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# **LP DAAC Status**

## **MODIS/VIIRS Science Team Meeting**

### **May 20, 2015**

**Dave Meyer, USGS**

LP DAAC Project Scientist

**Tom Maiersperger, SGT, Inc.**

LP DAAC Science Lead

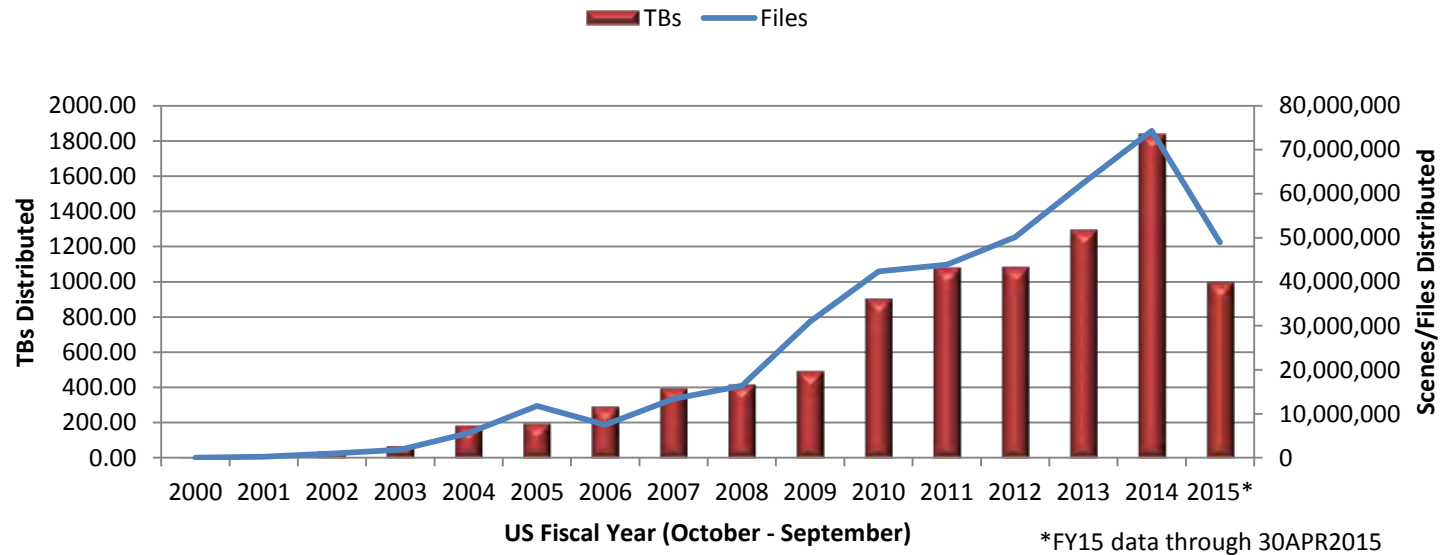
# LP DAAC status, V06 & VIIRS

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- Status
  - MODIS metrics
  - Web site update
  - Schedule/product delivery
    - Coordinate V06+VIIRS ingest
- New capabilities
  - Earth Data Search Client
  - New Services
  - Outreach/communications
    - Collection 6 land products workshop
  - Digital Object Identifiers for MODIS V06

# LP DAAC MODIS Distribution – historical

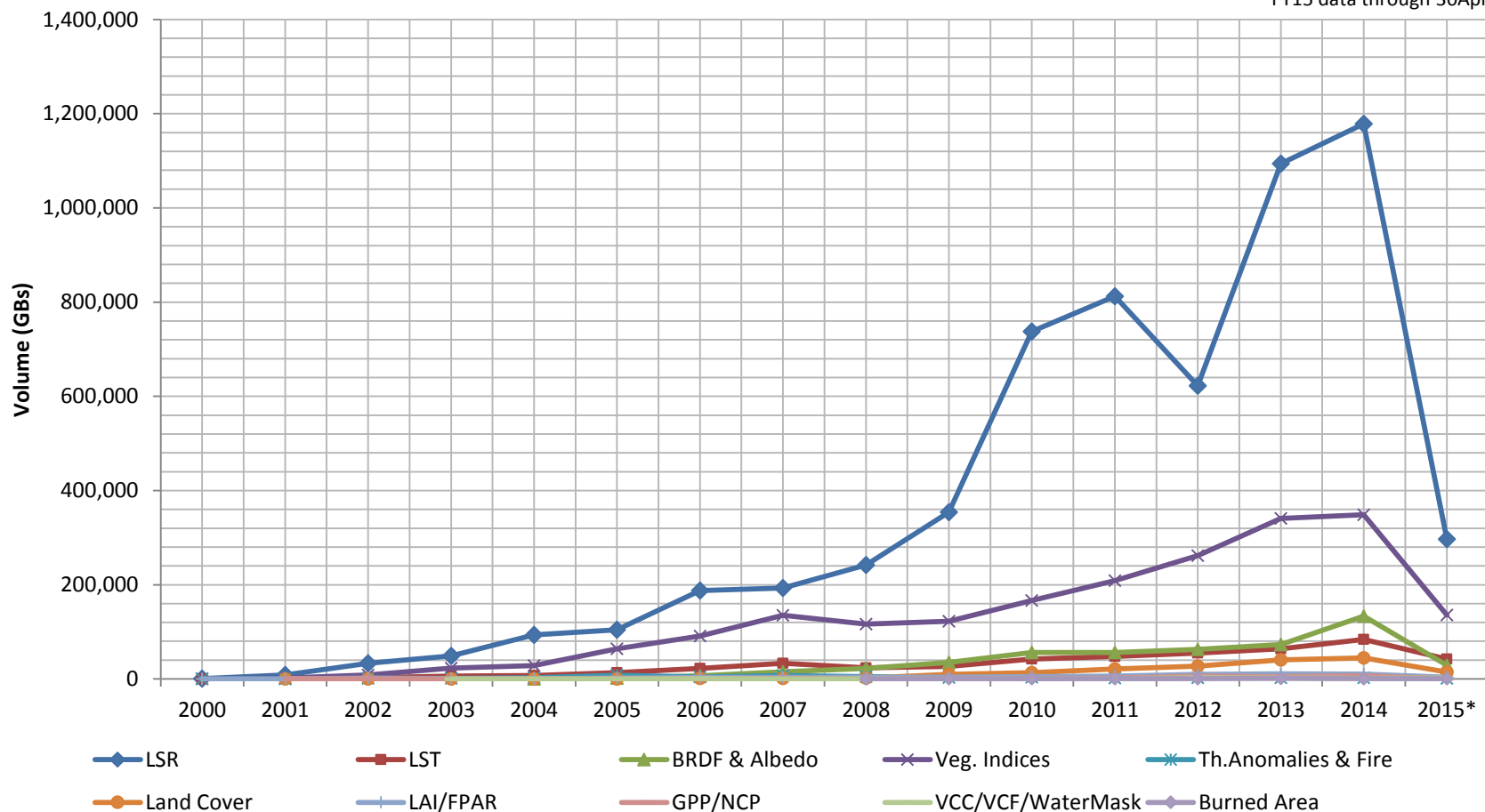
## LP DAAC MODIS Distribution by US Fiscal Year



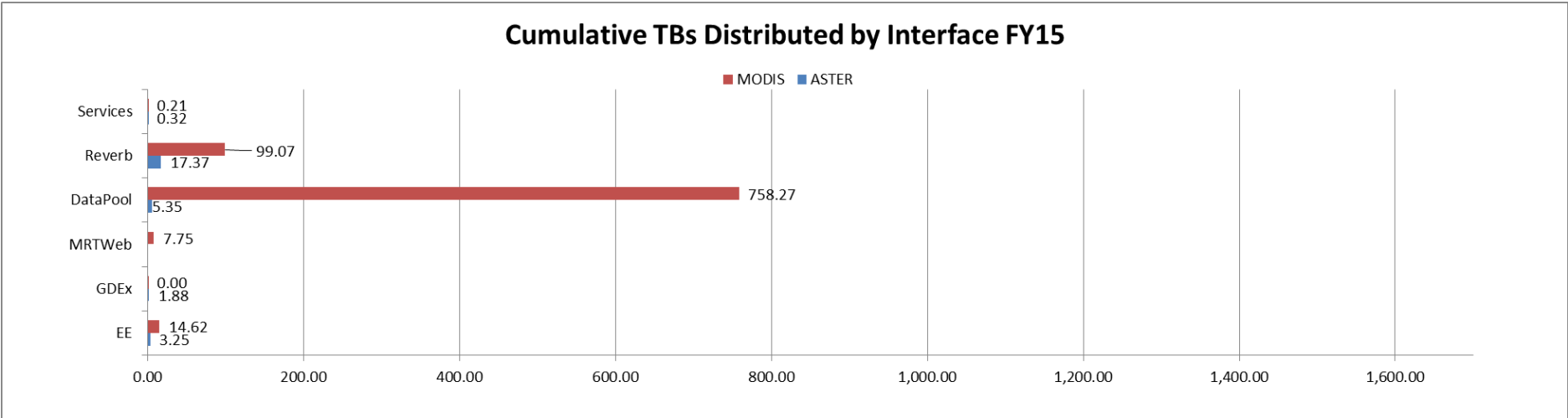
# MODIS Distribution (Volume)

## Terra & Aqua MODIS Distribution by Volume (2000–2015)

\*FY15 data through 30Apr15

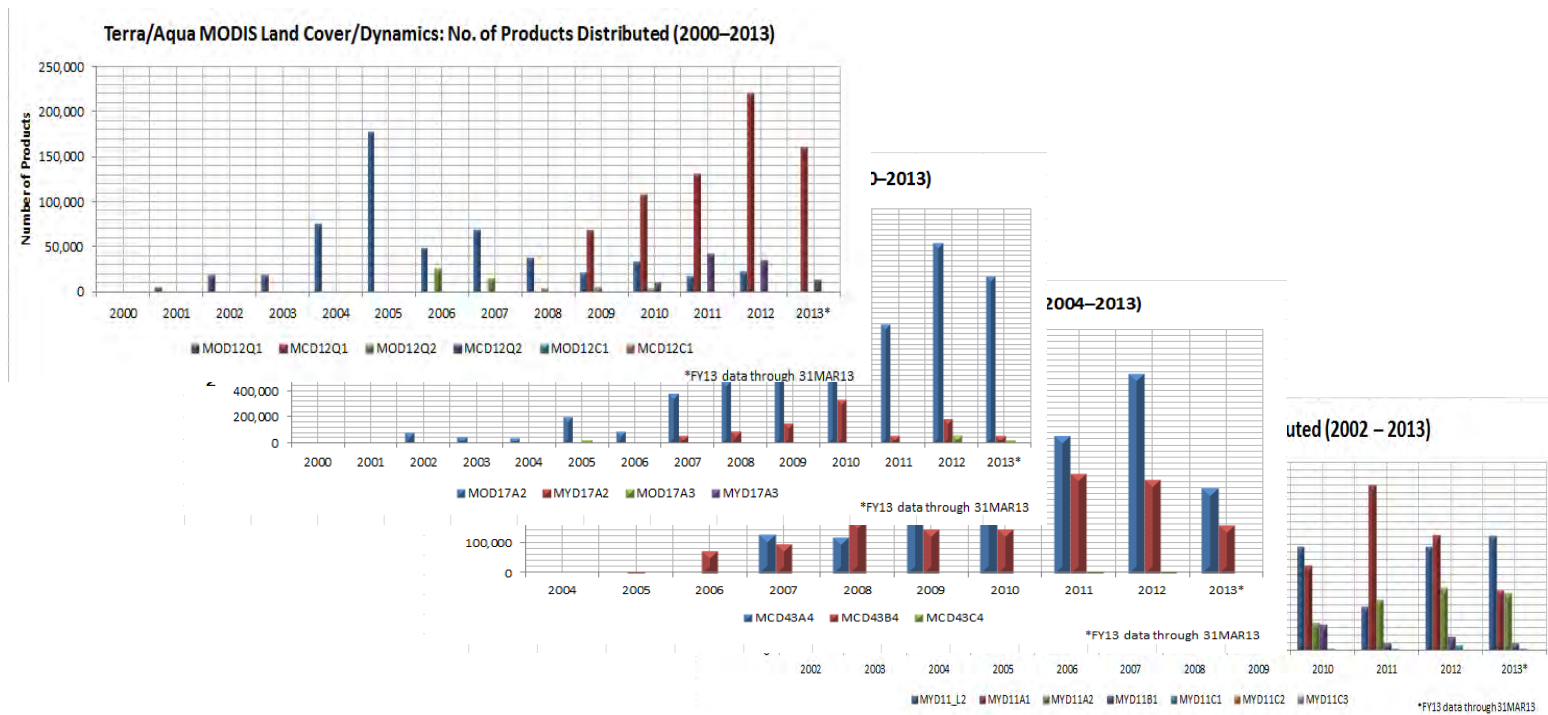


# LP DAAC distribution by access point – FY2015



# Metrics Data

- Product-by-product charts are appended to this presentation
- We can provide additional metrics upon request



# Website Redesign

## Faceted Search

Data Discovery ▾ Data Centers ▾ Community ▾ Science Disciplines ▾

# LP DAAC

LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER

Home About ▾ Data Products ▾ Data Access ▾ Tools ▾ User Community ▾ User Services ▾ Search Login with URS

Home > Dataset Discovery > Search results

### Refine by

**Products**

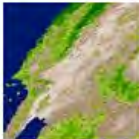
- Vegetation Indices
- Vegetation Continuous Cover/Fields (0)
- Land Cover (0)
- Elevation (0)
- Unprocessed (0)
- Reflectance (0)
- Thermal Anomalies and Fire (0)
- Gross Primary Productivity (0)
- Temperature and Emissivity (0)
- Radiance (0)
- BRDF and Albedo (0)
- LAI/FPAR (0)
- Land Surface Reflectance (0)
- Net Primary Productivity (0)

**Data Type**


- Terra MODIS
- MEaSURES SRTM (0)
- ASTER GED (0)
- MEaSURES WELD (0)
- Combined MODIS (0)
- Aqua MODIS (0)
- Terra ASTER (0)

Spatial Resolution (6)


### Search results

- MOD13A1**  


Global MODIS vegetation indices are designed to provide consistent spatial and temporal comparisons of vegetation conditions. Blue, red, and near-infrared reflectances, centered at 469-nanometers, 645-nanometers, and 858-nanometers, respectively, are used ...;

Composites 5 500 Global Terra MODIS Vegetation Indices EarthExplorer Data Pool  
Globvis Reverb MRTWeb
- MOD13A2**  


Global MODIS vegetation indices are designed to provide consistent spatial and temporal comparisons of vegetation conditions. Blue, red, and near-infrared reflectances, centered at 469-nanometers, 645-nanometers, and 858-nanometers, respectively, are used ...;

