

# LAND COVER AND CHANGE

Newsletter of the GOFC-GOLD Land Cover Project Office

**DECEMBER 2008**

**NUMBER 18**

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## 3RD GOFC-GOLD LAND COVER SYMPOSIUM HELD IN JENA

### REVIEW AND OUTLOOK OF GOFC-GOLD LAND COVER ACTIVITIES

From 13-17 October 2008, the 3<sup>rd</sup> GOFC-GOLD Land-Cover Symposium was successfully held at Jena University, Germany, organized and hosted by the Land Cover Project Office. In 2004, the Land Cover Implementation Team (LC-IT) started this tradition of biyearly meetings to review and discuss its activities. This year's symposium included the GOFC-GOLD Strategy Meeting, the Regional Network Meeting and four thematic workshops reflecting the different land cover activities.

More than 120 participants from 31 countries attended the event. Members from the LC-IT and the GOFC-GOLD Executive Committee came together with representatives from several national and international organizations (FAO, UNFCCC, GEO, EEA), space agencies, as well as researchers and representatives from companies. The detailed workshop agendas and all presentation (with permission of the speakers) are available online at the symposium website: <http://www.gofc-gold.uni-jena.de>.

Currently, reports for the individual workshops are in preparation, this newsletter provides a brief summary (page 4).



**Fig. 1: Participants of the LC-IT Meeting at Dornburg Castle during the GOFC-GOLD Symposium**

**3<sup>rd</sup> GOFC-GOLD Land Cover Symposium – Summary and actions for LC-IT (part 1)****UNFCCC – GCOS Implementation Plan and ECV Standards** (Herold, Wulder, Schmillius, Arino)

- Definition of ECV standards for land cover, biomass (and fire)
- Specifications for implementing ECV observations (working group for GOFC relevant ones to develop role models, e.g. for land cover)
- Participation in GTOS/TOPC meeting (29/30 Oct.) and UNFCCC COP 14 side events

**UNFCCC – GOFC REDD working group** (Achard, DeFries, Souza, Pandey, Herold)

- Update REDD sourcebook in critical and new sections by UNFCCC COP 14
  - Side Event in Poznan accepted
- Upcoming meetings:
  - 20/21. Oct. 08: Meeting at UNFCCC Secretariat on Degradation
  - GEO Forest Monitoring Symposium, Brazil, Nov
  - Nov. 08: Capacity development organized by Coalition for Rainforest Nations
- Link with regional networks and GOFC data initiative

**IGOL – Integrated Global Observations for Land** (Townshend, Brady)

- Continuity of IGOL requirements under GEO still critical
- Issues for land use and agriculture monitoring (exploratory working group to be formed)

**GEO Land Cover / Forest Tasks** (Brady, Loveland, Herold)

- GOFC-GOLD contribution to seven GEO forest and land cover tasks:
  - AG-06-04 Forest Mapping and Change Monitoring
  - DA-07-02 Global Land Cover
  - DA-07-03 Virtual Constellations-Land Surface Imaging sub task
  - DI-06-13 Implementation of a Fire Warning System at Global Level
  - CL-06-03 Key Terrestrial Observations for Climate
  - EC-06-07 Regional Networks for Ecosystems
  - US-06-02 Pilot Communities of Practice
- GOFC feedback on GEO 15 year targets
- GEO forest monitoring symposium: GOFC participation, objectives and contributions clarified
- More salient role for land monitoring in high-level GEO communication (i.e. key intro sections in 2009-11 workplan)
- New task on forest carbon tracking
- GOFC role as service provider for GEO?

**GOFC validation working group** (Woodcock, Wulder, Herold, Baret, Achard)

- Link to CEOS WGCV
- Global Validation/Best Map Effort
  - Concept and some experiences exist for operational validation system and synergy among datasets
  - Next steps:
    - Make best use of existing reference datasets (GOFC to lead)
    - Develop the sample design of new reference dataset
    - Prototype activities on response design
  - Develop proposal for multi-agency support and engagement to develop and implement global validation system
- Accuracy assessment for land cover change and area estimates
  - Outline of addendum to best practices document and writing assignments

**3<sup>rd</sup> GOFC-GOLD Land Cover Symposium – Summary and actions for LC-IT (part 2)****Support for GLOBCOVER** (Arino, Schmullius, Herold, Volden)

- GLOBCOVER available and validated, and will continue
- Continued support of GOFC team for further development, dissemination, and validation
- Evolving global land cover European initiatives (GMES working group)

**CEOS Constellation(s) and data continuity and availability**

(Townshend, Woodcock, Jeanjean, Held)

