Committee on Earth Observing Satellites
Land Product Validation subgroup

MODIS Science Team meeting
14 July 2004

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CEOS/WGCV/LPV Organizational Structure

CEOS
Committee on Earth Observing Satellites
(NASA rep = Ghassem Asrar)

WGCV
Working Group on Cal/Val
(NASA rep = Jim Dodge
Current Chair Steve Ungar/Goddard)

LPV
Land Product Validation Subgroup
(NASA rep & current chair =
Jeff Morisette)

Committee on Earth Observing Satellites

GOAL: ensure that critical scientific questions relating to Earth observation and global change are covered and that satellite missions do not unnecessarily overlap each other.

PRIMARY OBJECTIVES:

1: to optimize benefits of spaceborne Earth observations through cooperation of its participants in mission planning and in development of compatible data products, formats, services, applications, and policies
2: to serve as a focal point for international coordination of space-related Earth observation activities; and
3: to exchange policy and technical information to encourage complementarity and compatibility of observation and data exchange systems.

http://www.ceos.org/

CEOS

- comprising 41 space agencies and other national and international organizations
- created in 1984
- recognized as the major international forum for the coordination of Earth observation satellite programs and for interaction of these programs with users of satellite data worldwide

Individual participating agencies make their **best efforts** to implement CEOS recommendations

…"recommendations" often come from the CEOS Working Groups.

CEOS Organization

Working Group on Information Systems & Services (WGISS)

Working Group on Calibration and Validation (WGCV)

Education and Training (WG-Edu)

Strategic Implementation Team (SIT)

Ad Hoc Team on Utilization

Ad Hoc Working Group on Earth Observation

Ad Hoc Group on Earth Observations (GEO)

Working Group on Cal/Val

GOAL: ensure long-term confidence in the accuracy and quality of Earth observation data and products.

SPECIFIC TASKS:

1. **sensor-specific calibration and validation**
2. **geophysical parameter and derived product validation.**

- **a forum for calibration and validation information exchange, coordination, and cooperative activities**
- **promotes the international exchange of technical information and documentation, joint experiments, and the sharing of facilities, expertise, and resources.**

WGCV also seeks to be the recognized first point of contact for the international user-community as far as calibration and validation is concerned.

With the advent of the Integrated Global Observing Strategy (IGOS), the WGCV has devoted increased attention to the validation of higher-level products.

WGCV Organization

- **Atmospheric Chemistry Subgroup**
- **Infrared and Visible Optical Sensors (IVOS) Subgroup**
- **Land Product Validation (LPV) Subgroup**
- **Microwave Sensors (MS) Subgroup**
- **Synthetic Aperture Radar (SAR) Subgroup**
- **Terrain Mapping (TM) Subgroup**

http://www.wgcvceos.org/ -
The goals and activities of WGCV are summarized in its Three-Year Work Plan.
Current chair: Steve Ungar, NASA GSFC

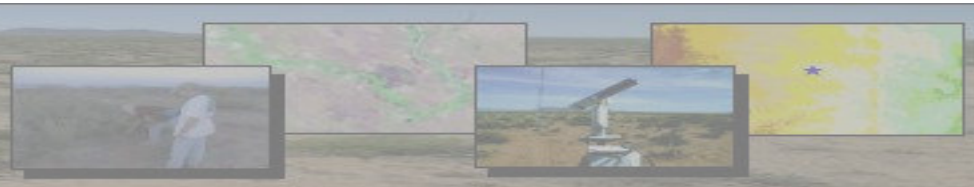
Land Product Validation subgroup

- **Established in 2000**
- **A topic-specific (non-wavelength-specific) subgroup**

Initial focus
(matching GOFC/GOLD implementation teams):

- **Land cover/land cover change**
- **Biophysical parameters (starting with LAI)**
- **Fire and burn scar**

Big Picture



LPV provides a validation service to the Integrated Global Observation Strategy (IGOS)

- **Global Terrestrial Observation System**
  - Terrestrial Observation Panel for Climate (TOPC)
  - Global Observation of Forest Cover/Land Dynamics
- **Global Carbon Observing System**

Implications:

- **Focus Products: Biophysical, Land Cover, Fire Disturbance, & Albedo**
- **Working in conjunction with GOFC/GOLD's regional networks**
- **Opportunity/Need to integrate with TEMS, GT-Net, & UN's GLC-net**

CEOS WGCV Definition

Validation:

the process of assessing by independent means the quality of the data products derived from the system outputs

(LPV will operates under this definition, but also with the understanding that validation activities should consider user accuracy needs and feedback to algorithm improvements.)