Composites 5 1000 Global Terra MODIS Vegetation Indices EarthExplorer  
Data Pool Globvis Reverb MRTWeb
- MOD13A3**  


Global MODIS vegetation indices are designed to provide consistent spatial and temporal comparisons of vegetation conditions. Blue, red, and near-infrared reflectances, centered at 469-nanometers, 645-nanometers, and 858-nanometers, respectively, are used ...;

# Preparing the archive for V06+VIIRS

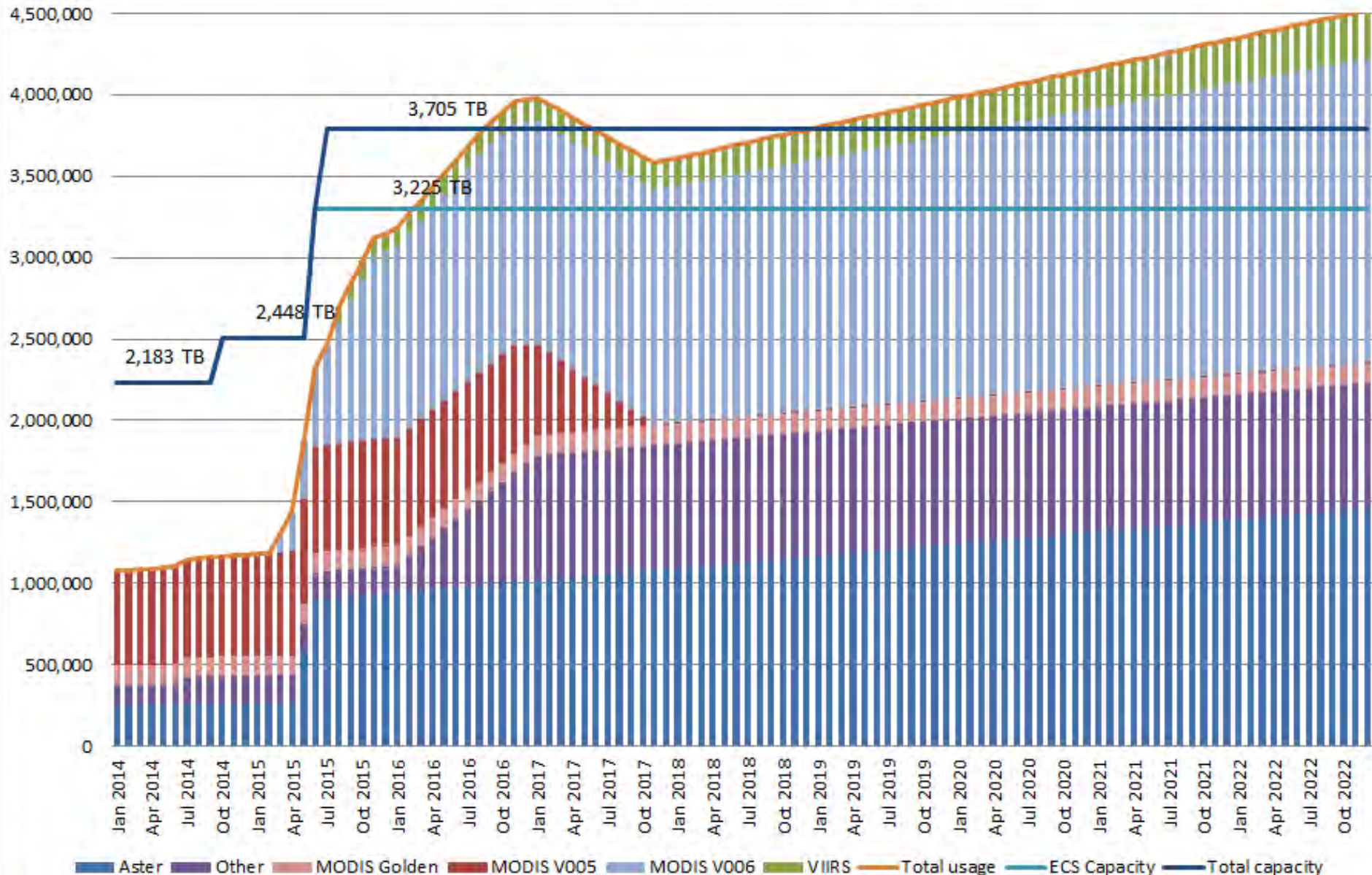
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- V06 delayed public release until fall
  - LP DAAC agreed to maintain both V05 and V06 for 1-2 years
- Nominally, first VIIRS products arrive this summer (!!!)
- Archive must be scaled to accommodate this load (plus additional products such as MEasUREMENTS, new ASTER products, etc.)
- Info we (LP DAAC) have:
  - V06 product delivery scheduled, product descriptions
    - Assuming appropriate documentation (ATBD's, user guides, etc.) are found in the "usual" places.
- We need:
  - Accurate descriptions of VIIRS products and delivery schedule
    - Currently estimating archive size based on comparable LandPEATE products



# Projected LP DAAC Archive Utilization - 04/10/15

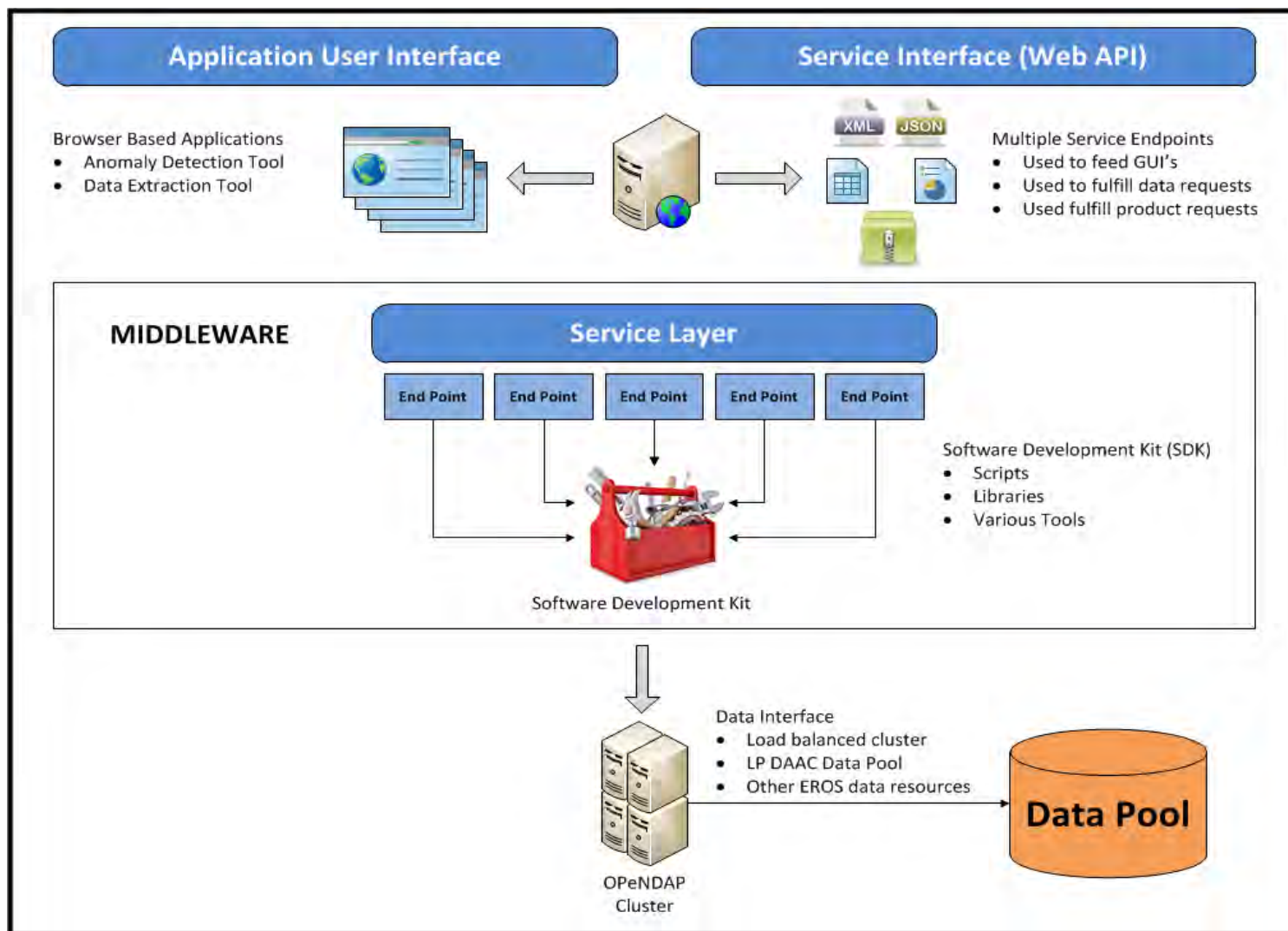
## 12 month MOD C5 retention (40X C6)



# NASA Earth Data Search Client (beta)

The screenshot displays the NASA Earth Data Search Client interface. At the top, navigation tabs include "EOSDIS - Earthdata Website", "EOSDIS Worldview", and "Earthdata Search". The main header features the "EARTHDATA" logo, a search bar containing "albedo", and filters for "Temporal" and "Spatial". A "Clear Filters" button and a "Feedback" link are also present. On the left, a sidebar shows "Back to Datasets" and the dataset title "MODIS/Terra+Aqua Albedo 16-Day L3 Global 500m SIN Grid V005". Below this is a "Retrieve Dataset Data" button and a list of 20 granules. The first granule is highlighted: "MCD43A3.A2015113.h16v08.005.2015133052413.h" with a date range of "2015-04-23T00:00:00Z to 2015-05-08T23:59:59Z". The main area shows a global map with a green grid over Africa and a color scale legend for albedo values from 0 to 0.75. A "3000 km / 1000 mi" scale bar is visible. At the bottom, a "MONTH" timeline shows the current selection for "Jan 2015".

# LP DAAC Services Concepts



# LP DAAC Data Access: OpenDAP vs. Data Pool

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- LP DAAC data is available through the LP DAAC Data Pool
  - Data files can be downloaded through HTTP links:
    - <http://e4ftl01.cr.usgs.gov/MOLT/MOD09Q1.005/2015.01.09/MOD09Q1.A2015009.h11v04.005.2015027222534.hdf>
    - The entire granule is downloaded through the link.
- OPeNDAP services allow users to request only the portion of the data files they are interested in:
  - [http://opendap.cr.usgs.gov/opendap/hyrax/MOD09Q1.005/h11v04.ncml.ascii?sur\\_refl\\_b01\[683:1:683\]\[2000:1:2010\]\[2000:1:2010\]](http://opendap.cr.usgs.gov/opendap/hyrax/MOD09Q1.005/h11v04.ncml.ascii?sur_refl_b01[683:1:683][2000:1:2010][2000:1:2010])
  - “request one pixel from MOD09Q1 from a specific tile, date and location for band 1, and return the result as an ASCII file”
  - Can be built into scripts to perform manipulations on the result
- **Information is extracted directly from the archive without downloading large amounts of data.**

# Middleware application: sample selection

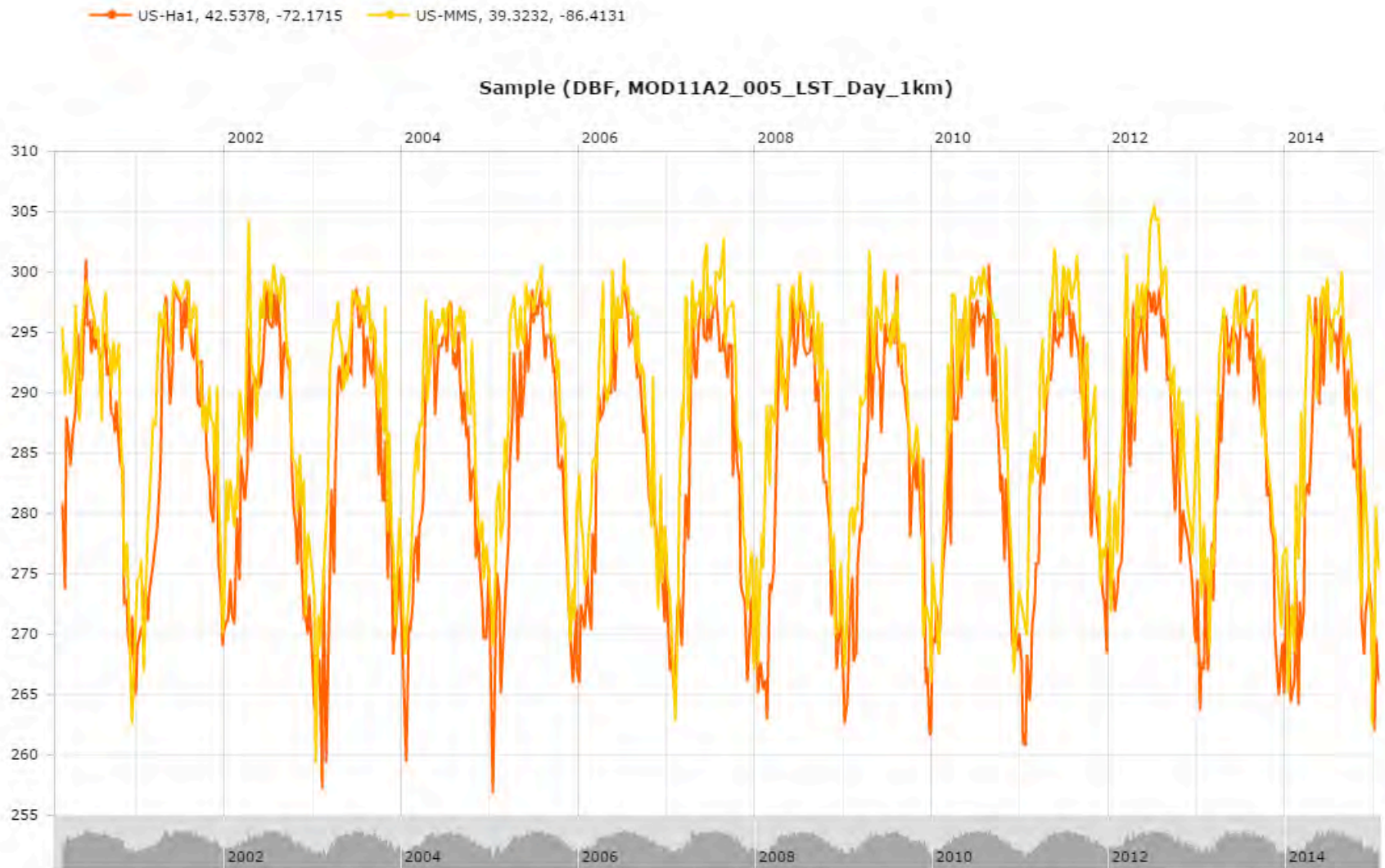
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- Demonstration Python application performed at the **pixel level**:

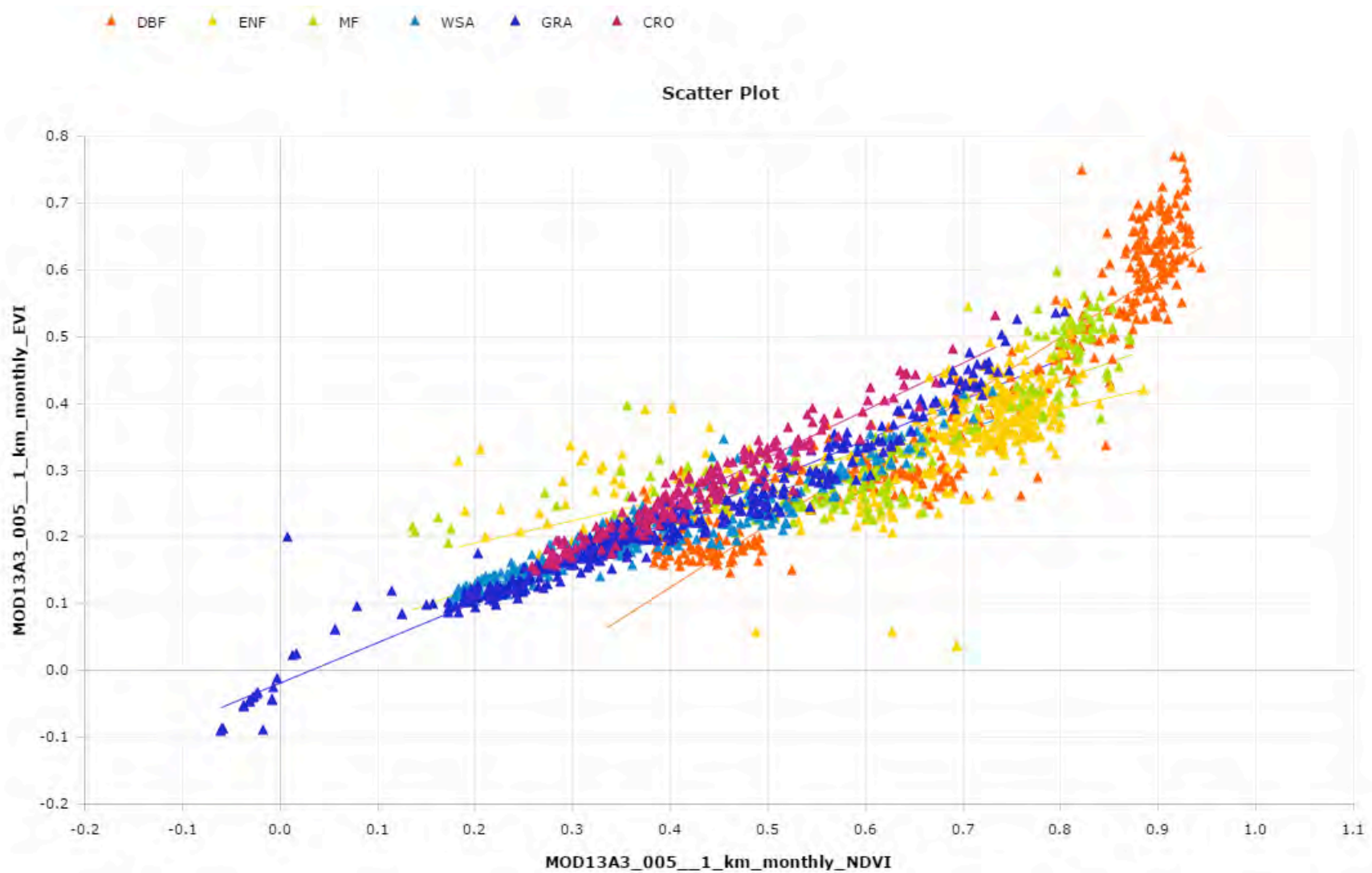
“Extract time series of EVI and LST from 10 flux tower locations from the beginning of Terra Mission through the current date”

- Data are located in 7 different MODIS Level 3 tiles
  - MOD11A2.005, 8-day LST (686 date values)
  - MOD13A3.005, monthly EVI (180 date values)
  - **$7 * (686 + 180) = 6,062$  granules (212 GB)**
- Process through sample selector 1 hour, 10 minutes
  - **Downloaded ASCII file is 409 KB (7 orders of magnitude less!)**

# Sample selection: plot LST at two sites



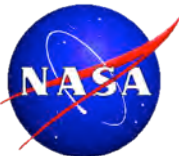
# Sample selection: Compare NDVI, EVI at 7 sites



# OpenDAP Accessibility

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- Many different tools can be used to access OPeNDAP Datasets
  - R
  - Python
  - Panoply
  - Working with ESRI for access via ArcGIS platforms.
- Currently in use by:
  - USGS Center for Integrated Data Analytics (D. Blodgett\*)
  - NASA Federated Giovanni (C. Lynnes\*)
  - NSF Earthcube (“BCube” brokered URLs, SJ. Khalsa)  
\*(funded through NASA ACCESS)
- Higher level interfaces in testing by UWG (and others)

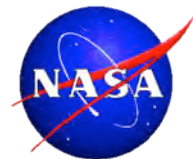
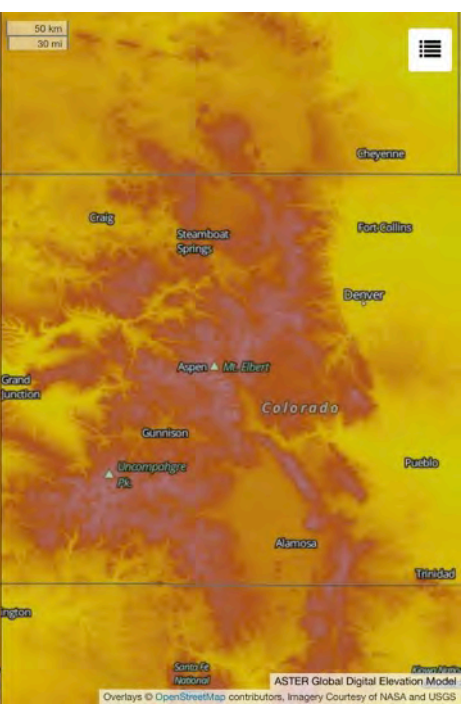
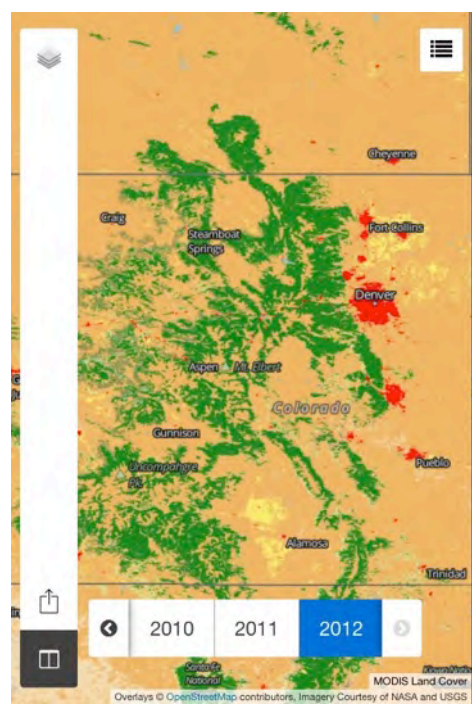
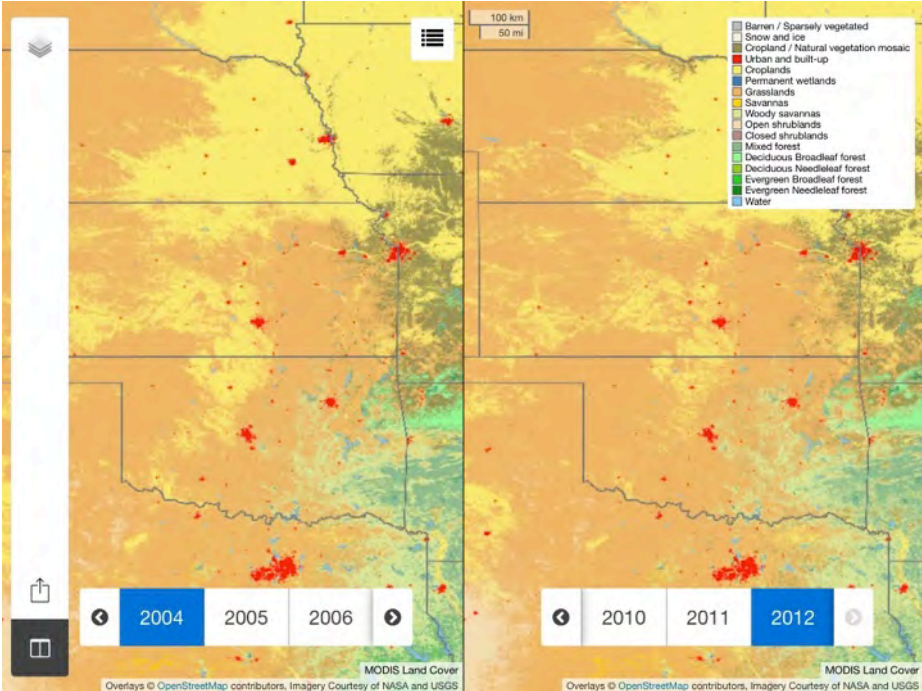




# Landcast mobile app

- Enables mobile users to easily explore and visualize LP DAAC land data collections
  - Geared towards general users, educators, application community
  - Currently iOS (Android planned)
  - Demo previewed at AGU 2014
- Datasets for visualization will include
  - MODIS: NDVI, LST, VCF, among others
  - ASTER GDEM
- Unique functionality will include animating time series, sharing images via email and social media, saving images
- Response to request from NASA to explore mobile applications







# Outreach and Communication: Social Media

Earthdata


Tweets Follow


[1.usa.gov/1zDZHQq](http://1.usa.gov/1zDZHQq), #rain  
Expand

 **NASAEarthdata** @NASAEarthData 24 Feb  
On Feb. 24, 2000, NASA's #Terra #MODIS acquired first scenes! Mississippi Delta 15 yrs ago. [1.usa.gov/1uvJvbA](http://1.usa.gov/1uvJvbA)  
[pic.twitter.com/A0LXJ8Tix2](http://pic.twitter.com/A0LXJ8Tix2)



Expand


 **NASAEarthdata** @NASAEarthData 23 Feb  
Learn to access & use #SAR data for wide range of research with NASA #ASF DAAC "Get Started Guide". [bit.ly/PcUdG2](http://bit.ly/PcUdG2)  
#remotesensing  
Expand

 **NASAEarthdata** @NASAEarthData 23 Feb  
Tweet to @NASAEarthData

facebook

Email or Phone  Password   
  
 Keep me logged in

**NASA Earthdata is on Facebook.**  
To connect with NASA Earthdata, sign up for Facebook today.

 **NASA Earthdata**  
Government Organization

Timeline About Photos Likes Videos

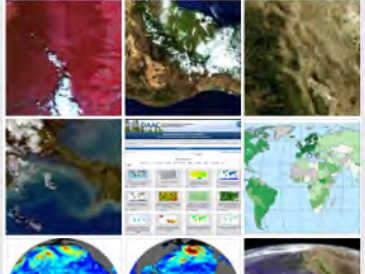
PEOPLE >


415 likes

ABOUT >

- NASA Facebook page to discover Earth science data, information, services and tools from the Earth Observing System Data and Information System.
- <https://earthdata.nasa.gov/>

PHOTOS >



  
January 6, 2015  
Like · Comment · Share

# Twitter as a tool to direct users to LP DAAC web site

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- Web-Enabled #Landsat data used to map permafrost in Alaska Yukon River Basin. [bit.ly/1sKciZn](http://bit.ly/1sKciZn) , @NASA\_Landsat [pic.twitter.com/3cAvZcYPkb](https://pic.twitter.com/3cAvZcYPkb) (from Dec 2014)
  - 29,325 Impressions (how many people saw this tweet?)
  - 573 Engagements (how many interactions/clicks within this tweet – bitlink, hashtags, avatar, followed, favorite, etc.)
- Developing metric to determine increase in web site visits due to social media referrals.

# Outreach and Communication: Webinars

This screenshot shows a YouTube video player for a webinar. The video title is "New Data Products at the NASA Land Processes DAAC". The main content area displays a slide with the text "Welcome to the NASA Earthdata Webinar" and "New Data Products at the NASA Land Processes DAAC". A speaker photo is visible. On the right side of the video player, there are "Audio Instructions" and "Telephone Audio" information. Below the video, there are several interactive panels: "Data Access Tools" with a list of tools (Reverb, EE, LP DAAC Data Pool, OSE, GIOVIS, etc.), "Familiarity with NASA MEASURED Data Products", and "Q & A".

**Audio Instructions:**  
For this event audio is being broadcast through your computer speakers or telephone.

**Telephone Audio:**  
U.S. Participant  
Passcode: #454

**Note:** If you have chosen to listen to audio via telephone, we ask that you please mute your computer speakers for best audio experience.

**Other points:**  
1. Once webinar starts the host will place the webinar audio performance slide in lower right  
2. Hand raising

**Data Access Tools:**  
What data access tools do you typically use? (e.g. Reverb, EE, LP DAAC Data Pool, OSE, GIOVIS, etc.)

**Familiarity with NASA MEASURED Data Products:**  
How familiar are you with NASA MEASURED Data Products?

**Answers (4):**  
Reverb  
Data Pool  
Data Pool  
GIOVIS

**Q & A:**  
Message from [Name] [Avatar]  
Welcome to [Name]! We will get started at 2pm. We are happy to have you! Tim Hout, Jennifer Boman

NASA Earthdata Webinar: Discover New Data Products at the NASA LP DAAC

This screenshot shows a YouTube video player for a webinar. The video title is "Diving into the Data Pools with DAAC2Disk". The main content area displays a slide with the text "Welcome to the NASA Earthdata Webinar" and "Diving into the Data Pools with DAAC2Disk". A speaker photo is visible. On the right side of the video player, there are "Audio Instructions" and "Telephone Audio" information. Below the video, there are several interactive panels: "Data Access/Discovery Tools", "Tool Familiarity", and "Q & A".

**Audio Instructions:**  
For this event audio is being broadcast through your computer speakers or telephone.

**Telephone Audio:**  
1-844-467-4665  
Passcode: 886948P

**International Participants:**  
Please select your country of origin from the Freephone/Toll Free Number list url included in your approval message. Same passcode: 886948P

**Note:** If you have chosen to listen to audio via telephone, we ask that you please mute your computer speakers for best audio experience.