- Different challenges for optical and SAR data (access to archive and future constellations)
- Needs for further pushing on all levels
- Comment on GEO data policy (Janetos, Brady, Woodcock)
- CEOS LSI Constellation Initiative on Global Landsat Archive
- Letter prepared by Tony to ESA & EC on Sentinel 1 & 2 & 3 data access
- Establish supersites for evaluation of multi-sensor capabilities and synergies, and stimulate space agency support (SAR observation strategy) (Held)

**FAO FRA Activities** (Hansen, Achard, Mayaux, Schmullius)

- GOFC LC-IT members practically involved in remote sensing survey
- Joint GOFC-GOLD contributions to RSS to be further specified, i.e. quality control, regional network involvement etc.
- GOFC push for urgent access to Landsat data
- Link to supersite approach

**Support for regional networks / capacity building** (Krankina, Brady)

- Number of land cover activities within regional networks
- Key role for global validation and involvement in FRA2010 (participation in regional workshops) & REDD
- USGS data initiative as near-term activity

**Cooperation with national monitoring programs** (Loveland)

- Initial start through data initiative
- Stronger role under GEO

**Boreal forest monitoring activities** (Schmullius, Wulder, Olsson)

- Workshop outcomes ...

**LCCS**

- Standard GOFC-GOLD recommended legends (GEO task)
- Better communication with national/regional =mapping programs

**Working with international scientific networks**

- Earth System Modeling and Integrated Assessment community
- IGBP, NEESPI, GLP (strategy review)

**Remaining (broader) issues:**

- Old/new GOFC themes: biophysical variables, land use/agriculture
- Updating strategy and actions
- LC-IT membership

The symposium was structured in several workshops. One of the main outcomes of the meeting is the **LC-IT Action Plan** (pages 2 & 3) identifying priorities for each individual LC-IT activity. During the first day, two technical workshops took place. At the **Workshop on reducing emissions from deforestation and degradation (REDD)**, the dedicated GOFC-GOLD working group came together to discuss the update of the GOFC-GOLD Sourcebook in critical and new sections (see page 10). The **Boreal and temperate forest workshop** focused on "Multi-source, multi-scale, sampling for large area forest characterizations". The presentation addressed the context for using hierarchical analysis or sample based approaches for forest monitoring over large areas as well as issues, examples and opportunities of these techniques. The participants plan to produce a report that describes the state-of-the-art, opportunities, and limits for the use multi-source, multi-scale, data for large-area forest characterization.

The joint efforts of GOFC-GOLD together with the CEOS Calibration/Validation Group have been the topic of a dedicated workshop on the second day. The goal of the **workshop on accuracy assessment for land cover change** was to review, discuss and synthesize experiences on approaches for accuracy assessments of land cover change and area estimates. The group envisages a related "best practices" type document to provide dedicated technical input to ongoing international processes (see page 8). The GOFC-GOLD Strategy and the Regional Network Meeting were integrated parts of the Symposium. The **Strategic Meeting** provided a forum for GOFC-GOLD partners and stakeholders to present their view on new and emerging issues in the field of land and forest cover observations and give feedback to GOFC-GOLD about future priorities and directions. During the **Regional Network Meeting**, representatives from seven GOFC-GOLD Networks (OSFAC; WARN; SAFNet, Miombo, SEARRIN, NERIN, Redlatif) participated to review together current activities and to plan future activities and collaborations.

During the two days of the **Land Cover Meeting** (fig. 1), LC-IT members as well as representatives from partner institutions presented status and outlook of current activities. The second day was dedicated to breakout group discussions working on different issues. In the Harmonization workshop, the 3<sup>rd</sup> version of **LCCS** was presented and discussed.



**LC-IT Session at Dornburg castle**



**Discussions during Coffee break**



**Discussions at REDD Workshop**



**Impression from Boreal Meeting**



**Discussions at REDD Workshop**

**Update on FAO's Global Forest Resources Assessment 2010**

The current issue of FRA newsletter (Issue 2, 2008) is available from:  
<http://www.fao.org/forestry/52401/en/>

To subscribe to this newsletter, send an E-mail message to [fra@fao.org](mailto:fra@fao.org) leaving the subject blank and entering the following one-line message: *subscribe FRA2010-News-L*

**The Global Forest Resources Assessment 2010 Remote Sensing Survey**

FAO and member countries are working together with partners to undertake a global remote sensing survey of forests. More details can be found on the FRA website:  
<http://www.fao.org/forestry/fra2010-remotesensing/en/>

A brochure on the FRA 2010 Remote sensing survey has been prepared and is available at the FRA Website at [www.fao.org/forestry/media/16692/1/0/](http://www.fao.org/forestry/media/16692/1/0/)

**FAO FRA Landsat Imagery Database:**  
<http://globalmonitoring.sdstate.edu/projects/fao/index.html>

For further information on FRA, please contact [fra@fao.org](mailto:fra@fao.org)

