Land Breakout Report Back

MODIS / VIIRS Science Team Meeting

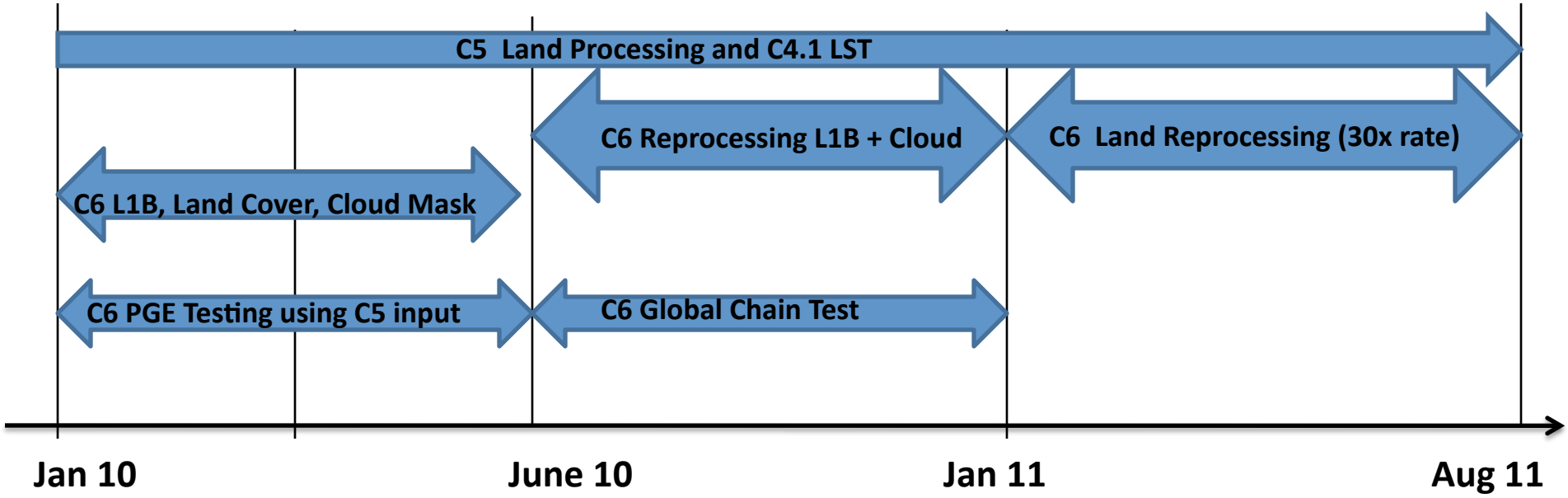
January 2010

Report Back Topics

- **MODIS**
  - Instrument/Measurement Teams - the land community is ready to step up again (Measurement Team White Papers !) but we need some guidance on what and how ?
  - Combining MODIS and VIIRS ST Meetings is a good idea
  - MODAPS will proceed with integration and test of new ATBDs - managing impact on Collection 6
  - Collection 6 Schedule - includes a community evaluation

C6 Testing and Reprocessing TimeLine

- C6 Reprocessing is scheduled to start in Jan 2011 and complete by Aug 2011
- Reprocessing of C6 L1B and Cloud Mask could be completed by the end 2011 and data will be archived at LAADS.
- C5 (and C4.1 LST) processing will continue through the completion of C6 reprocessing.
- It is anticipated that the LP and NSIDC DAACs will be able to ingest the land products at these production rates and also retain C5 products for sufficiently long time after the C6 reprocessing has been completed. Longer term archive of C5 is under consideration.



Four C6 Science Test Phases

1. **C6 L1B, Land Cover, Cloud Mask/Atmospheric Profile (Nov 2009 – April 2010)**
   - Evaluate the effect of C6 changes in L1B, input Land Cover, Cloud Mask and Atmospheric Profile on the C5 Land Products.

2. **PGE Specific Tests for C6 update (Dec 2009 – June 2010)**
   - Test and evaluate C6 changes to the individual land products using the C5 input.

3. **Global Chain Tests (June 2010 – October 2010)**
   - Test and evaluate the downstream algorithms for changes in the upstream land products mainly the L2 Land Surface Reflectance (through series of global chain tests and time series tests)

4. **Community Evaluation (Nov/Dec 2010)**
   - Generate and release global time series data from the final version of the C6 algorithm for evaluation by community experts (identified by the individual science teams).