**Other points:**  
1. Once webinar starts the host will

**Data Access/Discovery Tools:**  
What data access tools do you typically use? (e.g. Reverb, EE, LP DAAC Data Pool, OSE, GIOVIS, etc.)

**Answers (9):**  
LandsatLook Viewer, Earth Explorer, GIOVIS  
reverb, giovis, LP DAAC Pool  
Reverb, Data Pool  
GIOVIS, LP DAAC Pool

**Tool Familiarity:**  
How familiar are you with the DAAC2Disk Download Manager?

**Q & A:**  
Message from JENNIFER BOWMAN [Avatar]  
Welcome to [Name]! We will get started at 2pm. We are happy to have you! Tim Hout, Jennifer Boman

Diving into the NASA Data Pools with DAAC2Disk

# MODIS C6 Land Products Workshop

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- Collection 6 land products workshop:
  - LP DAAC uses Earthdata Webinar platform for delivery to remote participants
    - Extends reach and reduces travel costs for participants
  - **Interview videos with product PI's**
    - Incorporate videos into webinars
    - Publish to Youtube
    - Schedule interviews with interested PI's at target "meetings of opportunity"
    - **Who's interested?**

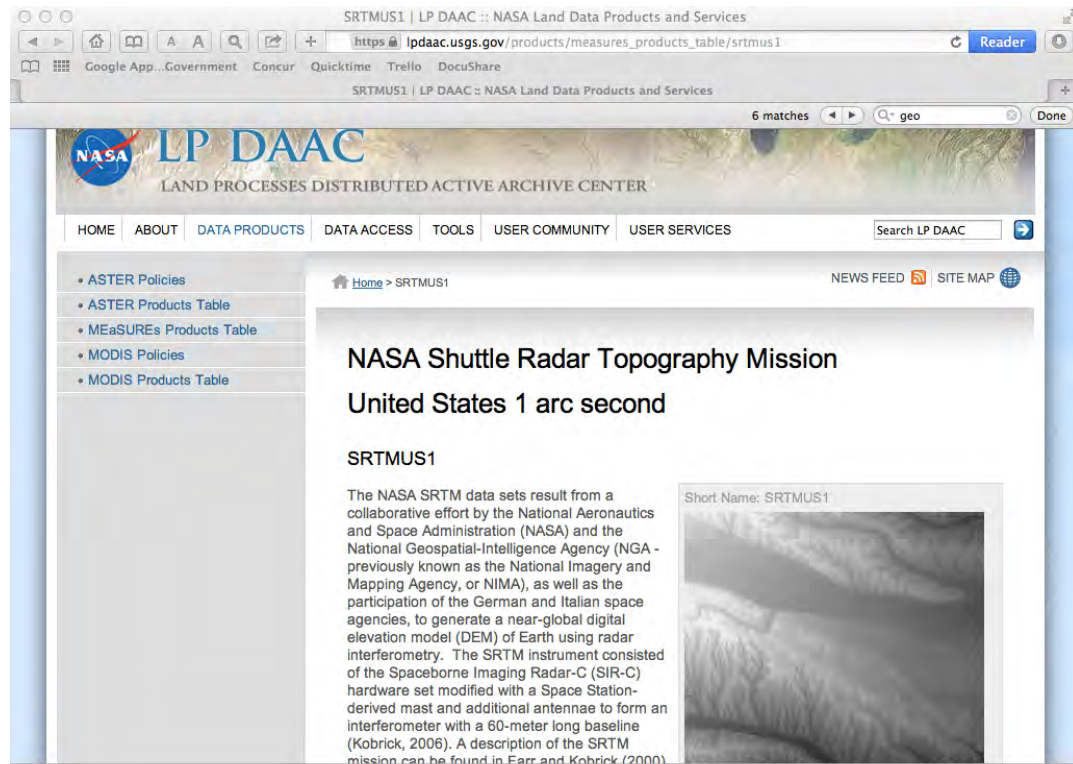
# DOI Example – MEaSURES SRTM V.03 (con't)

- Citation example:

Kobrick, M. and Crippen, R (2013) NASA Shuttle Radar Topography Mission United States 1 arc second Global Digital Elevation Model (HDF-EOS), doi:10.5067/MEaSURES/SRTM/SRTMUS1.003. [online] Available from: <http://dx.doi.org/10.5067/MEaSURES/SRTM/SRTMUS1.003>

- URL above resolves to SRTMUS1 “landing page”:

Include a citation generator so a user can select their desired citation style (APA, MLA, Chicago, etc) to be displayed on the screen.



The screenshot shows a web browser window displaying the LP DAAC (Land Processes Distributed Active Archive Center) website. The browser's address bar shows the URL [https://lpdaac.usgs.gov/products/measures\\_products\\_table/srtmus1](https://lpdaac.usgs.gov/products/measures_products_table/srtmus1). The website header includes the NASA logo and the text "LP DAAC LAND PROCESSES DISTRIBUTED ACTIVE ARCHIVE CENTER". A navigation menu contains links for HOME, ABOUT, DATA PRODUCTS, DATA ACCESS, TOOLS, USER COMMUNITY, and USER SERVICES. A search bar is located on the right side of the menu. On the left side of the page, there is a sidebar with a list of links: ASTER Policies, ASTER Products Table, MEaSURES Products Table, MODIS Policies, and MODIS Products Table. The main content area features the title "NASA Shuttle Radar Topography Mission United States 1 arc second" and the product name "SRTMUS1". Below the title, there is a paragraph of text describing the data sets, mentioning the collaborative effort by NASA, NGA, and other agencies. To the right of the text, there is a small image of a satellite view of a landscape. The browser's search bar shows "6 matches" and "geo".

# MODIS V06 Digital Object Identifier Citation

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- Increasingly, journals are requiring DATA citations (i.e. – DOI’s that link to data landing pages, which are NOT the same as journal pub citations!)
  - Connect publications to their underlying data
  - Give credit for producing and curating data sets
  - Facilitate data and science transparency and reproducibility
  - Track the products that derive from data
- ESDIS requests “creator” (algorithm developer/product generator) and “distributor” (“publisher”). Recommended format:
  - Running, S.W., Q. Mu, M. Zhao. 2016. MODIS Aqua Net Evapotranspiration 8-Day L4 Global 1km SIN Grid. Ver. 6. [indicate subset used]. Sioux Falls, South Dakota, USA: Land Processes Distributed Active Archive Center.  
<http://dx.doi.org/10.5067/MODIS/MYD16A2.006>
- ORNL & LPDAAC to work with PIs & SIPS to suggest citations
  - Citation for both PI team + SIPS (MODAPS) as “creators”



# Showing potential users where data have been cited

## NPP MULTI-BIOME: NPP AND DRIVER DATA FOR ECOSYSTEM MODEL-DATA INTERCOMPARISON

Below are files for this data set. Click on a file link to display that file on your browser. The Companion Files are small but the Data Set Files can be quite large.

### Project: [NET PRIMARY PRODUCTIVITY \(NPP\)](#)

NPP (net primary production) data from existing field measurements are being compiled for approximately 100 study sites covering several major world ecosystem types. These data are used by global change modelers to develop and validate models of vegetation-soil-atmosphere interactions within the global carbon cycle and to help calibrate remote sensing of vegetation worldwide

### Data Set: NPP MULTI-BIOME: NPP AND DRIVER DATA FOR ECOSYSTEM MODEL-DATA INTERCOMPARISON

The Ecosystem Model-Data Intercomparison (EMDI) provides the first opportunity for a wide range of global carbon cycle models to be compared with measured net primary productivity (NPP). The goals of EMDI are to compare model estimates of terrestrial carbon fluxes (NPP) to estimates from ground-based measurements and to improve understanding of environmental controls of carbon allocation. (see [Data Set Ref Doc](#))

This Data Set has available 2 companion files.

- [npp\\_doc.pdf](#)
- [NPP\\_TM196.pdf](#)

You will need [Adobe Acrobat Reader](#) to read/display files with a .pdf extension.

### Citation:

Olson, R. J., J. M. O. Scurlock, S. D. Prince, D. L. Zheng, and K. R. Johnson (eds.). 2001. NPP Multi-Biome: NPP and Driver Data for Ecosystem Model-Data Intercomparison. Data set. Available on-line [<http://www.daac.ornl.gov>] from the Oak Ridge National Laboratory Distributed Active Archive Center, Oak Ridge, Tennessee, U.S.A. doi:10.3334/ORNLDAAC/615

### Publications Using This Data Set

**Data Set Files:** (47.2 MBytes in 38 Files)

All Data Taken At Latitude: 90.00N, Longitude: 180.00E

# Showing potential users where data have been cited

## NPP MULTI-BIOME: NPP AND DRIVER DATA FOR ECOSYSTEM MODEL-DATA INTERCOMPARISON

Below are files for this data set. Click on a file link to display that file on your browser. The Companion Files are small but the Data Set Files can be quite large.

**Project:** NET PRIMARY PRODUCTIVITY (NPP)

NPP (net primary production) data from existing field measurements are being compiled for approximately 100 study sites covering several major world ecosystem types. The data are used to evaluate ecosystem models and their ability to simulate the carbon cycle and to estimate net primary production.

**Data Set:** NPP MULTI-BIOME: NPP AND DRIVER DATA FOR ECOSYSTEM MODEL-DATA INTERCOMPARISON  
The Ecosystem Model Data Set includes net primary production measurements and other ecosystem data. This Data Set has a companion file for each ecosystem type.

- [npp\\_dpc.pdf](#)
- [NPP\\_TM196](#)

You will need Adobe Acrobat Reader to view the PDF files.

**Citation:**

Olson, R. J., J. M. Ojima, and D. S. Parton. 2003. Intercomparison of Data from the Tennessee, U.S.A. and other sites.

**Publications Using**

**Data Set Files:** (47 files)

All Data Taken At Large Scale Sites

NPP MULTI-BIOME: NPP AND DRIVER DATA FOR ECOSYSTEM MODEL-DATA INTERCOMPARISON

The following 12 publications cited the product above:

Cuntz, M., P. Ciais, G. Hoffman, and W. Knorr. 2003. A comprehensive global three-dimensional model of 18-O in atmospheric CO2. *Journal of Geophysical Research* 108, No. D17, doi:10.1029/2002JD003153.

Roxburgh, S. H., D. J. Barrett, S. L. Berry, J. O. Carter, I. D. Davies, R. M. Gifford, M. U. E. Kirschbaum, B. P. McBeth, I. R. Noble, W. G. Parton, M. R. Raupach, and M. L. Roderick. 2004. A critical overview of model estimates of net primary productivity for the Australian continent. *Functional Plant Biology* 31(11): 1043-1059.

Zhao, M., F. A. Heinsch, R. R. Nemani, and S. W. Running. 2005. Improvements of the MODIS terrestrial gross and net primary production global data set. *Remote Sensing of Environment* 95: 164-176.

Zaehle, S., and S. Sitch. 2005. Effects of parameter uncertainties on the modeling of terrestrial biosphere dynamics. *Global Biogeochemical Cycles* 19: art-no. GB2030.

Hickler, T., I.C. Prentice, B. Smith, M.T. Sykes, and S. Zaehle. 2006. Implementing plant hydraulic architecture within the LPJ Dynamic Global Vegetation Model. *Global Ecology and Biogeography* 15:567-577.

Naegler, T., and I. Levin. 2006. Closing the global radiocarbon budget 1945-2005. *Journal of Geophysical Research-Atmospheres* 111.

Zhao, M. 2006. Sensitivity of Moderate Resolution Imaging Spectroradiometer (MODIS) terrestrial primary production to the accuracy of meteorological reanalyses. *Journal of Geophysical Research* 111:G01002.

Van der Werf, G.R., J.T. Randerson, L. Giglio, G. J. Collatz, P.S. Kasibhatla, and A.F. Arellano, Jr. 2006. Interannual variability in global biomass burning emissions from 1997 to 2004. *Atmospheric Chemistry and Physics* 6:3423-3441.

Luyssaert, S., I. Inglima, et al. (2007). "CO2 balance of boreal, temperate, and tropical forests derived from a global database." *Global Change Biology* 13(12): 2509-2537

Randerson, J.T., Hoffman, F.M., Thomtonz, P.E., Mahowald, N.M., Lindsay, K., Leez, Y., Nevison, C.D., Doney, S.C., Bonanz, G., St. ckliww, R., Global Change Biology (2009). Systematic assessment of terrestrial biogeochemistry in coupled climate-carbon models, Online

Refuge, CLW., USGS (2009). Greater Platte River Basins: Science to Sustain Ecosystems and Communities

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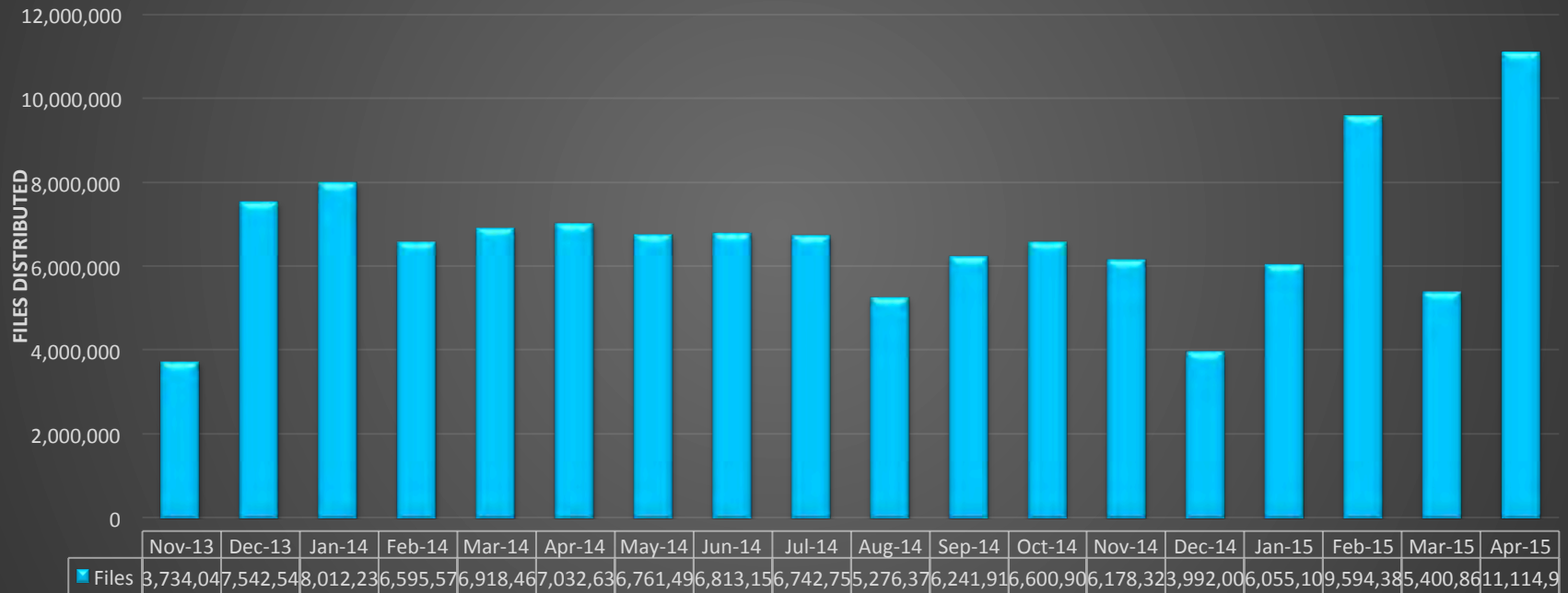
Questions?