## STANDARD REPORTS FOR ECV'S PRESENTED TO SBSTA-29

### GOF-C-GOLD PREPARED REPORT FOR ECV: LAND COVER AND BIOMASS

#### Background

In 2003, the UNFCCC Subsidiary Body for Scientific and Technical Advice (SBSTA) asked the Global Terrestrial Observing System (GTOS) to develop a framework for the preparation of guidance materials, standards and reporting guidelines for terrestrial observing systems (as part of the GEOSS and GCOS Implementation Plans). Since then GTOS and its panels have worked on the development of standards for 13 essential terrestrial climate variables. These standard reports will comprise the definition of these variables, an assessment of the available methods and instrument for measuring as well

as the existence of standards and protocols. In response to a request by SBSTA in 2005, a first progress report was submitted to UNFCCC in May 2007. The report is available online, at FAO/GTOS: <http://www.fao.org/gtos/doc/SBSTA-GTOS-ECV-report-v05.pdf>.

#### Role of GOF-C-GOLD

Within this framework, GOF-C-GOLD was requested to prepare and edit **ECV standard definitions for land cover, fire and biomass** and the respective implementation teams have worked on its development. The LC-IT revised and finalised the summaries of the Land cover and Biomass standard report during the recent GOF-C-GOLD Symposium, including recommendations for their operational observation. The summaries have been submitted to UNFCCC for presentation at the recently held 14<sup>th</sup> Conference of the Parties (COP-14), in Poland. The full standard reports are in development and progressing well. The draft versions of the Standards report are accessible online (see box). A supplement to the GTOS Biennial report informs about the international framework for climate related terrestrial observations: <http://www.fao.org/gtos/doc/pub52.pdf> (**GTOS-52**).

## GLOBCOVER MAP 2.2 AVAILABLE TO PUBLIC

Since end of September, the GlobCover Land Cover Map Version 2.0 has been available for public through the ESRIN ftp-server (see box). There, the **global as well as the regional land cover products** are accessible for everyone. Beside the product itself, the server provides access the product description and validation report. This new GlobCover Map is the **first global land cover product at 300 m resolution** produced through an automatic classification of MERIS mosaics over the period from December 2004 to June 2006. In September, the **3rd GlobCover User Consultation Meeting** was held in Copenhagen, where partner and user organizations discussed its quality. The processing for the 2<sup>nd</sup> version has been improved with respect to several issues identified in the first map version e.g.: modification of strata limits, water and snow detection, improved of cloud screening. The

**validation of the GlobCover Map** (for all 22 classes) resulted in an overall accuracy of 73 %. "Thus, the GlobCover Land Cover Version 2 product is currently at the same level of accuracy than previous global products e.g. GLC2000, but with a 10 times better resolution!" underlined Olivier Arino (ESA) during the Land Cover Symposium.

The recently released GlobCover Newsletter (Issue 8, see right) informs in detail about the product its validation and the workshop outcomes. It is available at the ESA DUP website: <http://dup.esrin.esa.it/projects/summary68.aspT>



#### ACCESS GlobCover Version 2 products & documentation:

- **Land Cover Product @ ESRIN FTP-Server:**  
Global and Regional Products:  
[ftp://uranus.esrin.esa.int/pub/globcover\\_v2/](ftp://uranus.esrin.esa.int/pub/globcover_v2/)
- **GlobCover MERIS composites @ Ionia GlobCover:**  
IONIA Server:  
<http://www.esa.int/du/ionia/globcover>

## GEO FOREST SYMPOSIUM HELD IN BRAZIL

### GOFC-GOLD WITH KEY ROLE IN MEETING AT FOS DE IGAÇU

To ensure globally consistent forest products as well as the long-term monitoring of forest ecosystems and advancing the knowledge about them, coordinated Earth observation systems are needed. The current Workplan of the Global Earth Observation System of Systems (GEOSS) includes **24 individual tasks** requiring forest observation (see box).

technical themes, including protected areas, biomass and carbon, phenology, fires and invasive species.

**GOFC-GOLD** is actively involved in several forest tasks and the GOFC-GOLD Project Office in Canada was strongly engaged in the thematic preparation of several sessions of the symposium. Many GOFC-GOLD members attended the meeting, namely Michael Brady, Curtis Woodcock, John Townshend, Carlos Souza and Alberto Setzer (RedLatif). Michael Brady gave presentations on GOFC-GOLD forest activities and the GEO Forest Community of Practice. Curtis Woodcock presented outcomes of the Jena Symposium.

A final report addressing critical issues in forest observation, assessment and monitoring will be prepared. Detailed information, including the Symposium summary and all presentations can be found at the conference's webpage: <http://www.dpi.inpe.br/geoforest>. The Symposium summary strongly underlines the need from the forest community and was presented at the GEO annual plenary at Bucharest, Romania.

