Land Discipline Overview MODIS/VIIRS

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Last MODIS Science Team Meeting, October 2006

Starting to broaden the Team meeting to embrace other Land observations in the context of NASA's missions to measurements objective. Focus on:

- Testing Collection 5 (Collection 5 Public Workshop ,Jan 07)
- Completed Land ESDR Whitepapers
- Scoping of Land Measurement Teams
- Developing Land Long Term Data Records
- Planning the Global Land Survey 05 (Landsat)
- Outstanding MODIS Issues from 2006:
  - Ustin Vegn Water Content ATBD pending review, now testing with USFS DB underway) – ATBD needs revision
  - Lyapustin, Alternative MODIS Surface Reflectance ATBD
  - Townshend, proposed Improved Land Water Mask
  - MODIS ASTER Book in planning - now final editing stage (Ramachandran)

Last Land VIIRS Meeting

(Validation Planning, Asheville, Feb 08)

- Outstanding Land EDR issues remain e.g. albedo, fire
  - LST Workshop, April 08
- Infrastructure needed to determine product accuracies – build on MODIS experience
- Land EDR validation approaches proposed e.g. Aeronet for surface reflectance IP, BSRN/SurfRad for albedo
- IPO > Privette '08 seed funding for preparatory Land validation activities

- In the context that "NPP will provide continuity of the research quality time-series"
  - Statement made of clear need for Land ESDR's / CDR's
  - NASA PEATEs currently being scoped for data production options

Land Selections (NPP VIIRS)

submitted in mid 06 - funding early 08

- Csiszar – Active Fire MODIS / VIIRS
- Friedl – Land Cover ESDR (MODIS/VIIRS)
- Hook – ASTER/MODIS/VIIRS MidIR/TIR calibration
- Huete – VI Time Series ESDR/CDR (MODIS/VIIRS)
- Justice – Burned Area ESDR
- Lyapustin – Surface Reflectance MODIS VIIRS
- Maslanik – NPP sea ice
- Morisette – Land Validation Infrastructure
- Myneni – LAI/FAPAR MODIS/VIIRS
- Schaaf – Albedo MODIS/VIIRS
- Stone – Lunar Calibration MODIS/VIIRS
- Vermote – Surface Reflectance MODIS/VIIRS
- Wan – LST ESDR/CDR
- Wolfe – Geolocation ESDR's

NOTE some PI's now working on 2 instruments and in general under reduced funding

MODIS and EOS Integrated Science Land Selections

- Chopping – mapping woody plants - SW US
- Frolking – vegetation water stress – optical /microwave
- Hall – MODIS snow cover
- Knayazikhin – MISR vegetation parameters
- Liang – MODIS high resolution surface radiative fluxes
- Randerson – global fire emissions – Terra/Aqua
- Running – MODIS primary production and evapotranspiration
- Thome – Calibration
- Townshend – MODIS vegetation continuous fields
- Xiao – MODIS leaf chlorophyll content, absorption and GPP