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# Product-specific metrics

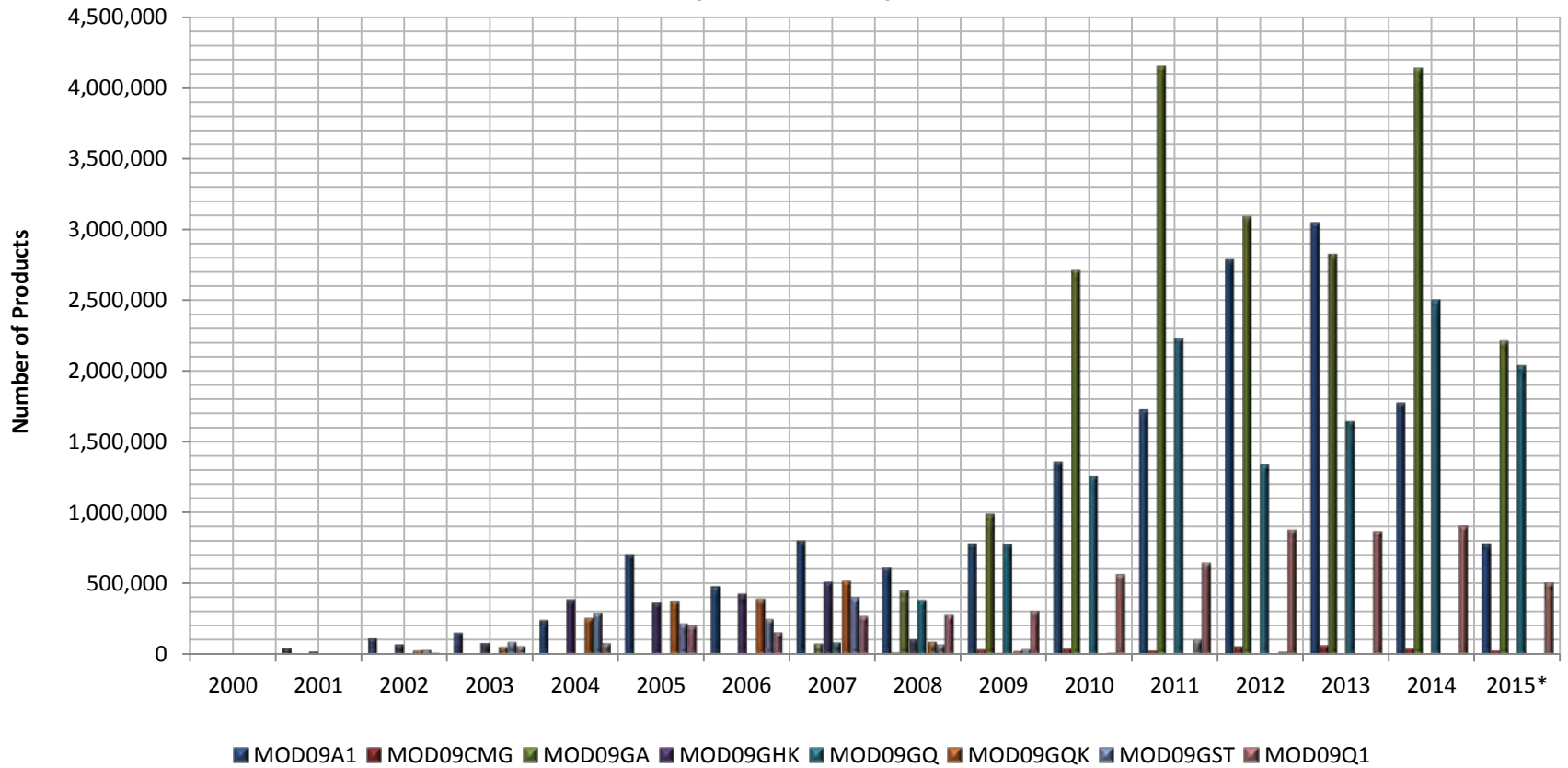
# LP DAAC Distribution – last 18 months

LP DAAC Total MODIS Files Distributed  
Nov2013 - Apr2015



# MOD09 – Land Surface Reflectance

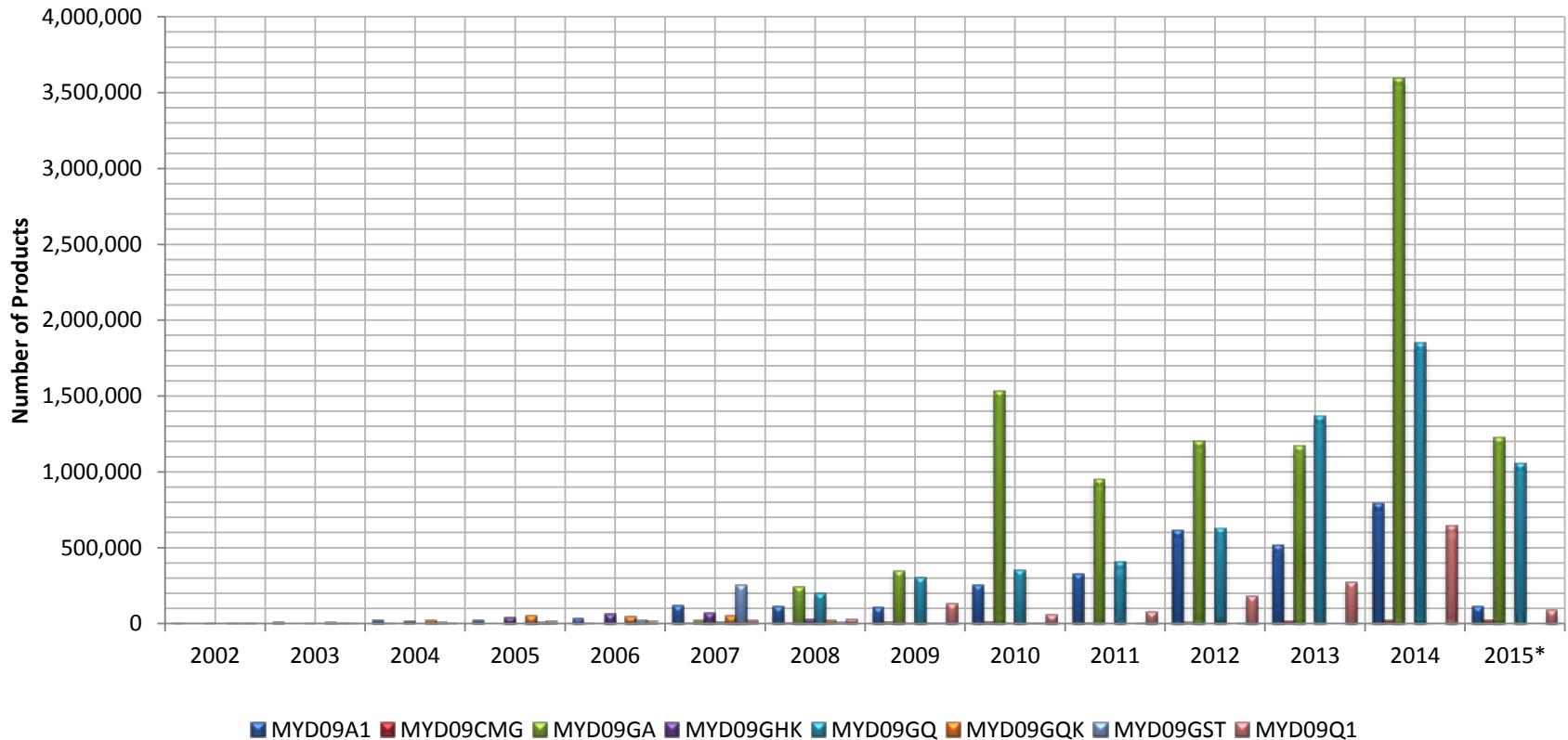
## Terra MODIS Land Surface Reflectance: Number of Products Distributed (2000–2015)



\*FY15 data through 30Apr15

# MYD09 – Land Surface Reflectance

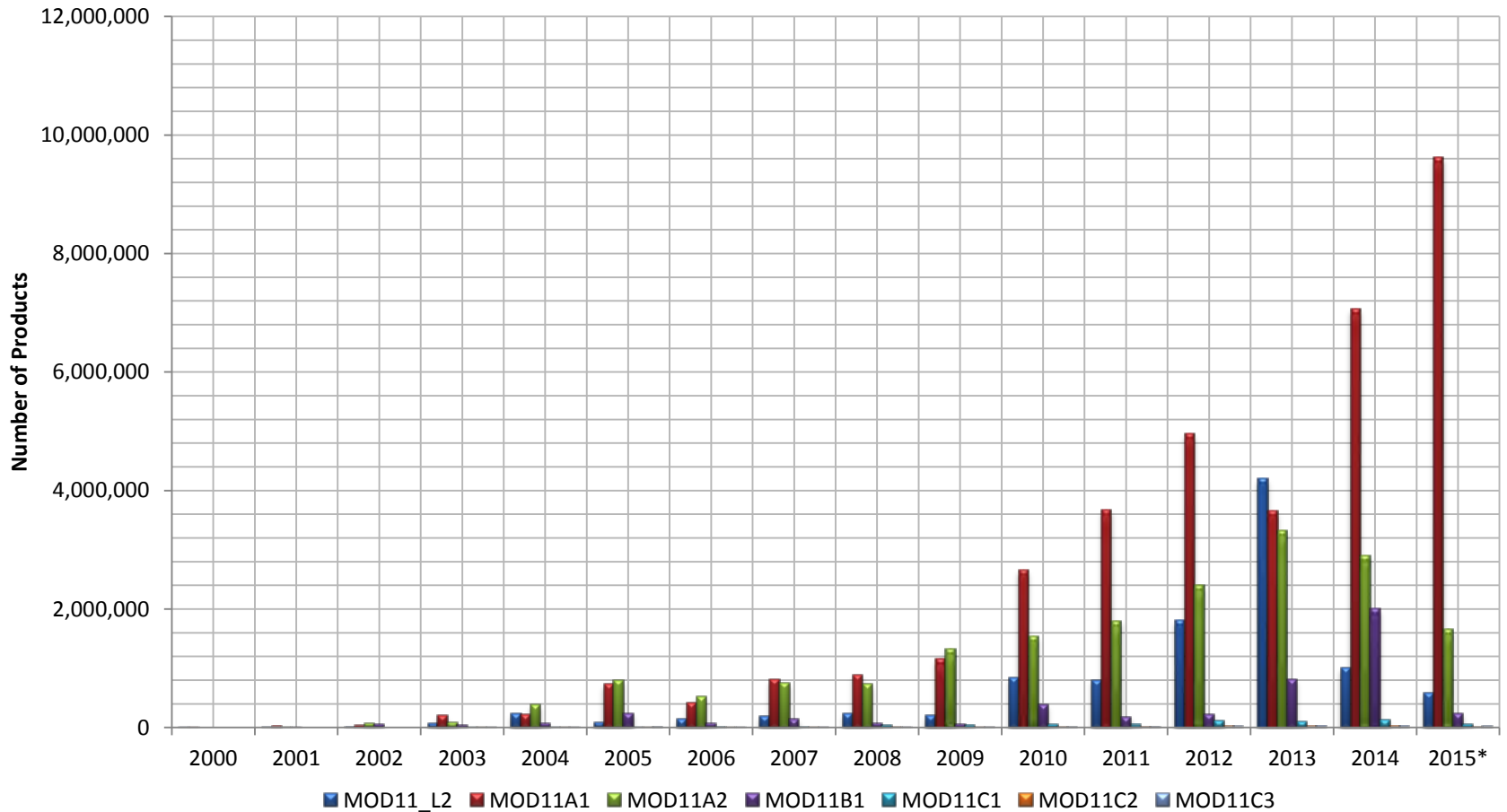
## Aqua MODIS Land Surface Reflectance: Number of Products Distributed (2002–2015)