#### Forest tasks in the GEO Workplan 2007-2009 (selection):

<b>AG-06-04</b>	Forest Mapping and Change Monitoring
<b>DA-07-02</b>	Global Land Cover
<b>DA-07-03</b>	Virtual Constellations-Land Surface Imaging sub task
<b>DI-06-13</b>	Implementation of a Global Fire Warning System
<b>CL-06-03</b>	Key Terrestrial Observations for Climate
<b>EC-06-07</b>	Regional Networks for Ecosystems
<b>US-06-02</b>	Pilot Communities of Practice

Therefore, the GEO Forest Monitoring Symposium was designed to strengthen the focus on forest observation worldwide and to provide a forum especially for GEO task teams and relevant institutions to further develop their task activities. The conference took place from 4-7 November 2008 in Igaçu/Brazil, jointly organized by the GEO Secretariat and the Brazilian National Institute for Space Research (INPE).

The main **objectives** were to:

- Consolidate the GEOSS approach for a systematic and integrated Forest Monitoring System of Systems that should ensure coordination, data sharing, inter-operability, and improve the ability of forest monitoring,
- Promote communication and collaboration among various communities working on different forest related themes,
- Engage individuals and institutions interested in learning more about GEO's efforts to construct the Global Earth Observation System of Systems (GEOSS).

70 participants from 20 countries attended the event, including decision-makers, researchers, non-governmental organizations and project managers active in all aspects of forestry management (fig. 3). The Symposium was structured around a number of

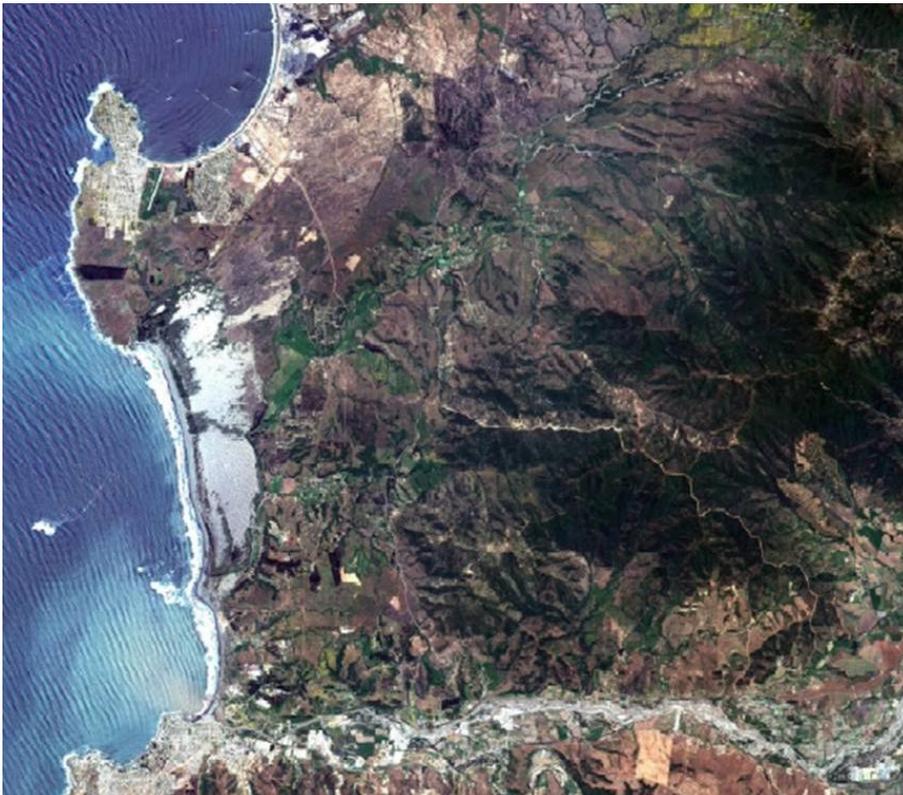


**Fig. 3: Participants at the GEO Forest Monitoring Symposium in Igaçu (picture: DPI/INPE)**

# NEW HIGH RESOLUTION SATELLITE CONSTELLATION IN OPERATION

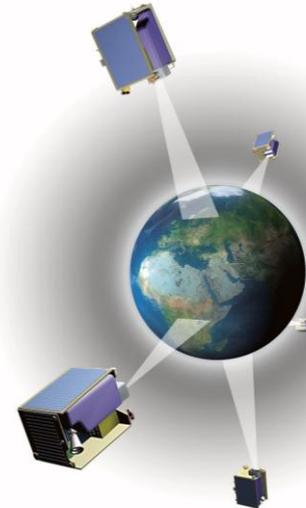
## RAPIDEYE SATELLITES SUCCESSFULLY LAUNCHED

In December 2008, the RapidEye Company has opened the image gallery on their website showing some of the first images taken by its new satellite constellation (<http://www.rapideye.de>). The constellation consists of five identical satellites that were successfully launched in August 2009. Each satellite is equipped with a multispectral camera system built by the Jena-Optronik GmbH, Germany. The cameras operate in five bands and provide images at 77 km width and a spatial resolution of 6.5 meters (see box for details).