Report Back Topics

- **MODIS Cont'd**
  - Senior Review for products - how will that work?
  - Land Product User Guides (will be Updated end-Feb)
  - ROSES Aqua / Terra Call - emphasis on uncertainty –

  " how can one assess uncertainty without validation ?"

Report Back Topics

- **VIIRS**
  - Draft Land EDR Evaluation Whitepaper - in review – revision to be completed in 2 weeks
  - We should move ahead on the known EDR and processing limitations rather than waiting
    - We don't need to wait until L+24
    - We need to start to fill in what is missing and is needed
  - Land PEATE is ready for Testing Improved Science Algorithms
    - Enhanced EDR's
    - MODIS heritage science code adapted for VIIRS (including non-EDR VIIRS products)

Report Back Topics

- **VIIRS**
  - IDPS Code Versioning will be an issue – we need to speed up access to the most recent contractor provided code (help needed from the IPO)
  - Use 250m Land Water Mask and Automate an Annual Update (NASA / IPO)
  - *VIIRS EDR Validation Infrastructure (Land Val Team Cooperation with IPO / NOAA)*
  - Discussion needed between NASA ESDRs and NOAA NDE plans for Land
  - Land Recommended FU2 Instrument Improvements (suggest NASA HQ gather an updated and prioritized list and initiate discussions with NOAA and the IPO on how to effect the improvements)

Recommendations for VIIRS FU2 Land Priorities (updated)

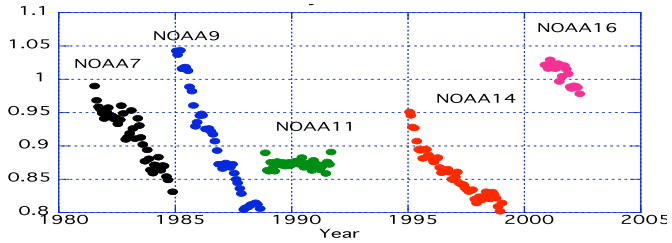
- Address the Optical Crosstalk Problem in VIS (M5)
- Reduce out of band response- all bands in VIS, NIR, SWIR
- Increase 343 K M15 Saturation spec. to 420 K (and perform full range calibration testing) - M15 full resolution download (Fire - NOAA also interested)
- Improved testing of near and far field stray-light response
- Explain and model polarization characterization results

Land Long Term Data Record (aka Climate Data Record)

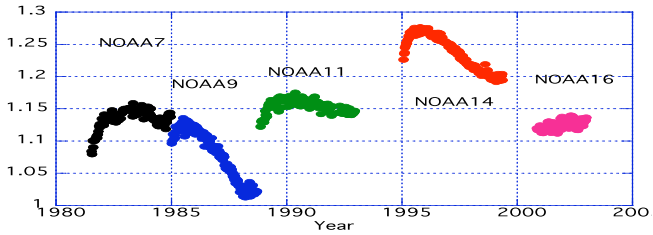
Needs to address calibration, atmospheric/BRDF correction issues

CALIBRATION

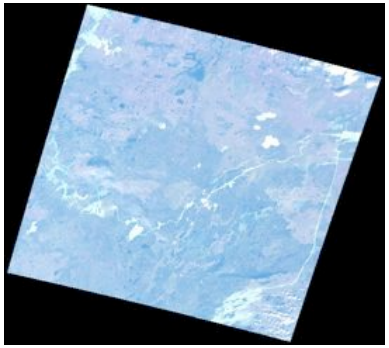
Degradation in channel 1
(from Ocean observations)

