



# **LAND PRODUCT VALIDATION**

## **SUBGROUP REPORT**

**F. Baret, S. Garrigues & J. Nightingale**

WGCV-30 Brazil June 2009

# Outline

- *Objectives*
- *structure*
- *accomplishments and ongoing activities*
- *planed activities*
- *recommendations*

# Mission Statement & Goals

- to foster **quantitative validation** in a traceable way of *higher level global land products* derived from remote sensing data and relay results so they are relevant to users
- to increase the **quality and efficiency** of global satellite product validation *via* developing and promoting international standards and protocols for field sampling, scaling, error budgeting, data exchange
- to provide feed-back to international structures (GEO/GEOSS) for :
  - requirements and achievements on product accuracy and quality assurance
  - definitions of future mission

# Products targeted

- Land cover with GOFC-GOLD
- Fire (active, burnt area) with GOFC-GOLD
- Biophysical characteristics (LAI, fAPAR, fCover, chlorophyll, phenology?)
- Energy (albedo, short and long wave fluxes)
- **New products**
  - Land Surface Temperature (with IVOS)
  - Soil (moisture, type)
  - Biomass? In discussion with GOFC-GOLD

# Products not targeted

- Net Ecosystem Exchange/Productivity (NEE/NEP)
- Evapotranspiration

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- ***Structure***
- *Accomplishments and ongoing activities*
- *Planned activities*
- *Recommendations*

# LPV structure

- **A structural problem:**

- biophysical products are not as close to sensors as radiometric calibration is!!
- Community is large and scattered: more focus on product families corresponding to a better identified (unified?) community (land cover, fire, biophys. , energy, soil, LST ...)

→ Need for a structure better representing the diversity of products with leads belonging

# LPV structure

## The new structure:

**sub-groups by product family with leads from the community if possible from different continents**

- **Land-Cover:** M. Herold & M. Friedl
- **Fire:** K. Tansey & L. Boschetti
- **Vegetation:** R. Fernandes, S. Plummer, J. Nightingale
- **LST:** A. Pinheiro & J. Sobrino
- **Soil:** W. Wagner & T. Jackson

# LPV structure

- **Role of the sub-group leads:**

- Convey information from the specific products community towards CEOS/WGCV/LPV.
- Report plans/advances/problems in the validation (and calibration when applicable) of the specific products to be presented at the CEOS/WGCV plenary meetings.
- Help organize (approximately once every 2 years) a dedicated (or topical) meeting on the validation of these products.
- Provide information to update the LPV web site: new releases of products, validation exercise, reports, publications, workshops and meetings.
- When desirable, participate to the CEOS Working Group on Calibration and Validation plenary meeting to directly report progresses and submit recommendations towards space agencies.

# The web tools

- LPV web page maintained by J. Nickeson



The screenshot shows the NASA Goddard Space Flight Center website for the CEOS Working Group on Calibration & Validation (WGCV) Land Product Validation Subgroup. The page features a navigation menu with links to Home, Landcover, Biophysical, Surface Rad, LST/Emissivity, Fire/Burn, and Soil Moisture. It also includes a section for announcements, a central graphic of the Earth with satellite icons, and a mission statement.

NASA GODDARD SPACE FLIGHT CENTER | + NASA Homepage

**CEOS** WORKING GROUP ON CALIBRATION & VALIDATION  
Committee on Earth Observation Satellites  
**Land Product Validation Subgroup**

Home Landcover Biophysical Surface Rad LST/Emissivity Fire/Burn Soil Moisture

Current LPV Chair: Frédéric Baret (INRA)  
Vice-Chair: Sebastien Garrigues (CNES)

**Announcing...**

- The **International Conference on Land Surface Radiation and Energy Budgets**, Beijing, March 18-20, 2009.
- Mark your calendars!!! **4th Global Vegetation Workshop**, Missoula, MT, June 16-18, 2009
- The Globcover product and validation report are now available via the [POSTEL web](#)

**LPV Mission**

To foster quantitative validation of higher-level global land products derived from remote sensing data and to relay results so they are relevant to users

- WIKI site for exchanges within sub-groups

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- ***Accomplishments and ongoing activities***
- *Planned activities*
- *Recommendations*

# Previous workshops

- 1) **7-8 June 2001** LAI Intercomparison  
ESA Frascati, Italy
- 2) **23-24 October 2002** Land Product Validation Workshop on Surface Albedo  
Boston MA USA
- 3) **16 August 2004** EOS LAI Intercomparison Activity Results  
Missoula, MT USA
- 4) **27-28 October 2005** Global Vegetation Continuous Fields Validation Workshop  
Brookings, SD USA
- 5) **27-28 April 2005** LPV workshop on albedo  
Vienna, Austria
- 6) **7 August 2006** LPV workshop on long-term VI record  
Missoula Montana
- 7) **8-10 August 2006** Long term global monitoring using moderate resolution satellites  
Missoula Montana
- 8) **23 March 2007** LPV workshop on LAI and fAPAR products  
Davos, Switzerland
- 9) **30 Sept. – 3 October 2008.** LPV special session within CEOS/WGCV-29 plenary  
Avignon, France
- 10) **14-15 October 2008** GOFC-GOLD Land cover Symposium  
Jena, Germany
- 11) **18-20 March 2009.** Special albedo session within the “International Conference on Land Surface Radiation and Energy Budgets: Observations, Modeling and Analysis”  
Beijing, China

# Main accomplishments

- The focus was mainly put on the set up of the new structure of the LPV group
- Proposition for a draft guideline for burnt area validation
- Improved links with GOFC-GOLD
- Validation of the GLOBCOVER land cover classification
- completion of the internal engine of OLIVE (On Line Interactive Validation Exercise) with extension on albedo products
- Advances on the characterization of the uncertainties attached to 'sites' measurements
- Set up of 4 sites for continuous LAI and fAPAR (and albedo) validation sites (3x3 km<sup>2</sup>)

# Publications

- ***ISRSE, Stresa May 2009. The GOF-C-GOLD/CEOS land cover harmonization and validation initiative: Technical design and implementation framework.*** M. Herold, C. Woodcock, S. Stehman, F. Baret, M.A. Wulder, and C. Schmullius
- ***ISRSE, Stresa May 2009. Global validation of EOS land products, lessons learned and future challenges: A MODIS case study.*** J. Nightingale, J. Nickeson, C. Justice, F. Baret, S. Garrigues, R. Wolfe, E. Masuoka

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- *accomplishments and ongoing activities*
- ***planned activities***
- *recommendations*

# Planned activities

- **Future meetings**

- LPV sub-group meeting, 15<sup>th</sup> June 2009 Montana
- Fire products, Leicester, 8-11 September 2009
- LST September 2010, Valencia,

- **Validation guideline documents**

- To be defined at the Montana meeting. Some already ongoing.

- **Other**

- Publish BEMANIP2 for vegetation and albedo products intercomparison
- Complete and publish validation on LAI and fAPAR @ 3x3 km<sup>2</sup>
- Implementation of OLIVE
- More to come after the Montana meeting ...

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- *objectives and structure*
- *accomplishments and ongoing activities*
- *contribution to GEO tasks*
- *planned activities*
- ***recommendations***

# Recommendations

- **Encourage agencies to implement the previous recommendations including:**
  - Recommend agencies to support the continuity and expansion of product validation activities to be able to quantify the associated uncertainties and allow fusion between similar products
    - *ESA (TRUTH?) other agencies??*
  - Need support for implementation of the 'on line validation tool' in the CAL/VAL portal
    - *ESA was asked to support this activity but ???*