**Fig.4: One of the first images from the RapidEye satellite CHOMA: Estuary of Aconcagua River, Chile (source: RapidEye)**

combines a large-area-coverage with a high revisit rate and a high spatial resolution. The expected mission life is 7 years.



**Fig. 5: Constellation of the five RapidEye satellites named: Tachys, Mati, Trochia, Choros and Choma**

Currently, the system commissioning and calibration phase is ongoing. According RapidEye the tuning of the system parameters is progressing very well. The images posted in the Image Gallery show the first results (<http://www.rapideye.de/products/gallery/>). It provides viewing access to six images from areas in North and South America with zooming capability, each covering 25 km x 25 km. By the end of the year, the company expects to start commercial operation. Then, radiometrically corrected and orthorectified demonstration datasets will be available for download at the company's website.

**More Information:**

RapidEye AG  
 Molkenmarkt 30  
 14776 Brandenburg, Germany  
[sales@rapideye.de](mailto:sales@rapideye.de)  
<http://www.rapideye.de/>

RapidEye satellite specifications		
Spectral bands	Blue	440-510 nm
	Green	520-590 nm
	Red	630-685 nm
	Red Edge	690-730 nm
	NIR	760-850 nm
Ground sampling distance	6,5 m	
Image pixel size (orthorectified)	5m	
Swath wide	77 km	
Revisit time	Daily	
Equator crossing	11:00 a.m.	

A unique feature of the camera system is the 'red-edge' spectral band that provides specific information about the chlorophyll content of plants. The five satellites revolve around the earth 15 times daily ensuring the collection of over 4 million km<sup>2</sup> of data daily and a daily revisit rate to any point on earth (fig. 5). Thereby, the satellite system

# PROGRESS AND NEXT STEPS FOR JOINT GOFC-GOLD AND CEOS CAL/VAL ACTIVITIES

## PLANS TO IMPLEMENT GLOBAL LAND COVER VALIDATION EXERCISE

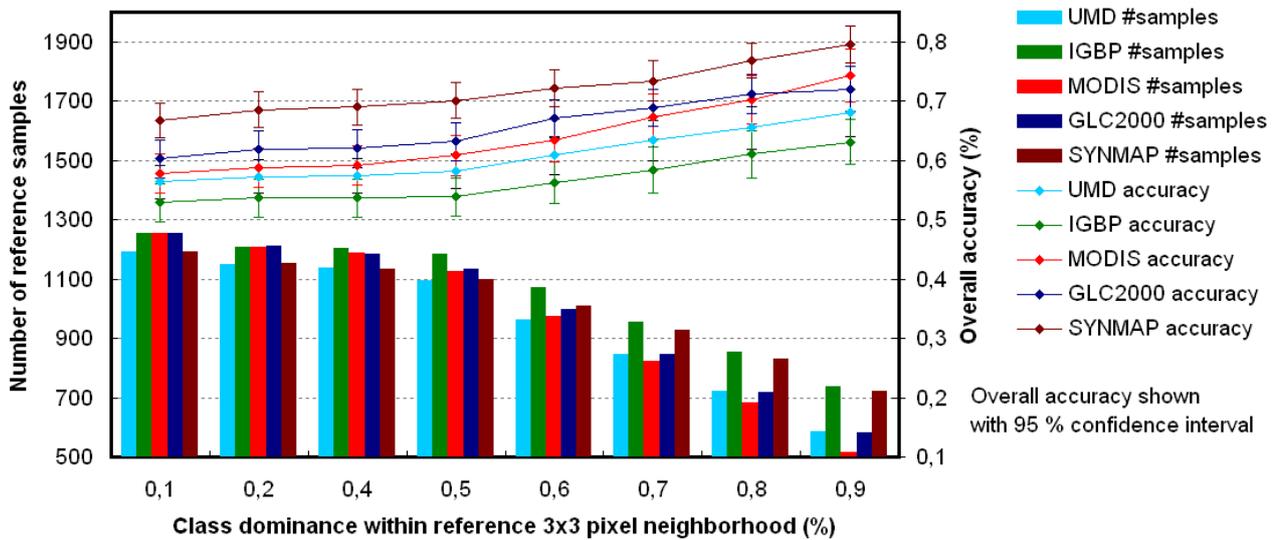
Several global and regional datasets have been derived in response to the need for worldwide and up-to-date information regarding land cover and related temporal dynamics. Although efforts in harmonization and validation are mentioned in nearly all related mapping projects as well as in many other circumstances, there is only limited compatibility and comparability between these different maps. The GOFC-GOLD land cover implementation team and the CEOS land validation subgroup have been working on developing and implementing a land cover harmonization and validation framework.