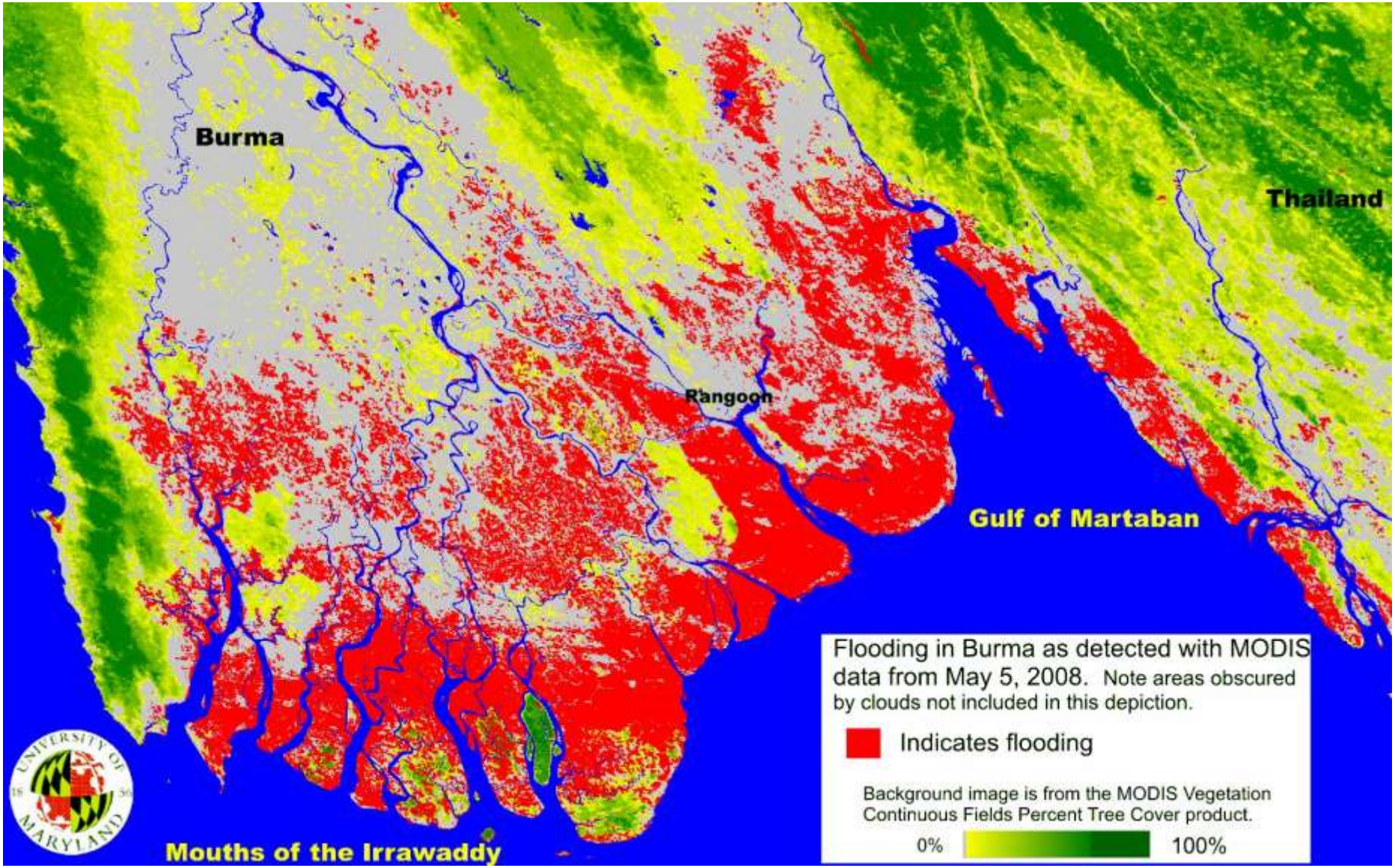
A NEW 'MERGED' SCIENCE TEAM's (combining algorithms and science)

- developing how the Land group will operate
- instrument cal, algorithm, products, validation, outreach, instrument improvements (C1)
- TO BE EFFECTIVE WILL REQUIRE PI PARTICIPATION (optional?)

MODIS Land

- Instrument issues – polarization characterization, bad detectors, terra/aqua differences (Vermote/Xiong)
- Data now well established and used
  - Both for Science and Applications (larger international community)
- Setting a global standard
  - data quality, validated products, product and instrument information, freely available data
- Data access through DAAC functions well
- A major contribution to GEOSS – but little formal recognition (NASA's plan for GEO ?)
- User feedback on standard products continues – reduced ability to respond
- Some P.I.'s now generating and distributing own products
  - Some community insight needed (Land Portal)
- The user community is expecting continuity with VIIRS
- MODIS Products highly visible – could be more so

Flooding Myanmar



MODIS Land Processing

- Collection 5 Land reprocessing ends this week
- Collection 6 Land planned to start July 2009 and end July 2010
  - Increased community outreach on C6
- Collection 5 will be produced and distributed until at least 6 months after the Collection 6 reprocessing has finished
- Distribution rate to end-users with subscriptions and DAACs will average 20X (16X reprocessing and 4X C5/C6)

Land Direct Readout Community

- A rapidly growing community with common needs and problems benefit from cooperation
- Land/Vegetation DR Workshop (Mexico 2007)
  - Initial focus on MODIS/VIIRS Land (strong PI participation)
  - Foster community cooperation and stronger community voice
  - International Land Direct Readout Coordination Committee formed under GOFC/GOLD
    - Co-chaired by USFS, Geosciences Australia, Conabio Mexico
  - Earth Observer Meeting Summary
- NASA International EOS/NPP Direct Readout Conference (Thailand 2008)
  - Land Breakout

Land Direct Readout Workshop

Mexico 2007

VIIRS Land

- Larger community generally unclear as to what is happening – not much publicity on the instrument or proposed products
- Instrument undergoing testing
- Good communication with NOAA (NGDC) and IPO
  - Regular Land telecons coordinated by the Land PEATE
  - Land Val Workshop
  - LST Workshop
- NASA EDR evaluation continuing
  - A moving target
  - Steps both forward and backward
- Open communication with the contractor on desired improvements but not much flexibility
- Validation will be needed – prototyping underway
- Instrument overlap with MODIS will be needed – assumed

