

GOFC-GOLD

Global Observation of Forest Cover and Land Dynamics



Land Cover
Project Office



European Space Agency
Agence spatiale européenne

GOFC-GOLD Land Cover Office in Europe: Priorities and Plans

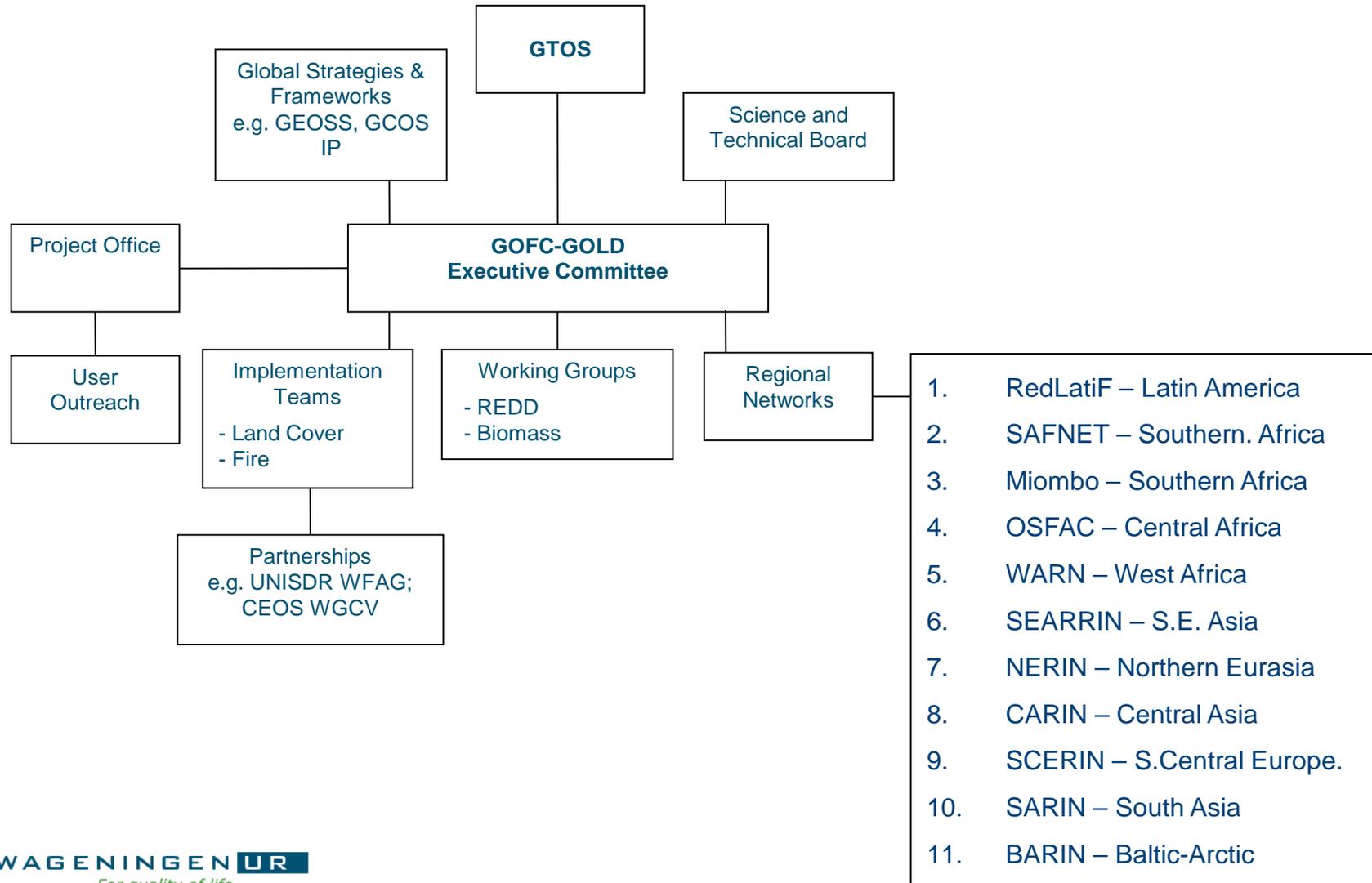
Brice Mora

NASA LCLUC Spring Science Team Meeting, Rockville, MD, April 23-25, 2014

Background to GOFC-GOLD

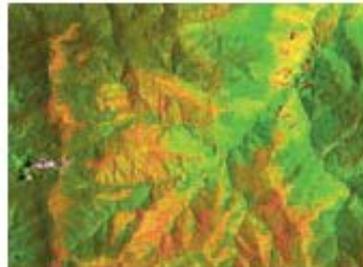
- Developed in 1997, originally under the Committee on Earth Observation Satellites (CEOS):
 - To test the concept of an Integrated Global Observing System (IGOS)
 - To improve use of Earth Observation data to address major problems of global concern
 - To improve coordination of national programs
 - To improve co-operation between providers and users of Earth Observation data for regional and global applications
- Has become one of the Panels of the Global Terrestrial Observing System GTOS (FAO GTOS Secretariat)
- Sponsors: FAO, WMO, UNEP, UNESCO, ICSU, EC-JRC, ESA, NASA, USGS