The CEOS Calibration Validation Working Group (CVWG) is one of the three standing working groups of the Committee on Earth Observation Satellites (CEOS). The objective of the

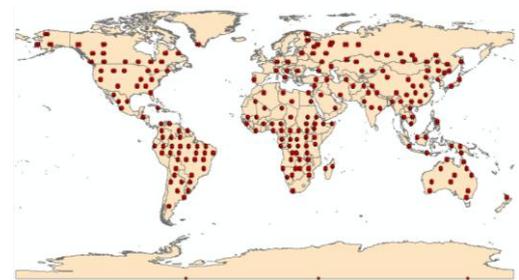
initiative is "to enhance coordination and complementarity, to promote international cooperation, and to focus activities in the calibration and validation of Earth observations for the benefit of the CEOS members and the international user community" (CEOS WGCV). The specific objective of the Land Cover Products subgroup is:

- 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

The joint activities between the CEOS Cal/Val group and the GOFC-GOLD land cover office have received a further push during the CEOS Cal/Val meeting 29. Sept-2.Oct in Avignon (<http://www.star.nesdis.noaa.gov/smcd/CEOS/WGCV29/>) and the 3<sup>rd</sup> GOFC-GOLD land cover symposium 13-17.Oct. in Jena (<http://www.gofc-gold.uni-jena.de/sites/Jena08.php>).

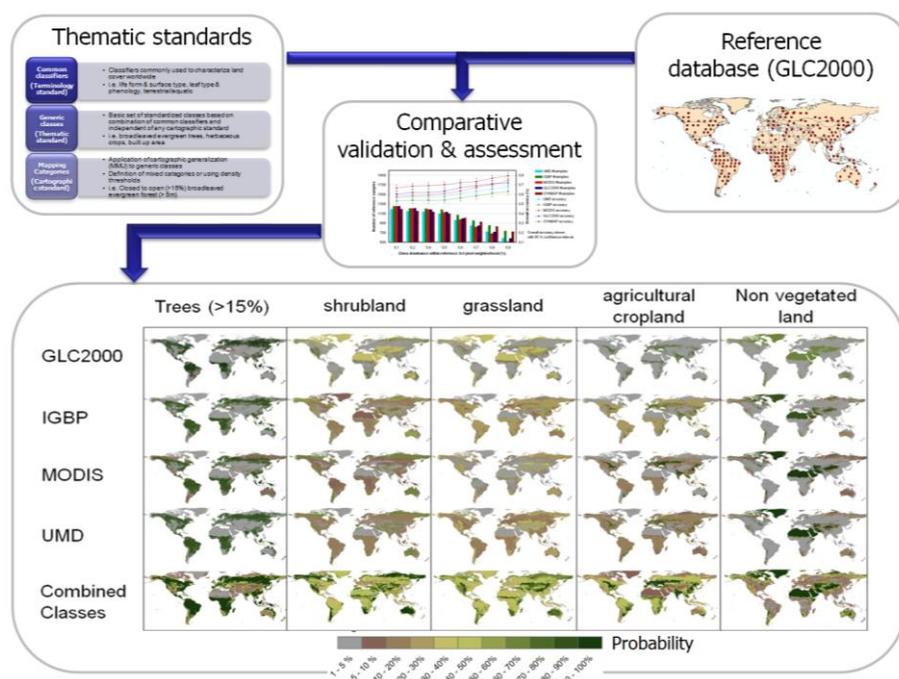


**Fig. 5: Comparative accuracy assessment based on GLC2000 reference database (2000, Source JRC) with 1253 secondary samples worldwide interpreted with Landsat data. All global land cover products have been translated and aggregated according to a generalized legend for 11 classes.**



The activities are driven by political initiatives and activities by the international community pushing observation progress and needs for validation. They include (for the case of land cover):

1. The United Framework Convention on Climate Change (UNFCCC) efforts to reduce uncertainties in monitoring the global climate system through observing essential climate variables (ECV), and in capacity building needs to address stronger role of developing countries in post-2012 agreement. Currently, significant investments are currently being allocated for REDD readiness and to develop national level forest monitoring in developing countries.
  2. The Group on Earth Observation and the related task on Global Land Cover (DA-07-02), aiming to provide a suite of global land cover datasets, initially based on improved and validated moderate resolution land cover maps and eventually including land-cover change at high resolution (task co-lead by USGS and GOFC-GOLD).
  3. Ongoing and evolving global land cover monitoring and assessment projects and programs such as GLOBCOVER and FAO's Forest Resources Assessment 2010 and their needs for sophisticated validation.
- Among the ongoing activities are the prototyping of comparative global land cover validation