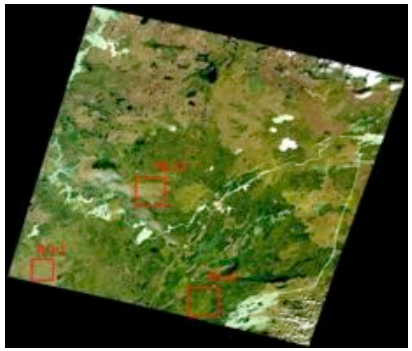


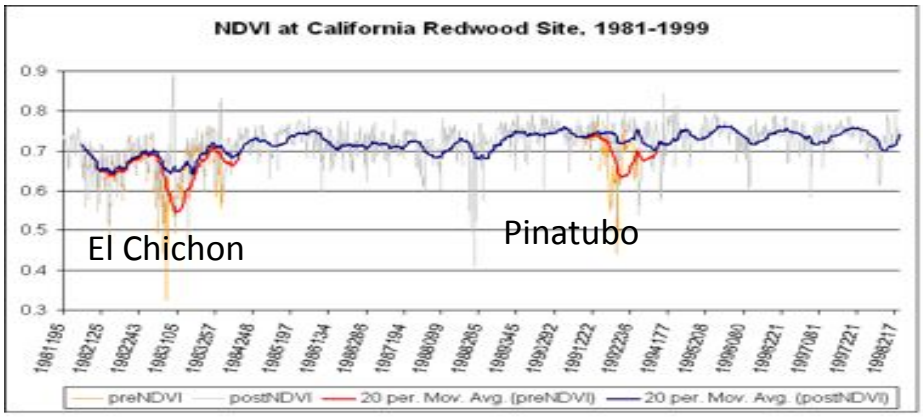
Channel1/Channel2 ratio
(from Clouds observations)