\*FY15 data through 30Apr15

# MOD11 – Land Surface Temperature

## Terra MODIS Land Surf. Temp.: Number of Products Distributed (2002–2015)

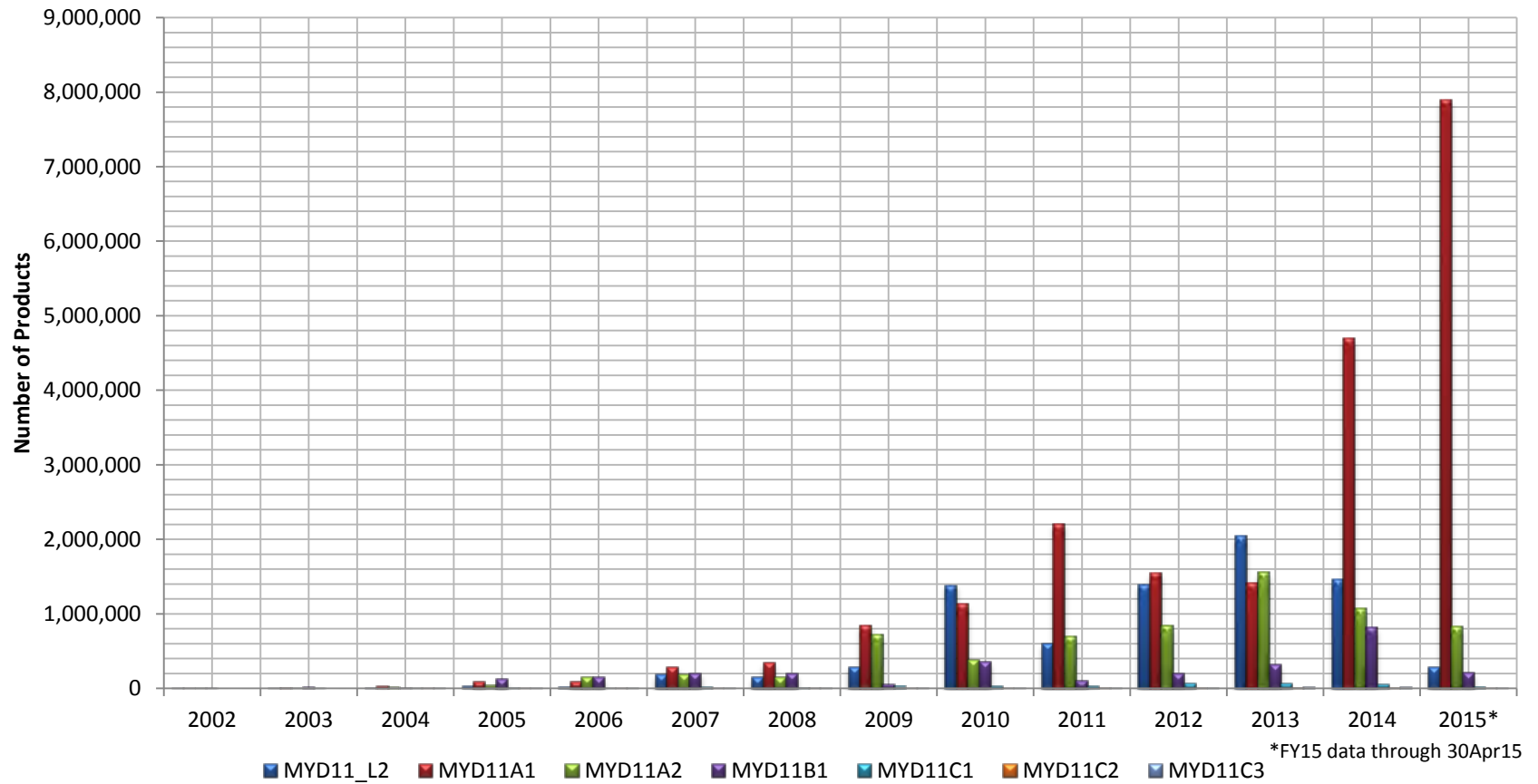


\*FY15 data through 30Apr15



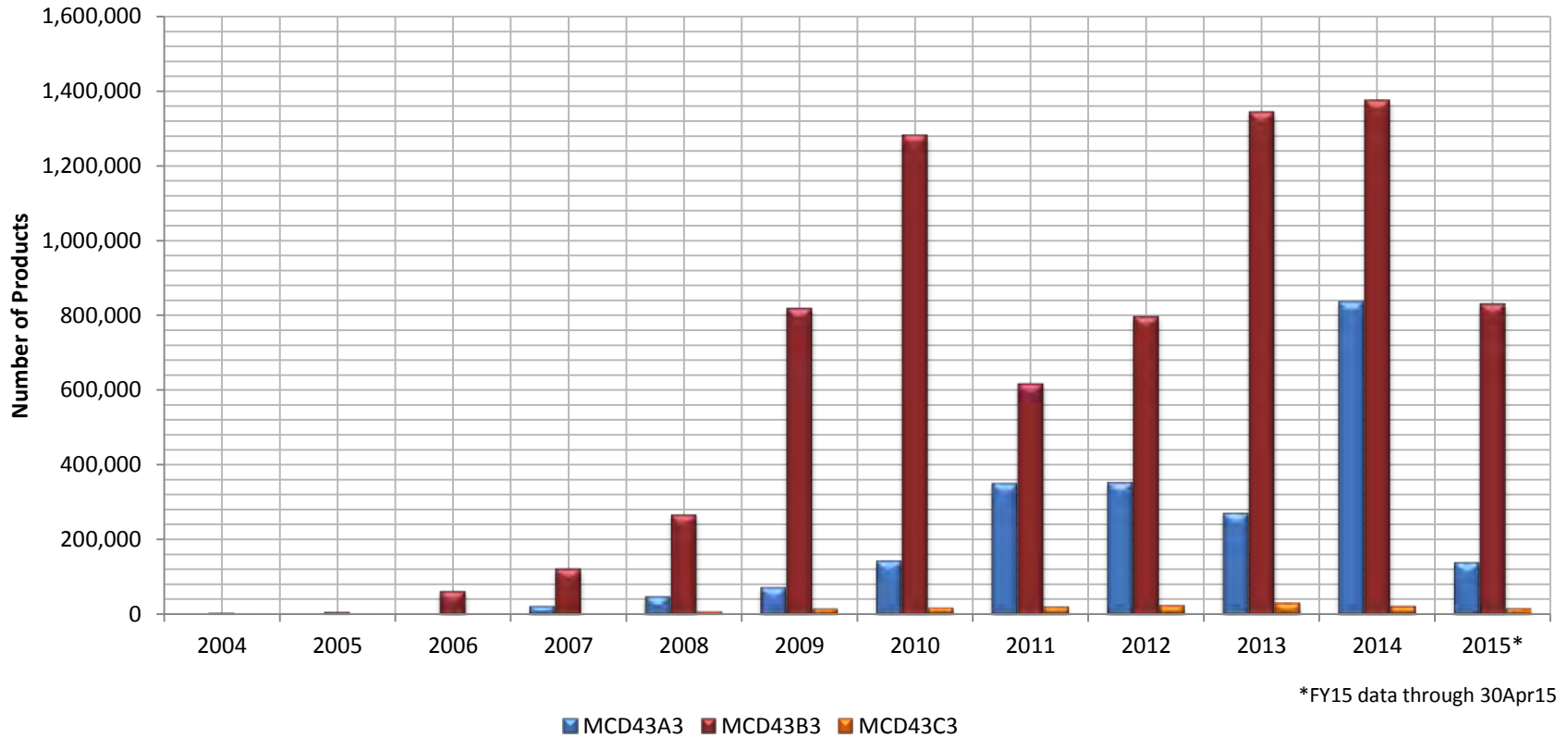
# MYD11 – Land Surface Temperature

## Aqua MODIS Land Surface Temperature: Number of Products Distributed (2002–2015)



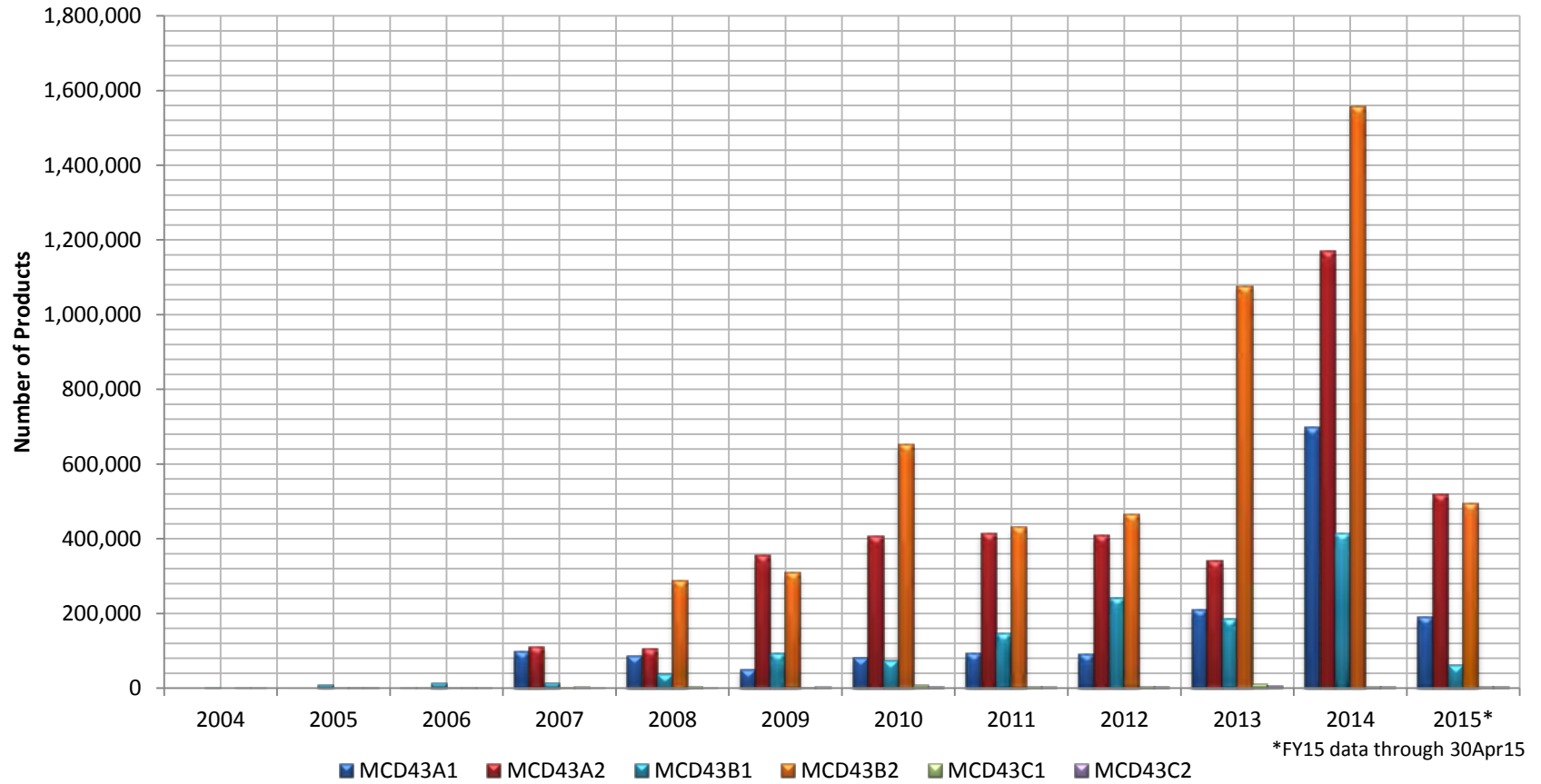
# MCD43x3 - Albedo

## Terra & Aqua MODIS Albedo: Number of Products Distributed (2004–2015)



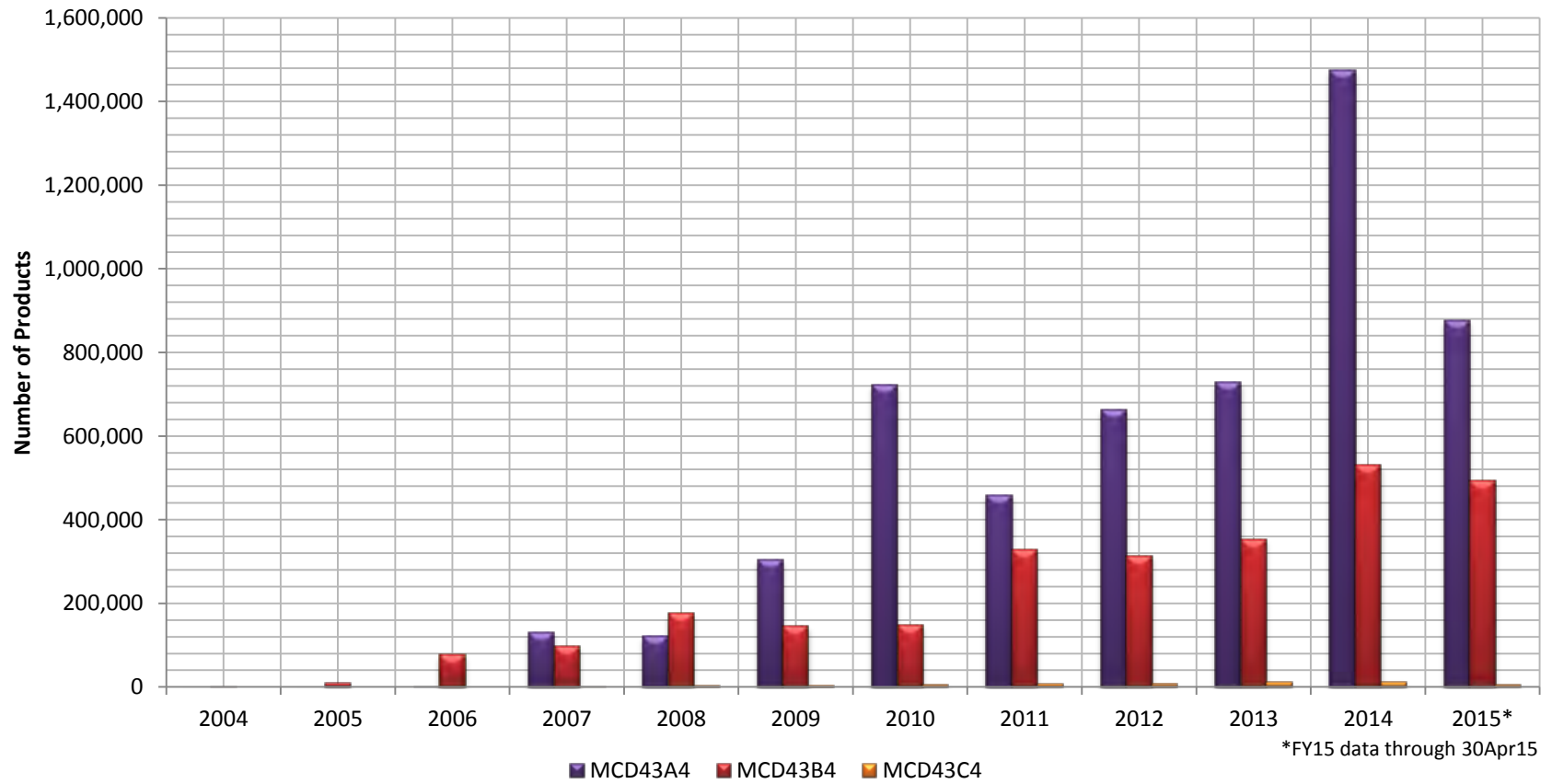
# MCD43 – Albedo/BRDF Parameters

## Terra & Aqua MODIS BRDF–Albedo: Number of Products Distributed (2004–2015)



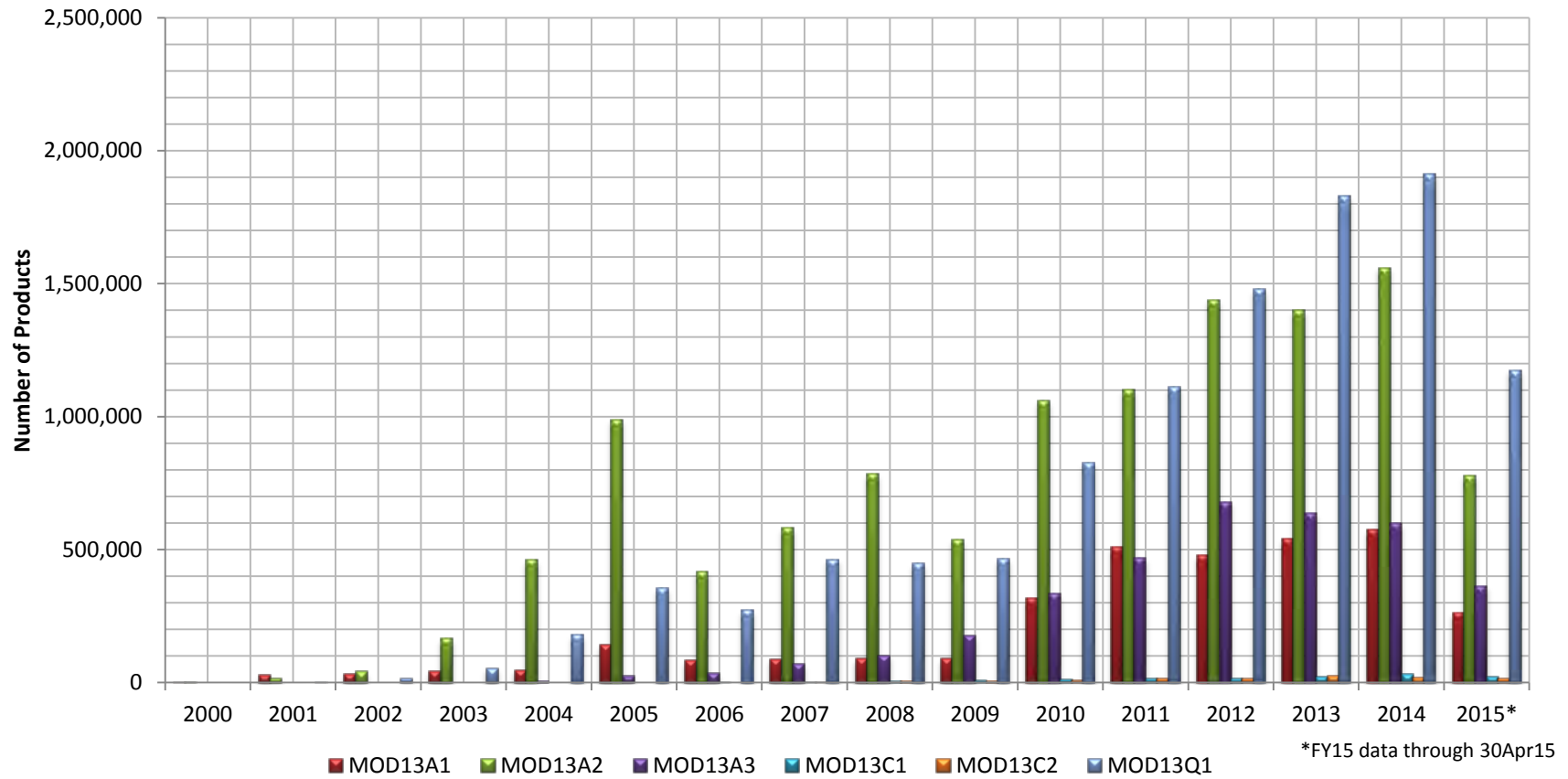
