Observing terrestrial variables for climate: achievements and opportunities

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Joint GCOS, UNFCCC, IPCC workshop
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Essential Climate Variables (terrestrial)

River discharge, Water use, Groundwater, Lakes, Snow cover, Glaciers and ice caps, Ice sheets, Permafrost, Albedo, Land cover (including vegetation type), Fraction of absorbed photosynthetically active radiation (FAPAR), Leaf area index (LAI), Above-ground biomass, Soil carbon, Fire disturbance, Soil moisture
5th CCI Colocation Meeting

The 5th Colocation meeting of the CCI took place in ESRIN, Italy from the 20-22 October 2014. A key focus for this year’s Colocation meeting is on the steps that need to be taken to make the ECVs operationa.

Read more...

Final version of Fire_cci Burned Area products available

Burned Area (BA) data generated in the Fire_cci project is now available online at http://www.

Read more...

CCI Workshop: Integrative Study of the Sea Level Budget

2-5 February 2015, ISSI, Bern, Switzerland

The International Space Science Institute (ISSI) are hosting a CCI workshop to discuss the
1 land cover pixel, 4 descriptors

2000-2005-2010

www.esa-landcover-cci.org/
Key remarks

1. The UNFCCC/GCOS/ECV framework has resulted in focus and important progress for climate observations
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2. GCOS terrestrial counterpart (GTOS) is inactive; intermediate solution with GTOS panels and technical community
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Essential for what and whom?
Key remarks

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3. ECV observation progress has largely focused on IPCC WP I – type users
Increasing overlap and synergies among climate science communities

Hibbard et al., 2010, Int. J. Climatol.
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4. Importance of terrestrial domain is increasing in climate science
Land use change after deforestation in 1990 - 2005

Sample points (10 x 10 km²)

- Deforested area (km²/year)
- No deforestation (%), no forest(%) or no data(%)
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5. Human dimension largely absent in ECVs; required for links to mitigation and adaptation
Starting the dialog between observation and mitigation community

- Representatives from UNFCCC, FAO, ICRAF, ESA, IPCC, etc.
- Focus on Land Use (Agriculture) and Forest
- Land use change and forestry and agricultural management practices
- Key ECVs: fire, land cover, biomass, soil carbon, ...
- Develop a consistency among mitigation-relevant terrestrial ECVs for IPCC GPG-based estimation

GCOS Workshop on Observations for Climate Change Mitigation

Geneva, Switzerland
5–7 May 2014

Co-sponsored by the Land Cover Project Office of the Global Observation for Forest Cover and Land Dynamics (GOFC-GOLD) Programme

Workshop website:
http://www.wmo.int/pages/prog/gcos/index.php?name=ObservationsforMitigation
Deforestation
Croplands w/o rice
Livestock
Rice

Total AFOLU + forest sink
(CO2e net emissions/removals)

7 Tg CO2e
0 Tg CO2e
2.3 Tg CO2e
0 Tg CO2e

4.5 Tg CO2e
0 Tg CO2e
4.8 Tg CO2e
0 Tg CO2e

26 Tg CO2e
-7.6 Tg CO2e
National forest monitoring capacities for REDD+

from Romijn et al., 2012, ESP

Capacity gap
- Very large
- Large
- Medium
- Small
- Very small
- N/A
Large area biomass mapping

AGB - Baccini et al. (2012)

AGB - Saatchi et al. (2011)

Absolute Difference

Mitchard et al. CBM 2013 8:10
Large area biomass mapping

AGB - Baccini et al. (2012)

AGB - Saatchi et al. (2011)
Large area forest biomass mapping

Forest Biomass (Mg/ha):
- 0 - 25
- 26 - 50
- 51 - 100
- 101 - 150
- 151 - 200
- 201 - 350
- 351 - 600
Key remarks for terrestrial domain

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6. (Global) ECV monitoring and national estimation and reporting (to UNFCCC) are largely independent
One question and one challenge

1. **Question:** How to expand the GCOS/Essential Climate Variables framework to make terrestrial/land observations more relevant for purposes of mitigation and adaptation?

2. **Challenge:** Stimulus and actions needed by the UNFCCC to better integrate and coordinate (1) global (research) observations, (2) national estimation and reporting, and (3) monitoring and implementation of local actions (for mitigation and adaptation)!