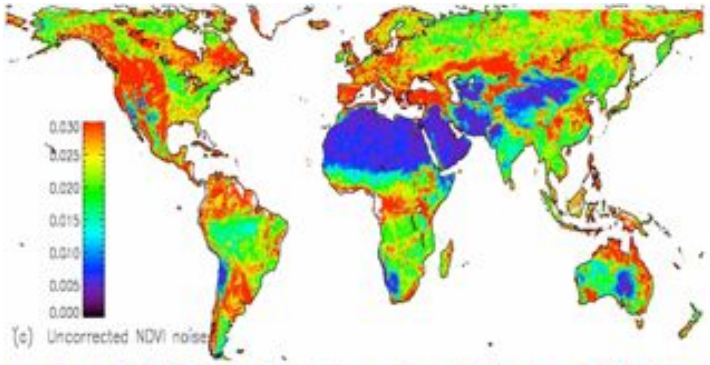
ATMOSPHERIC CORRECTION

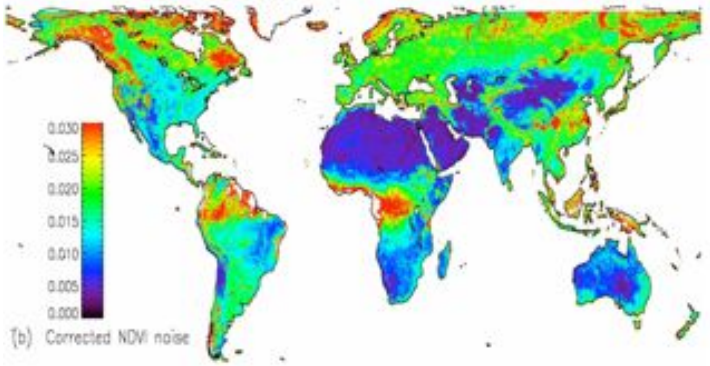


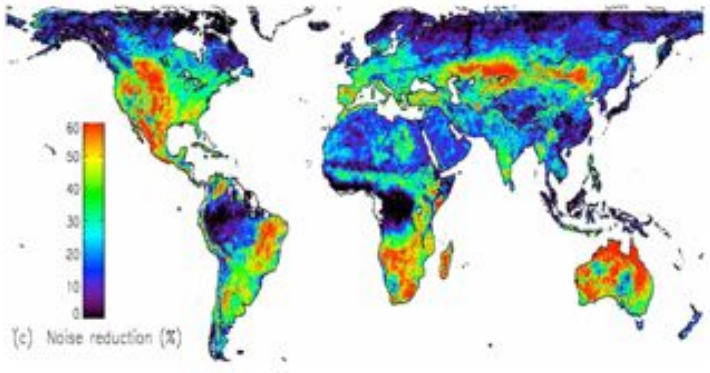




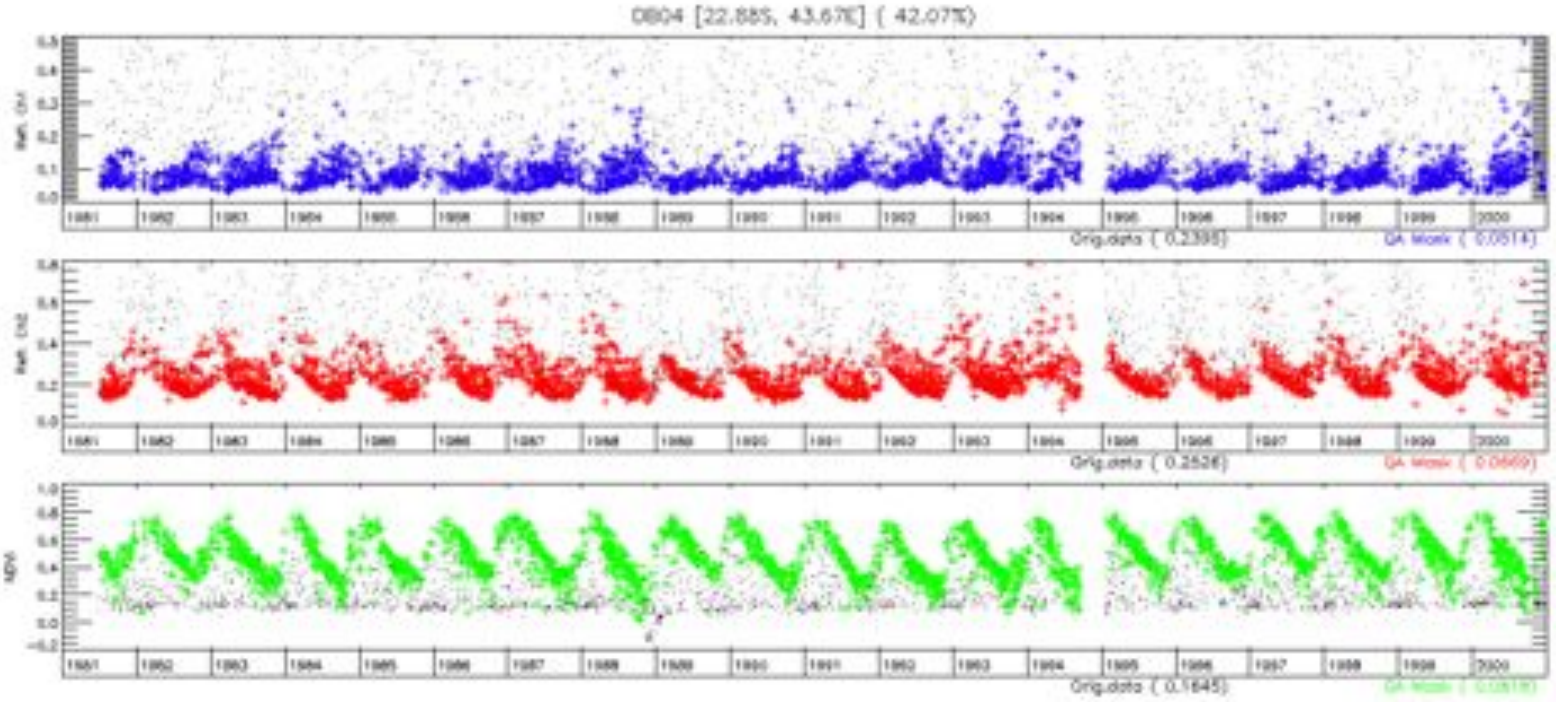
BRDF CORRECTION



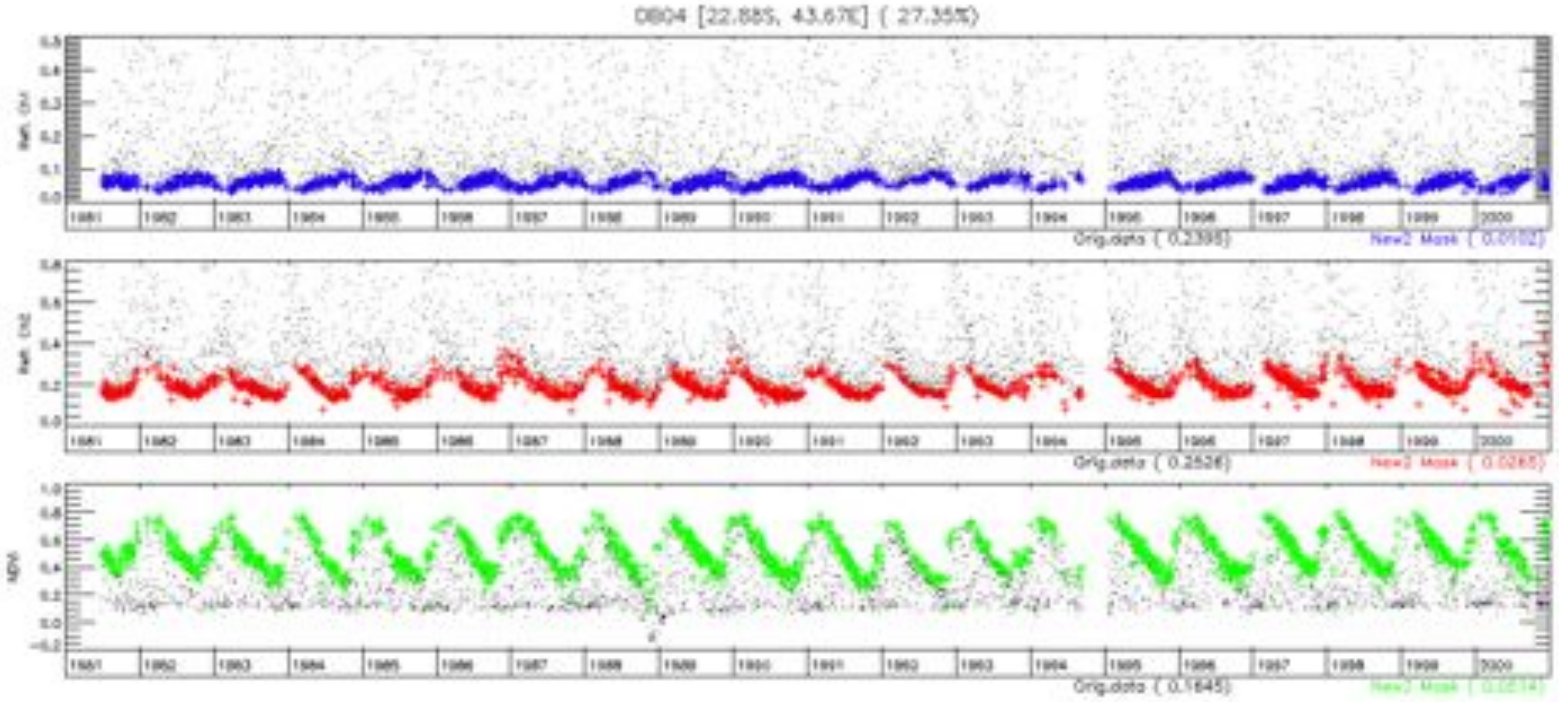




AVHRR Time series CLAVR mask



AVHRR Time series LTDR cloud mask



General Points

- Stronger and sustained Land 'community' Long Term Data Record Initiatives (CDRs) are needed
  - A 'CDR development stewardship' funding program is needed
  - Standard NASA 3 year funding cycle mechanism is not well suited – long term peer-reviewed, 'community' funded initiatives
  - NASA/NOAA CDR Pathfinders – with joint funding?!!

General Point

- Policy Relevant Science
  - brings more scrutiny
  - requests for the original data > reproducibility of results
  - Keeping Old MODIS Collections – how long ?

General Point

- **NASA's input to International Coordination on Observations should be strengthened**
  - For the Land Surface, NASA Products (primarily MODIS) continue to pave the way in terms of global 'science quality' land observations
  - If GCOS/UNFCCC ECVs are intended so that observations and science can inform policy, then NASA could benefit from participation in ECV discussions
    - Need for better ECV Process beyond self declaration
    - Land ECV's need to move beyond IPCC WG 1 -
  - Mechanisms in place for international Land advisory (NASA supports this and can benefit from increased participation)
    - GOFC/GOLD – land cover, fire, biomass
    - CEOS LPV - Validation will hopefully be a critical component of ECV's
      - International Validation Protocols > current bottom up efforts need top down recognition
    - Much invested time and as a result experience in the Land Community
  - More US attention being given to GEO (Soc Benefit) which has an increasing involvement in Climate
    - MODIS has much to offer GEO and so will VIIRS
  - Discussion with other international coarse resolution providers will come in handy – ESA, Eumetsat, China, India