Mission Statement & Goals

- to foster quantitative validation 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 economy of global satellite product validation *via* developing and promoting international standards and protocols for field sampling, scaling, error budgeting, data exchange for global land product validation
- to advocate mission-long validation and intercomparison programs for current and future earth observing satellites.

LPV Plans (2003-2005)

- Create infrastructure for validation data exchange and management (with WGISS) resulting in on-line access to CEOS Land Validation Core Site data sets (pilot for 5 sites exists) – modeled after EOS Land Validation Core Sites
- Conduct product Inter-comparisons
- Develop consensus “best practice” protocols for data collection and description
- Enhance web based information:
  - Establish individual listserv groups for: biophysical, land cover, fire (done in 2003)
  - Continue working with users to define uncertainty objectives/needs (by integrating with the CEOS/WMO database)

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WGCV/WGISS test facility

EROS Data Center, Sioux Falls, SD - Microsoft Internet Explorer

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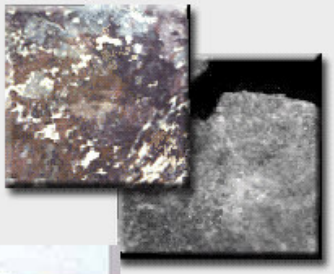
Address http://edcsgs16.cr.usgs.gov/wgiss/ Go Links

USGS
EROS Data Center - WGISS & WGCV Test Sites

CEOS

CEOS Working Group on Information Systems and Services Test Facility for the Working Group on Calibration and Validation -- Land Product Validation Test Sites

This prototype is being developed in partnership between the Working Group on Calibration and Validation (WGCV http://wgcv.ceos.org) and the Working Group on Information Systems and Services (WGISS http://wgiss.ceos.org) and provides a good opportunity to demonstrate and improve upon the suite of WGISS tools and services that can be applied to assist with land product validation activities. This prototype is only one example of what can be done through CEOS collaboration efforts."



