLand algorithm code available to the public, via Pat Coronado, for released products



Final Words

- MODLAND achievements are outstanding (continue to be said loud and clear)
 - Major advances in land data product availability since start of contract
 - Infrastructure in place - Science driven production / QA / Validation (CEOS LPV)
 - Created a paradigm shift – validated geophysical products of known accuracy

Chris Justice, MODIS Land Science Team Workshop, July 2003