The CEOS Land Product Validation Subgroup

Mission

To foster and coordinate quantitative validation of higher level global land products derived from remotely sensed data in a traceable way, and to relay results so they are relevant to users.

Web Site

http://lpvs.gsfc.nasa.gov

Now with structured information on validation stage, best practices, references, and links to products for each variable.

Activities within the LPV Focus Areas

The primary aim of the Focus Areas is to engage the international community in the development of data sets and protocols supporting consistent validation of remote sensing based global land products.

Land Cover

Collaborating with GOF-C/GOLD Land Cover Implementation Team on the development of a global land cover validation framework and focused land cover evaluations. This will include harmonization of validation data, metadata, and guidelines for appropriate application of each dataset under development. Training underway.

Validation Protocols:
- Standards for validation and accuracy assessment of regional and global land cover products exist (CEOS, Strahler 2006).
- GFZ framework – module being developed on how to access national forest change.
- Best practices guidelines (Olofsson et al., 2014) for the validation of land cover products.
- A Land project GFO (Land GFO) phase 2 completed and land cover product validation for phase 3 is currently being designed.
- Open access to available land cover reference databases has been arranged, portal is: http://www.gfoglawn.org/sites/gfoglawn_refdataportal.php

Land Surface Phenology (LSP)

Discussing how to quantify uncertainty in both satellite and ground phenological measurements.

3rd Phenology Validation Workshop at Phenology Conference, Oct 5-8, 2015, Kasadus, Turkey. Currently identifying core validation sites for LSP validation activities. Considering two types of sites:

Type A sites – with detailed spatial and temporal ground phenological observations and incorporating multiple resolution scaling opportunities.

Type B sites – with phenology camera (phenocams) and good representation from citizen science observations within national phenological networks (NPNs)

Once these core sites are agreed upon, along with corresponding remote sensing data, ground observation and phenom data will be compiled into data bundles that will be made publicly available for data sharing and coordinated assessment/intercomparison.

Biophysical (LAI and Fpar)

A LAP workshop to develop a Fpar validation is planned to be conducted in 2015. The workshop will be focused on developing a Fpar validation framework. The workshop will be a forum for sharing ongoing Fpar validation efforts and for developing a comprehensive Fpar validation framework.

Snow Cover

The ESA Satellite Snow product Intercomparison and Evaluation Experiment (SNOWPEx) aims to intercompare and validate hemispheric and global satellite snow products for estimation of temporal trends of the seasonal snow cover and assessing their accuracy. Community consensus on methods and protocols for intercomparison of products and their validation using varied reference data sets.

MODIS Collections 6 reprocessing underway. Comparisons with Cryo show significant improvement in snow cover in mountainous areas.

A integrated watershed-scale experiment in China is making use of radarsimeters, cameras, and aircraft data to determine accurate snow depth, fraction of snow cover, and snow water equivalent, which will be validated against the validation of snow products over this area in the two winter seasons 2012/13 and 2013/14.

New snow water equivalent product and validation methods are being developed by the Chinese Meteorological Administration.

Surface Radiation

The GlobTemperature Data Portal now active. Currently includes AATSR and SEVIRI products. ESA GlobTemperature User Consultation Meeting, June 11-12, 2015, University of Reading. Recent work by Guillevic, et al., (2014) serves as a baseline protocol for LST validation measurements continue to be worked on for MODIS, VIIRS, Landsat, NISST and ASTER.

The HispIRI airborne campaign continues. A very large campaign with AVIRIS and MASTER on the ER2 in CA. Flights in 3 seasons for 3 years through 2015. Several HyTES airborne campaigns have been completed. Next campaign will take place in April 2015 over Coors. Level 1.2 products are available for the 2013 and 2014 campaigns. Product validation is in progress. Development of the new T-E separation algorithm for 8-NP/VIIRS is in progress. Collaboration of GOCSP and LIN on LST definition in preparation of LST as future Essential Climate Variable (ECV).

LST & Emissivity

The new T-E separation algorithm for MODIS (MOD02) has been implemented as part of Collection 6 reprocessing. This algorithm is similar to the ASTER algorithm and is designed specifically to retrieve accurate emissivity at a 1 km resolution.

Soil Moisture

NASA launched a new Soil Moisture Mission, the Soil Moisture Active Passive (SMAP) observatory, on Jan, 30, 2015, beginning a 3-year mission to produce the most accurate, high-resolution soil moisture maps ever. Cal/Val work to begin in early May. Product delivery expected to commence 9 months post-launch. The International Soil Moisture Network (ISMN), established in 2010, continues to grow its network: data sets and user base. There are currently over 1400 stations worldwide.

ESA Climate Change Initiative (CCI) soil moisture project is conducting ACAT and AMSR-E SM reprocessing and is planning validation. The 39-year data record of SM has been released and the initial validation results show a promising correlation of values with existing SM models. Negative trends with precipitation need to be explored further.

Goals

To increase the quality and efficiency of global satellite product validation by developing and promoting international standards and protocols for:

- Field sampling
- Scaling techniques
- Accuracy reporting
- Data & information exchange

Land Cover

ECV: T09, GCOS-IP3:8: T26, T27, T28

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