VIIRS Land PEATE

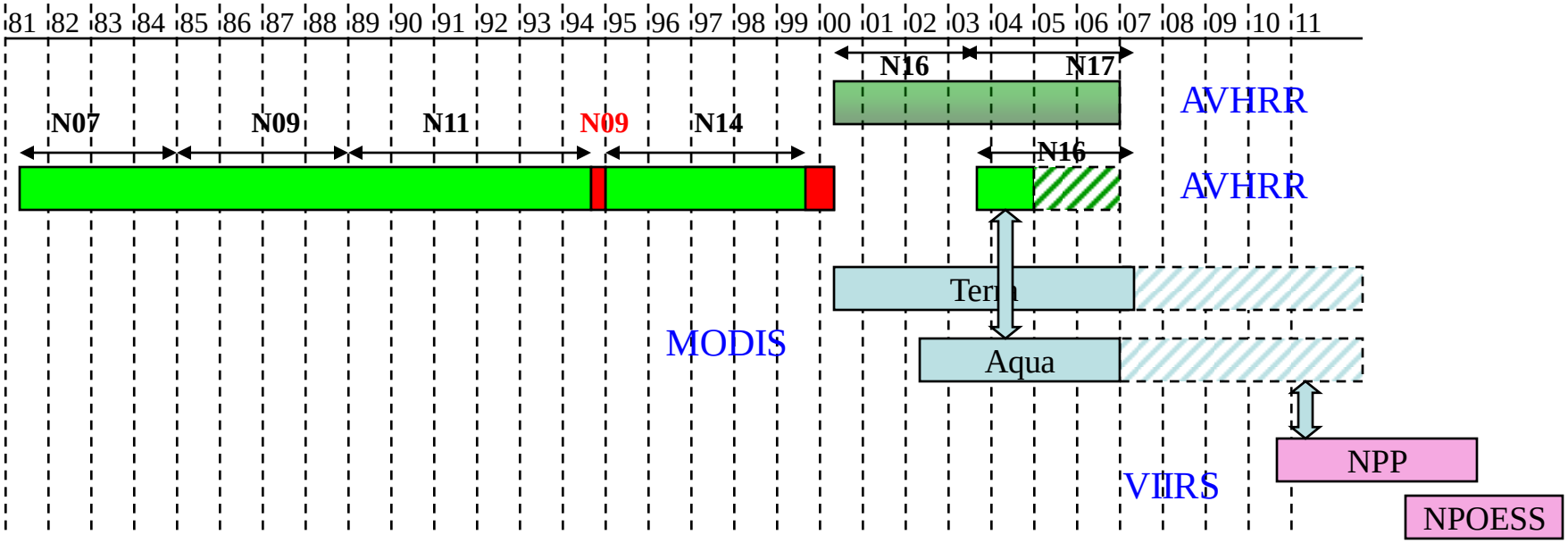
- Linux-based MODAPS system running with:
  - 16 compute servers, 20TB disk installed
  - 16 days of improved SDR proxy data (MODIS with VIIRS scan geometry) produced
  - Products archived in LAADS
- Build 1.5 OPS software and VIIRS (DDRs) complete integration in MODAPS in Fall 2008
- LDOPE evaluating NGST & PEATE tests
  - Known Issues and VIIRS global browse posted at LDOPE web site

NASA ESDR's (CDR's)

- Earth Science Data Records (science quality data)
- ESDR White Papers generated '06
  - A little out-dated now
  - No movement on measurement teams
- ESDR Breakouts at CC&E Joint Workshop
  - No suggested change in direction
  - Community assuming products will be there
  - More prescriptive funding needed
- NASA science will need ESDR's from VIIRS - EDR's largely inadequate
  - Some VIIRS Land ESDR development funded by the Science Team
  - Next NASA funding opportunity for CDR's 2011 ??
- NOAA funding for Land CDR generation
  - But Land products traditionally not high on the NOAA Agenda
  - Presidents budget NOAA $74M FY09 for CERES (NPP), TSIS (C1) and CDR's

- Consistent Long Term Data Records needed by the NASA Science Community

Land LTDR (long term data records) Masuoka, Vermote et al.