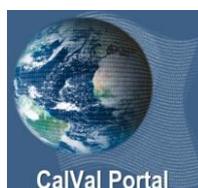
**Fig. 6: Deriving probability maps of individual map products and classes based on comparative validation towards a joint "best" map estimate.**

exercises using the existing GLC2000 reference database (Fig. 5 and 6). Such activities are technical precursors to the implementation of an operational global land cover validation system is key component of observing land cover as ECV. Such technical efforts are part of a number of near term priorities:

- Continued cooperation between GOFC-GOLD and the CEOS land Cal/Val subgroup and support of international projects,
- Utilize and make available existing global reference databases (i.e. from GLC2000 and GLOBCOVER projects),
- Define standard accuracy assessment for fine-scale land cover change and area estimates, in particular relevant for REDD implementation.
- Planning and foster implementation for an operational validation component of global land cover monitoring (i.e. ECV)
- Use of "application specific weighting" for accuracy reporting to link land cover observations to areas of societal benefits,
- Continued communication and dedicated contributions with political and policy level including the UNFCCC/SBSTA and GEO (work plan tasks) to ensure that efforts are salient (relevant and useful), legitimate (fair, transparent, involve international consensus and local experts), and credible (technically robust, consistent and continuous)



**CEOS Working Group on Calibration/Validation (Land Cover Products Subgroup):**  
<http://lpvs.gsfc.nasa.gov/>



**CEOS Cal Val Portal:**  
<http://calvalportal.ceos.org/>

# PROGRESS OF REDD WORKING GROUP

## UPDATE OF REDD SOURCEBOOK PRESENTED AT COP-14

During 2008, several UNFCCC methodological workshops on Reducing Emissions on Deforestation and forest Degradation (REDD) took place, e.g. in Tokyo (25-27 June), in Accra (21-27 August) and Bonn (20-21 October). Detailed information on these events are available on the new **UNFCCC REDD Web Platform**: [http://unfccc.int/methods\\_science/redd/items/4531.php](http://unfccc.int/methods_science/redd/items/4531.php). In response to these recent developments, the GOFC-GOLD REDD working group has reviewed and adopted the outline of the 2<sup>nd</sup> version of the REDD Sourcebook. New sections and topics will be included and have been deeply discussed during the related workshop at the 3<sup>rd</sup> GOFC-GOLD Symposium, in Jena.

### Outline of GOFC-GOLD REDD Sourcebook version 2

(New chapters marked in green)

#### 1 INTRODUCTION

- 1.1 Purpose and Scope of the Sourcebook
- 1.2 Issues and Challenges

#### 2 METHODOLOGICAL SECTION

- 2.1 Guidance on Monitoring of Changes in Forest Area (incl. reforestation)
- 2.2 Estimation of Carbon Stocks
- 2.3 Estimation of Soil Carbon stocks
- 2.4 Methods for estimating CO<sub>2</sub> Emissions from D. & D
- 2.5 Methods for estimating CO<sub>2</sub> Emissions from biomass burning
- 2.6 Estimation of uncertainties
- 2.7 Status of evolving technologies

#### 3 PRACTICAL EXAMPLES FOR DATA COLLECTION

- 3.1 Overview of annex-I GHG national inventories on LULUCF
- 3.2 Overview of existing forest area changes monitoring systems
- 3.3 National forest inventories
- 3.4 National carbon assessment through carbon budget model
- 3.5 Data collection at local / national level

#### 4 GUIDANCE ON REPORTING

version of the sourcebook will include chapters e.g. on soil carbon stock, biomass burning and evolving technology.

To inform about these progress, the GOFC-GOLD REDD working group has organized a side event on "**Monitoring REDD using the GOFC-GOLD Sourcebook: practical examples for data collection**" at COP-14, hosted by Papua New Guinea (PNG). With about 100 participants, the event was very well attended (fig. 6). During the first section, members of the team informed about the update process and new sections of the REDD Sourcebook. The second session addressed current capacity development activities, including workshops organized by the Coalition of Rainforest Nations (CfRN) and GTZ; the UN-REDD Programme and the Forest Carbon Partnership Facility. During the subsequent panel discussion representatives of several countries, the Global Environmental Facility and ESA were aboard to talk about ... All presentations are available at the UNFCCC website:

[http://regserver.unfccc.int/seors/reports/events\\_list.html](http://regserver.unfccc.int/seors/reports/events_list.html).