# MOD43x4 - NBAR

## Terra & Aqua MODIS NBAR: Number of Products Distributed (2004–2015)



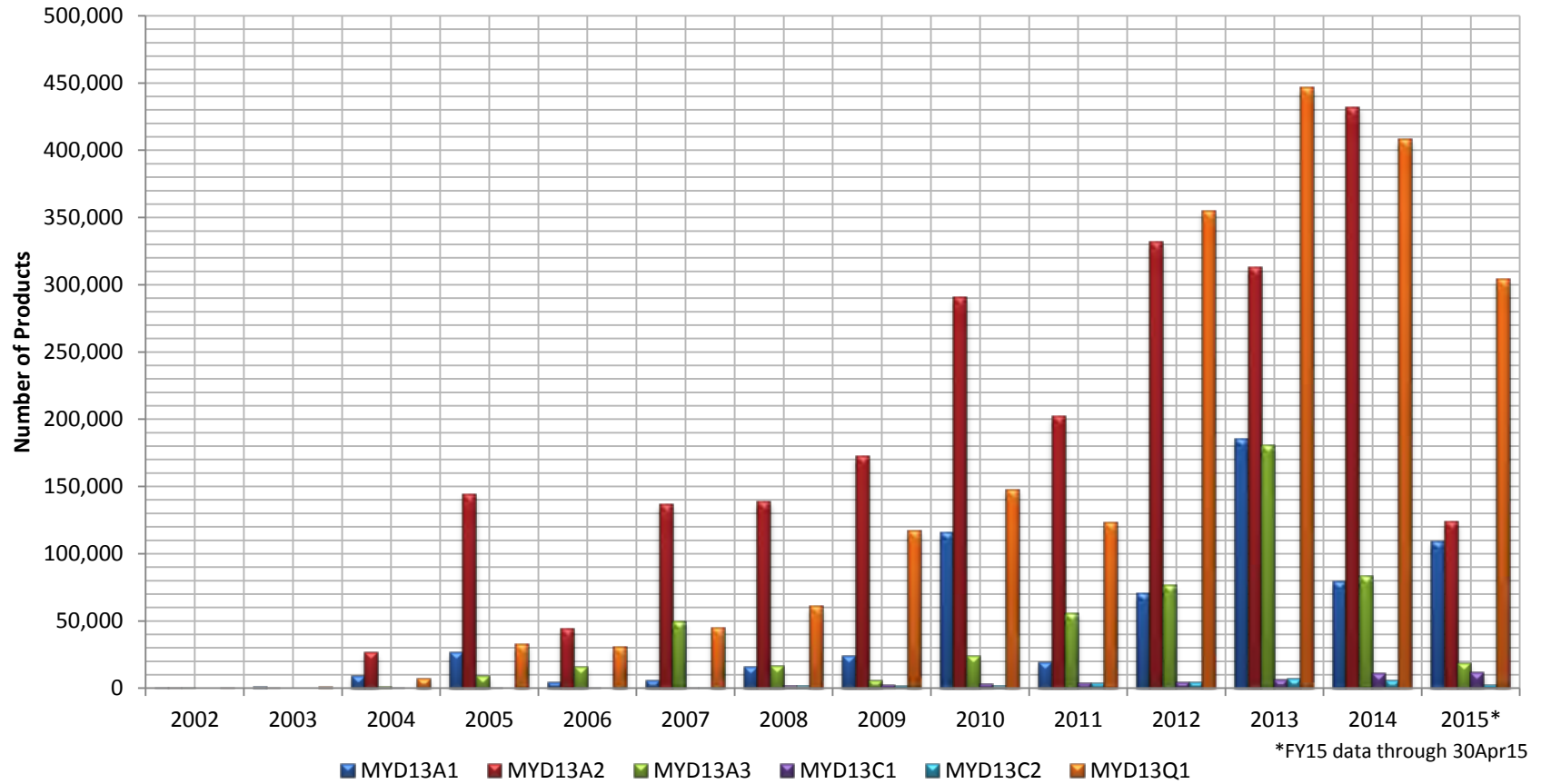
# MOD13 – Vegetation Indices

## Terra MODIS Vegetation Indices: Number of Products Distributed (2000–2015)



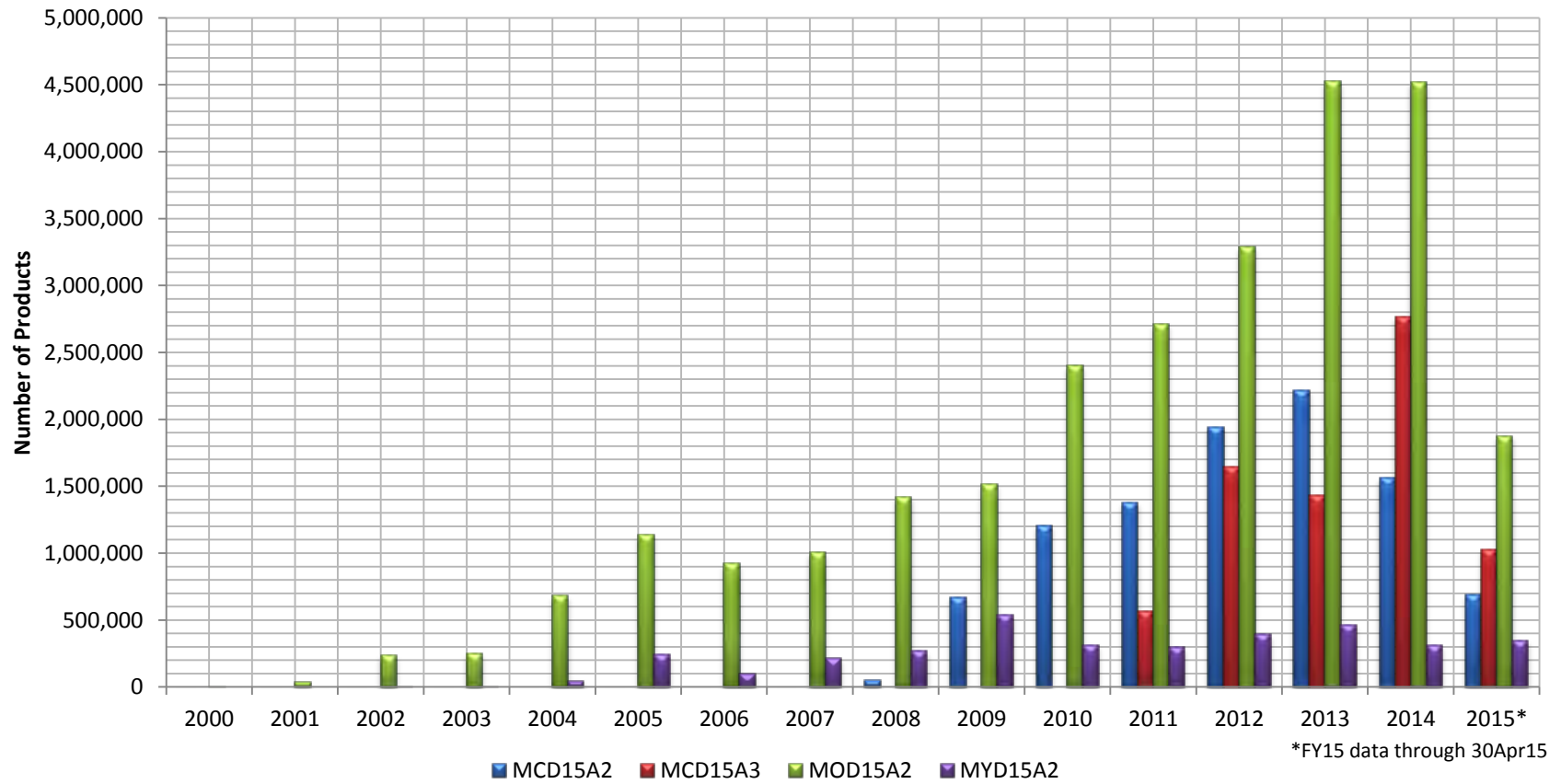
# MYD13 – Vegetation Indices

## Aqua MODIS Vegetation Indices: Number of Products Distributed (2002–2015)



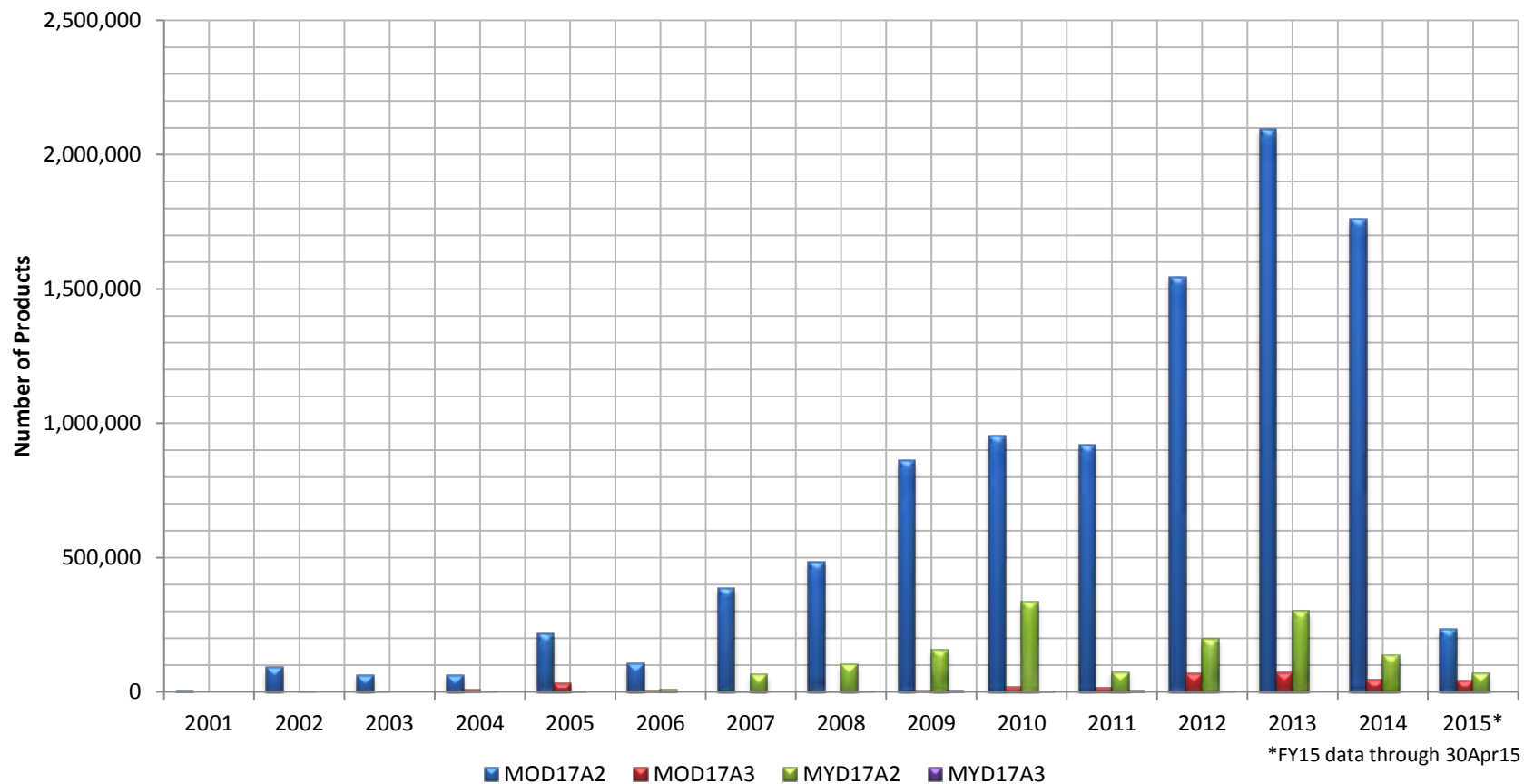
# MCD15 – LAI/fPAR

## Terra & Aqua LAI-FPAR: Number of Products Distributed (2000–2015)



# MOD/MYD17 - GPP

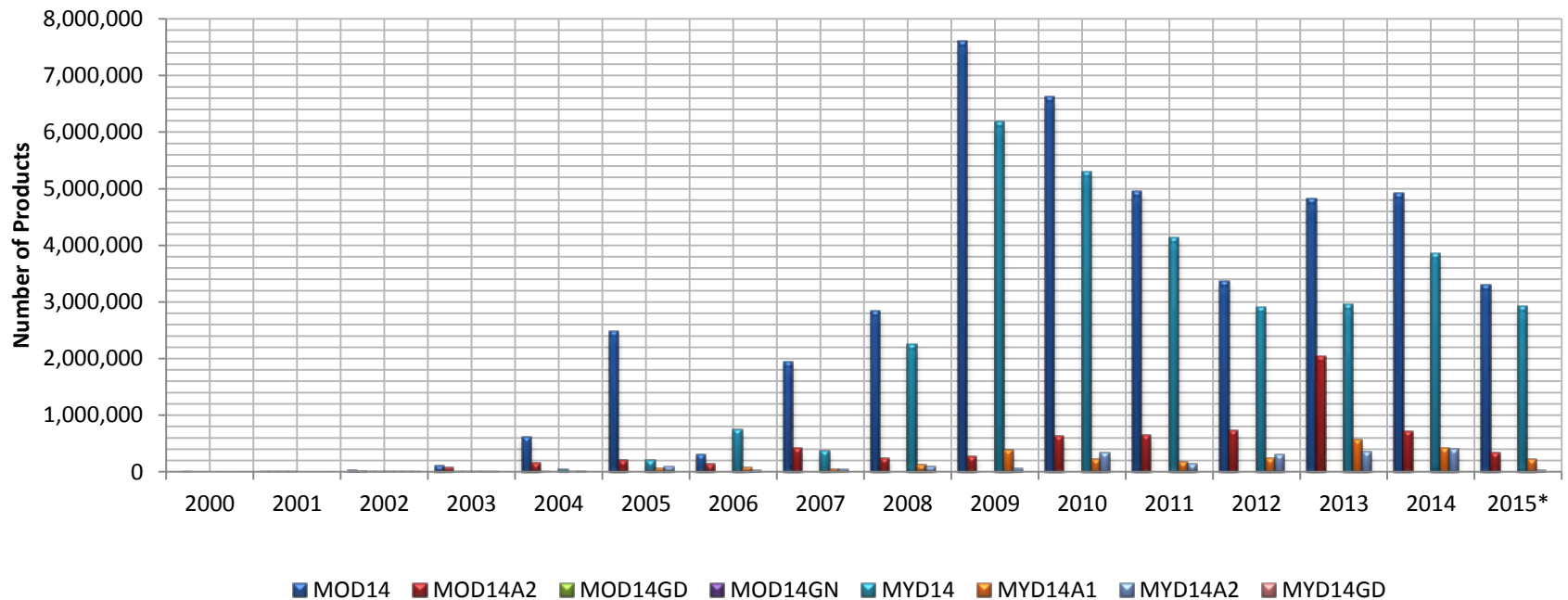