Internet

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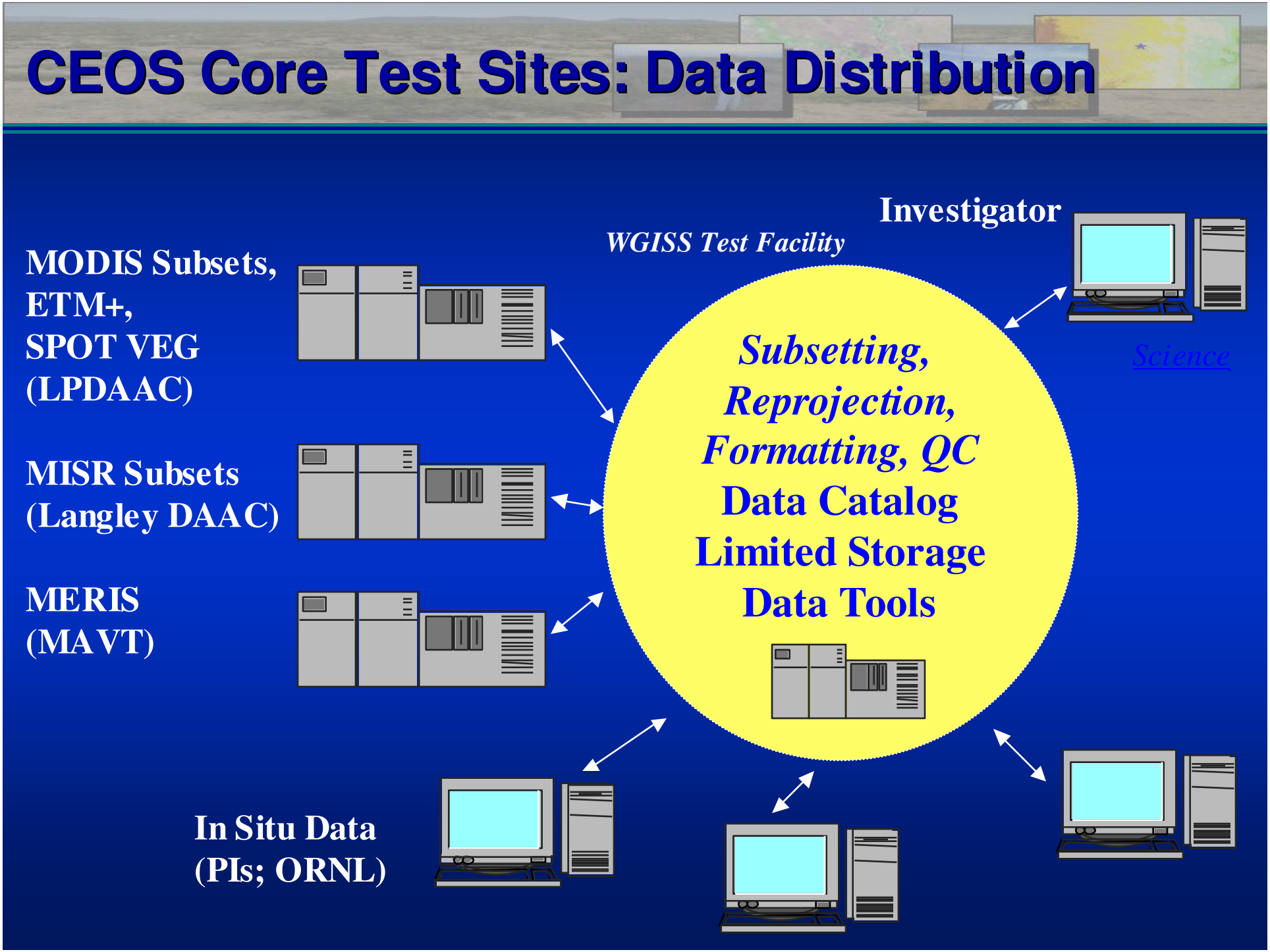
WGCV/WGISS test facility

CEOS Core Test Sites: Data Distribution



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"Intercomparison" General Timeline

	LAI	Albedo	Fire related	Land cover
Topical meeting to establish data requirements	Boston U, 1998	Boston U, 2002	Lisbon, 2001 Darmstadt 2004	Toulouse, 2001 UMd, fall 2004
Decide on Sites				
Develop data sharing infrastructure	Frascati, Italy 2001	Avignon 2005		Boston U, Feb '02 (special issue)
Field Campaigns & individual product analysis				
Synthesis of results	Montana August 2004			

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LPV "Special Issue"

- Special Issue: describing the state of the art research on both protocol and results for validation and accuracy assessment of global land products (Liang, Baret and Morisette, eds.)
- Three sections:
  - Surface Radiation variables
  - Ecosystem variables
  - Land cover characteristics (including land cover change, fire, and burnt area)
- Solicit a summary from User/GCM community to write a note for each section on the implication for the uncertainty/validation of the products

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Five listservs established

ceos_lpv_gen@listserv.gsfc.nasa.gov
General information regarding LPV activity, both scientific and administrative

ceos_lpv_rad@listserv.gsfc.nasa.gov
surface RADiation products, including surface reflectance/atmospheric correction, land surface temperature, albedo and BRDF