**Fig. 6: Panel discussion during PNG/GOFC-GOLD REDD Side event at UNFCCC COP-14 in Poznan on 3. December 2008.**

More than 50 participants attended the workshop in Jena. All presentations are available as pdf at the LC-IT website: <http://www.gofc-gold.uni-jena.de/sites/Jena08.php>. The next

### Two REDD Capacity Building Workshops in 2009

- **February 2009, Brazil:**  
Land Use Area Change Assessment
- **March 2009, India:**  
National Forest Inventory

The working group intends to finalise the second version in the first quarter of 2009 and present it at COP-15, in Copenhagen. Furthermore, several capacity-building workshops are planned.

### More information:

<http://www.gofc-gold.uni-jena.de/redd/>

## UPCOMING LAND COVER EVENTS

### EVENTS / CONFERENCES / WORKSHOPS in 2009

#### Undecided

##### **GTOS Steering Committee Meeting**

**Venue:** Paris, France

**Date:** 1st quarter of 2009

**Info:** <http://www.fao.org/gtos/>

##### **Amazon Basin Regional Network workshop**

**Venue:** Belem, Brazil

**Date:** 1st quarter of 2009

**Contact:** Carlos Souza ([souzajr@amazon.org.br](mailto:souzajr@amazon.org.br))

#### February

##### **GEO Workshop: Developing an Agricultural Monitoring System of Systems**

**Venue:** Beijing, China

**Date:** 11-13 February

**Info:** <http://www.cropwatch.com.cn/agrworkshop/>

##### **REDD Capacity Building Workshop: Land Use Area Change Assessment: The Experience of Existing Operational Systems**

**Venue:** Brazil

**Date:** 4-6 February

##### **GEO User Interface Committee meeting**

**Venue:** tbc., France

**Date:** 26-27 February 2009,

**Info:** <http://www.earthobservations.org/>

#### March

##### **Climate Change – Global Risks, Challenges & Decisions**

**Venue:** Copenhagen, Denmark

**Date:** 10-12 March 2009

**Info:** <http://climatecongress.ku.dk/>

##### **100<sup>th</sup> Anniversary of the German Society for Photogrammetry, Remote Sensing and Geoinformatics (DGPF)**

**Venue:** Jena, Germany

**Date:** 24-26 March 2009

**Info:** <http://www.dgpf.org/>

##### **REDD Capacity Building Workshop: National Forest Inventory: The Experiences of Non-Annex I Countries**

**Venue:** India

**Date:** March

##### **Land energy budget conference**

**Venue:** Beijing

**Date:** 18-20 March

**Info:** <http://www.landenergybudget.org/LED/default.htm>

**May**

**33<sup>rd</sup> International Symposium on Remote Sensing of Environment (ISRSE): Sustaining the Millennium Development Goals**

**Venue:** Stresa, Italy

**Date:** 4-8 May 2009

**Info:** <http://isrse-33.jrc.ec.europa.eu/>

**June**

**Global Vegetation Workshop 2009: Long term global monitoring of vegetation variables using moderate resolution satellites**

**Venue:** Missoula, USA

**Date:** 16-18 June 2009

**Info:** <http://www.ntsg.umd.edu/VEGMTG/>

Start for registration: 1 March 2009

**September**

**7<sup>th</sup> International Workshop of EARSeL SIG on Forest Fires: Advances in RS and GIS applications in Forest Fire Management**

**Venue:** Matera, Italy

**Date:** 2-5 September 2009

**Info:** <http://www.forestfire.ima.cnr.it/>

**October**

**XIII World Forestry Congress 2009**

**Venue:** Buenos Aires, Argentina

**Date:** 18-25 October 2009

**Info:** <http://www.wfc2009.org/en/index.asp>

**December**

**Fifteen session and Conference of the Parties of the UNFCCC (COP-15)**

**Venue:** Copenhagen, Denmark

**Date:** 7 December - 18 December 2009

**Info:** <http://www.cop15.dk/en/>

**Newsletter archives of related projects**

**GlobCover** Newsletter: <http://dup.esrin.esa.it/projects/summary68.aspT>

**GLCN** Newsletter (Global Land Cover Network): <http://www.glcnet.org/news/>

**CEOS** Newsletter (Committee on Earth Observation): <http://www.ceos.org/pages/newsletter.html>

**FRA-2010** Newsletter (FAO): <http://www.fao.org/forestry/52398/en/>

The ESA GOFC GOLD Land Cover Project Office Newsletter:

The Newsletter is distributed free of charge to all members listed in the ESA Land Cover Project Office database. To update your information, to subscribe or to be removed from our database, please contact us or visit the newsletter website:

<http://www.gofc-gold.uni-jena.de/sites/letter.php>

If you have any suggestions or recommendations for future contributions to this newsletter please feel free to contact us.

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