## Terra & Aqua MODIS GPP & NPP: Number of Products Distributed (2000–2015)





# MOD/MYD14 – Thermal Anomalies/Fire

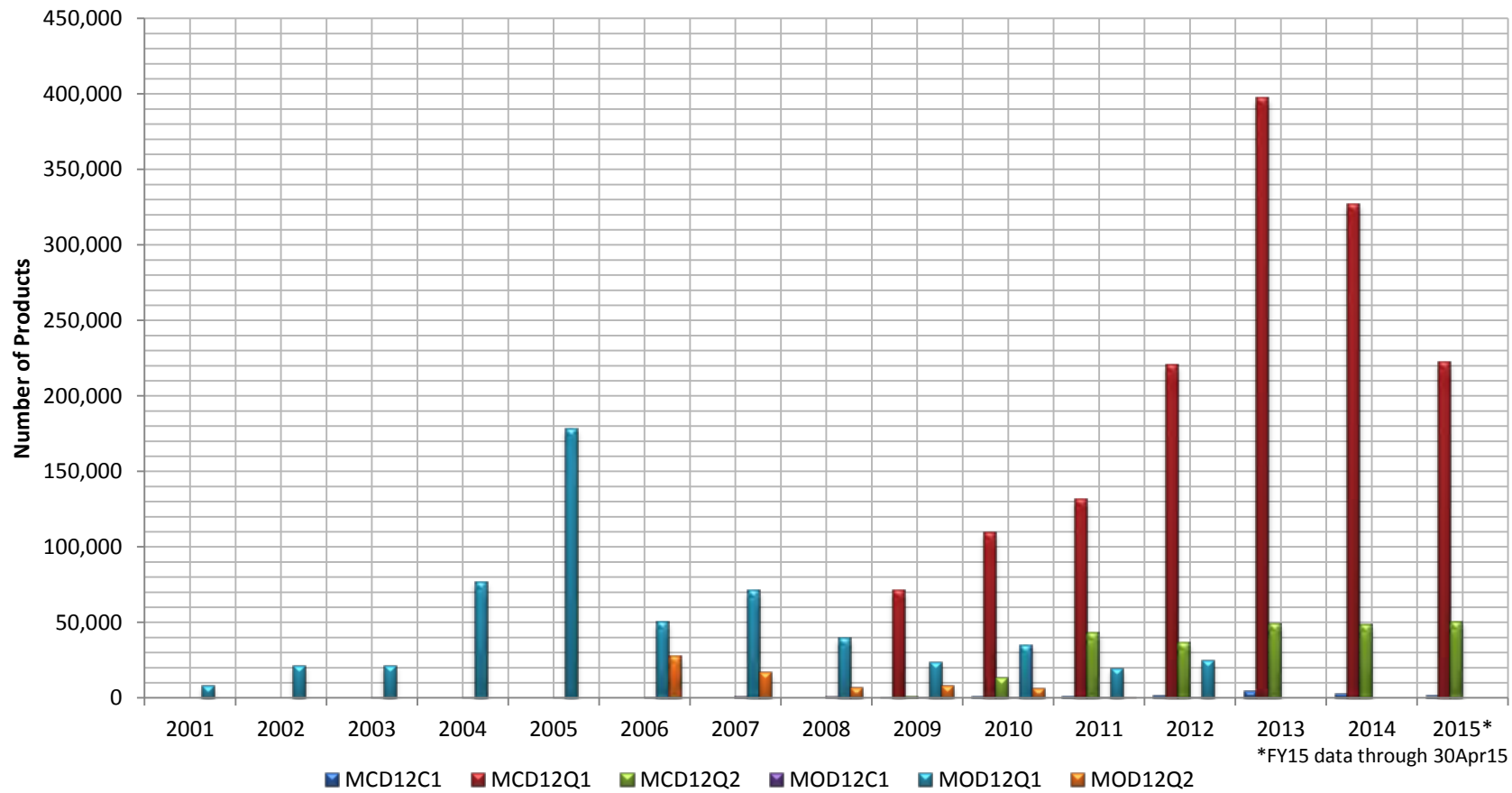
Terra & Aqua MODIS Thermal Anomalies and Fire: Number of Products Distributed (2000–2015)



\*FY15 data through 30Apr15

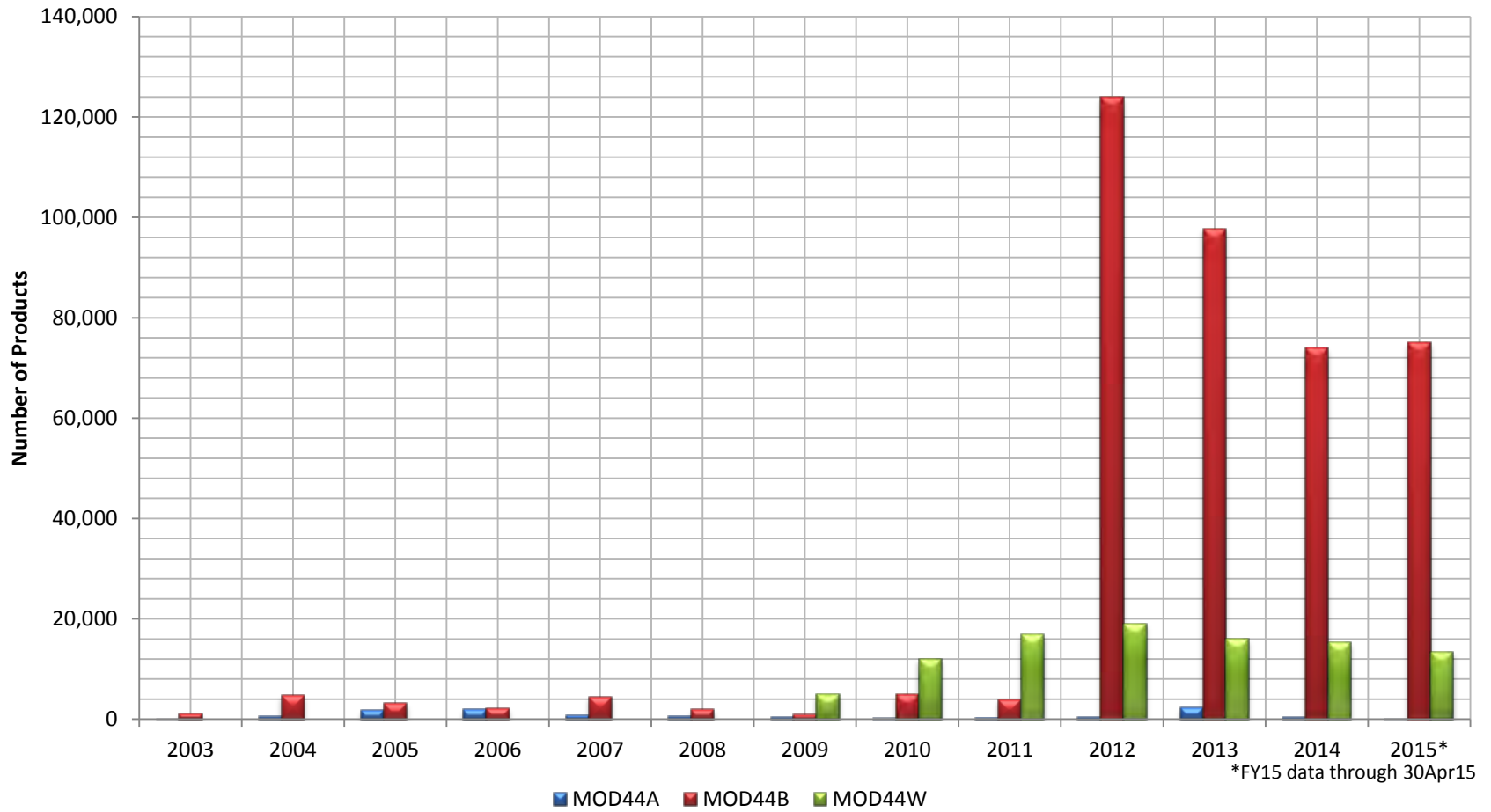
# MxD12 – Land Cover Type/Dynamics

Terra & Aqua MODIS Land Cover/Dynamics: Number of Products Distributed (2000–2015)



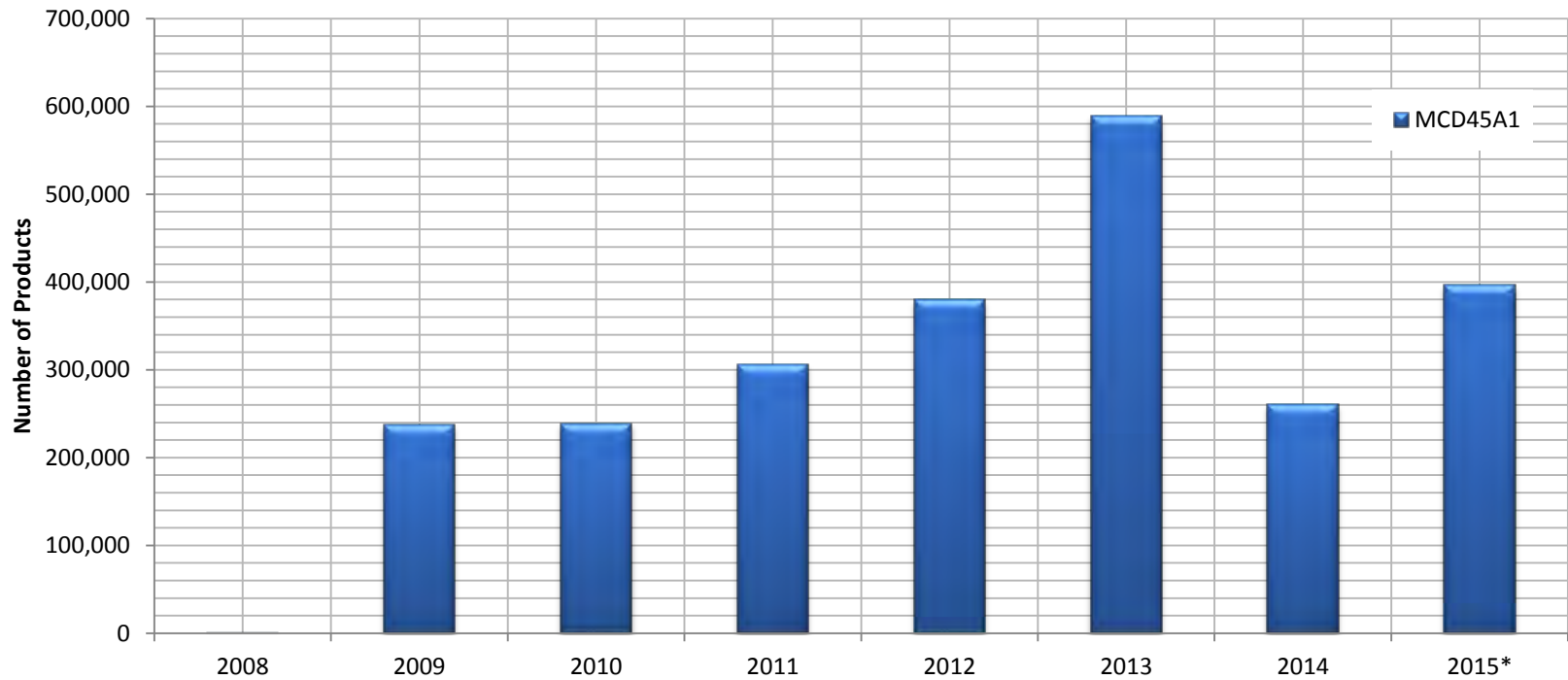
# MOD44B – Veg. Cont. Fields/Water Mask

Terra MODIS VCC/VCF & Water Mask: Number of Products Distributed (2003–2015)



# MCD45 – Burned Area

**Terra+Aqua MODIS Burned Area: Number of Products Distributed  
(2008–2015)**



\*FY15 data through 30Apr15