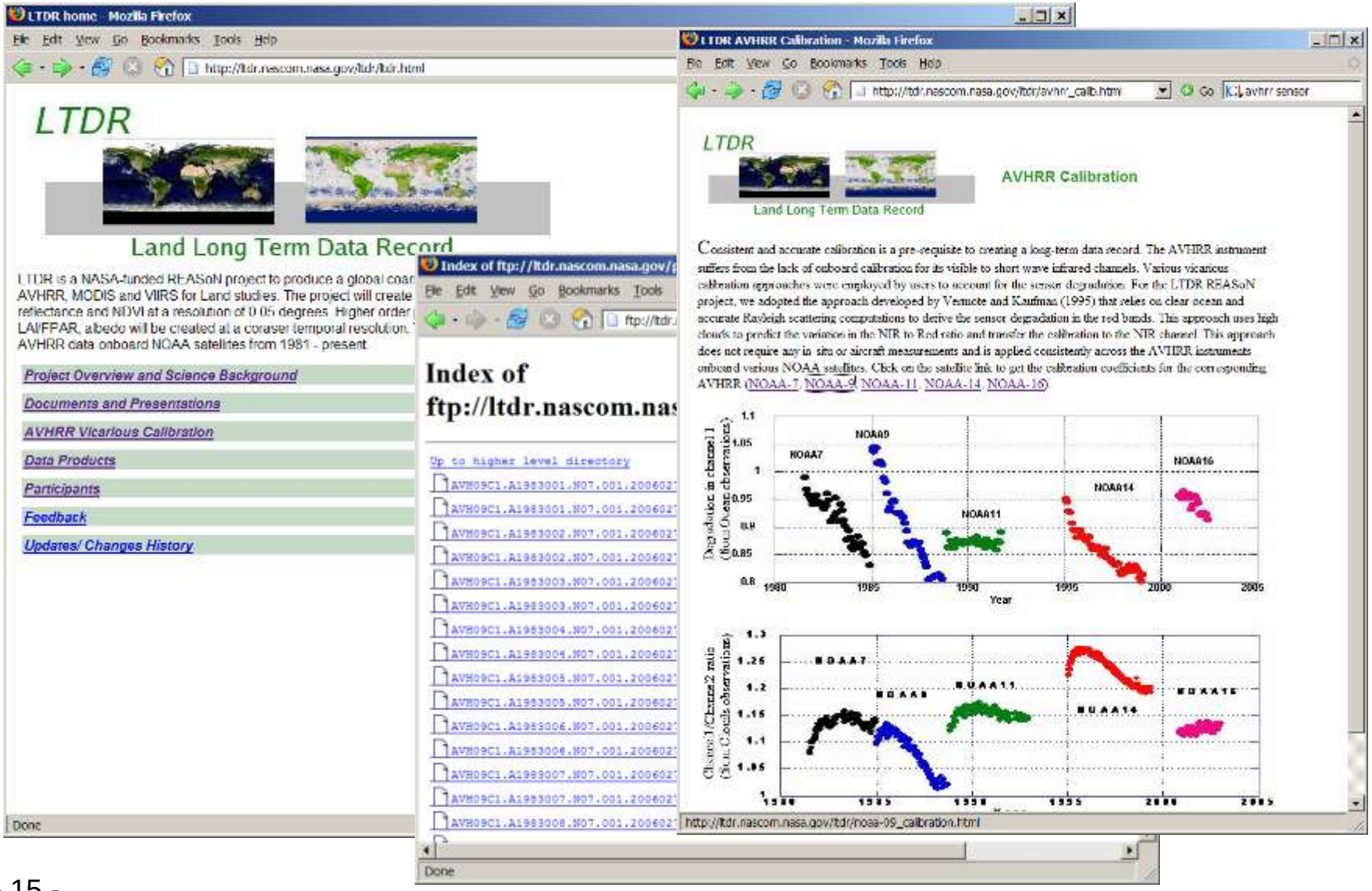
AVHRR (GAC) 1982-1999 + 2003-2006

MODIS (MO(Y)D09 CMG) 2000-present

VIIRS 2010 – 2020 (global gridded comparison products)

GOAL Seamless Data Record

LTDR Web Page



http://ltdr.nascom.nasa.gov/ltdr/ltdr.html

LTDR Version 3 Data Set

- Improvements in cloud screening and correction for tropospheric aerosol
  - developed from near-coincident NOAA16-Aqua MODIS data
- Correction for stratospheric aerosol
- Covers: 1981-1999, 2003
- Available: Late 2008
- MEASURES Proposal for gap filling with SeaWiFs and VEGETATION and the AVHRR 1km (inc METOP) data to the LTDR - BUT not funded

Topics for the Land Breakout

- PI Updates – who is funded to do what
- Science Presentations – new results
- MODIS Collection 5 Status
  - Validation activities
  - C5 LST Issues
- MODIS Collection 6 Planning
- VIIRS EDR/CDR status
- VIIRS Land Validation Infrastructure
- New Team Coordination and managing expectations
  - How to organize ourselves – merged teams
  - Restructure current land MODIS and VIIRS telecons
  - Workshops
  - Community Outreach