Background to GOFC-GOLD



GOFC-GOLD REDD+ Sourcebook

SOURCEBOOK



A sourcebook of methods and procedures for monitoring and reporting anthropogenic greenhouse gas emissions and removals associated with deforestation, gains and losses of carbon stocks in forests remaining forests, and forestation

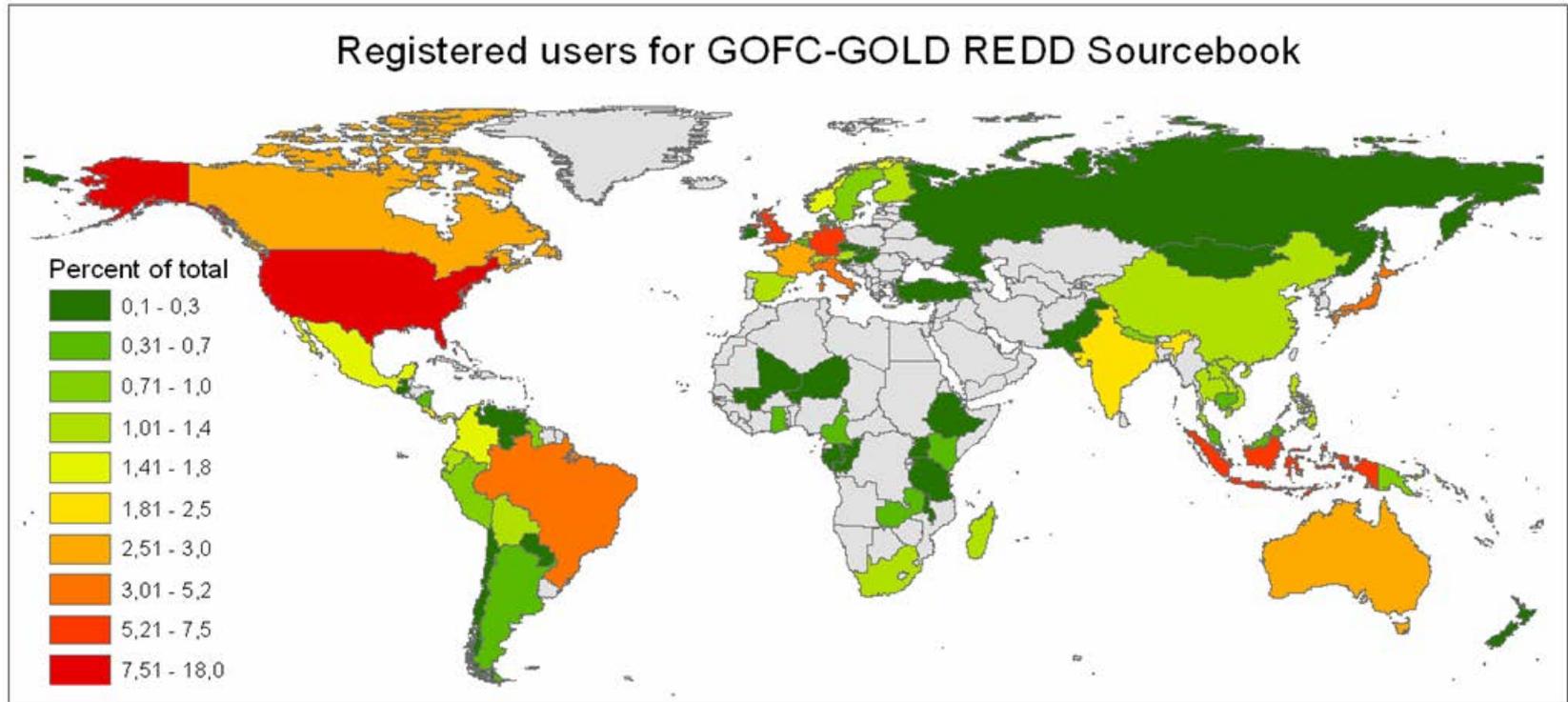
Latest version published in March 2014 (COP-19 V.2)