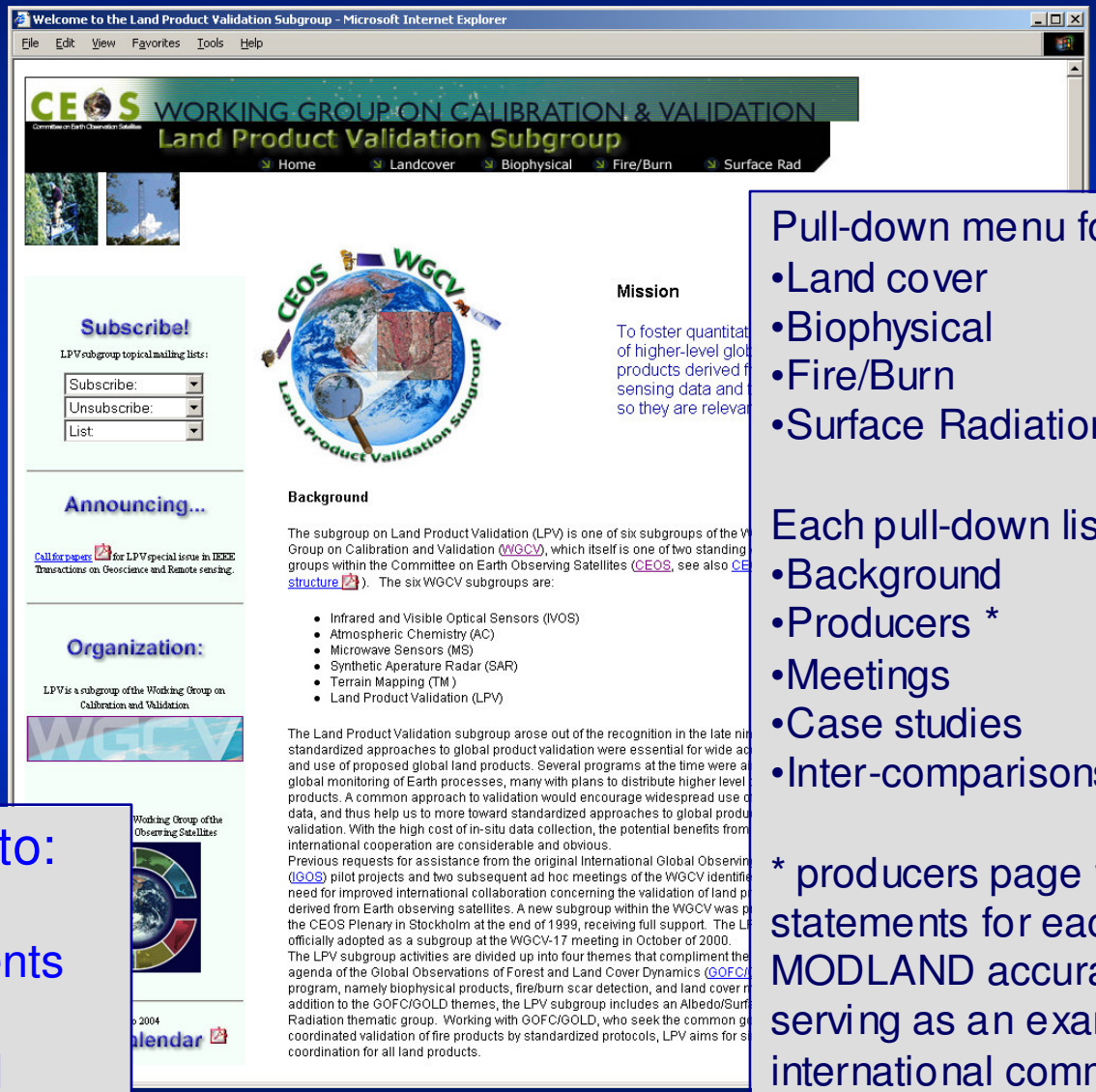
ceos_lpv_bio@listserv.gsfc.nasa.gov
BIOphysical parameters, including vegetation indices, leaf area index, FPAR, and vegetation productivity

ceos_lpv_lc@listserv.gsfc.nasa.gov
Land Cover and land cover change products

ceos_lpv_fire@listserv.gsfc.nasa.gov
FIRE, burn scar, and fire emissions products

(related to action WGCV 20-11)

http:landval.gsfc.nasa.gov/LPVS



Pull-down menu for main topical areas:

- Land cover
- Biophysical
- Fire/Burn
- Surface Radiation

Each pull-down lists:

- Background
- Producers *
- Meetings
- Case studies
- Inter-comparisons

* producers page will link to accuracy statements for each product, where MODLAND accuracy statements are serving as an example to the international community

Quick links to:

- Listserves
- Announments
- WGCV
- CEOS and
- CEOS calendar

web curator: Jaime Nickeson