WAGENINGEN UR

for quality of life

GOFC-GOLD REDD+ Sourcebook

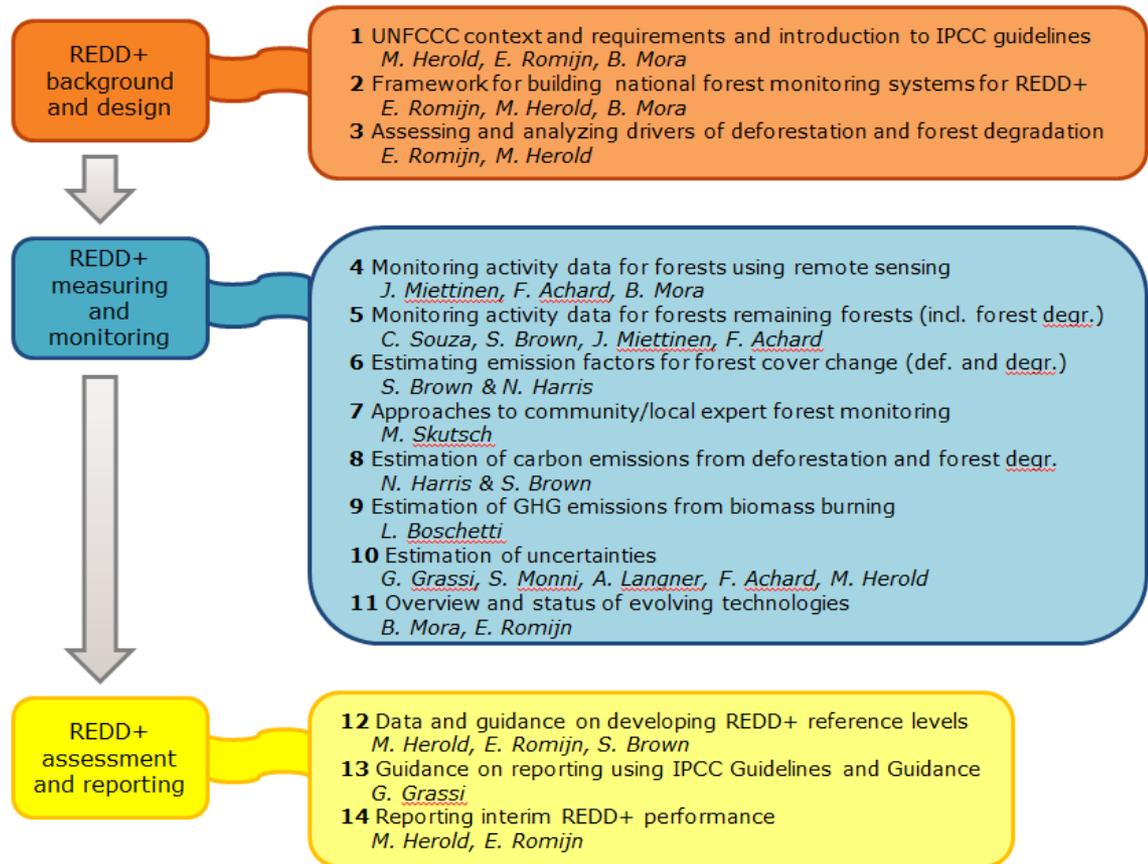


Quick facts about the Sourcebook:

- Last version released in March 2014 following COP-20
- Accessible from the GOFC-GOLD LC PO website (www.gofcgold.wur.nl/redd)
- Advertised to more than 3,500 persons (beyond registered user list) via GOFC-GOLD LC PO newsletters and social medias
- Cited in the literature

REDD+ Curriculum

- Developed with the World Bank FCPF
- Objective: provide learning and teaching material to enable countries to develop capacities and implement REDD+ monitoring and reporting.
- Set of 14 modules including lectures, country examples and practical exercises
- Follows structure of the sourcebook
- Available this summer (2014)



Background lectures

Module 1.2 Framework for building national forest monitoring systems for REDD+

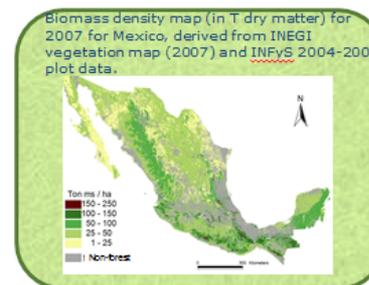
Module developers:
Erika Romijn
Marin Herold
Boris Mora

After the course the participants should be able to:

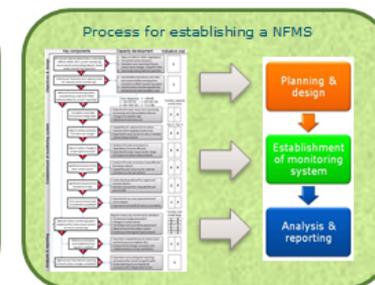
- Understand the needs and priorities of a national REDD+ policy and implementation strategy
- Assess and elaborate forest monitoring and reporting capacities of developing countries in different national circumstances
- Develop a roadmap for building sustained in-country capacities for REDD+ MRV

©2010-2012 training materials for REDD+ monitoring and reporting
Module 1.2 Framework for building national forest monitoring systems for REDD+

Country examples



Practical exercises

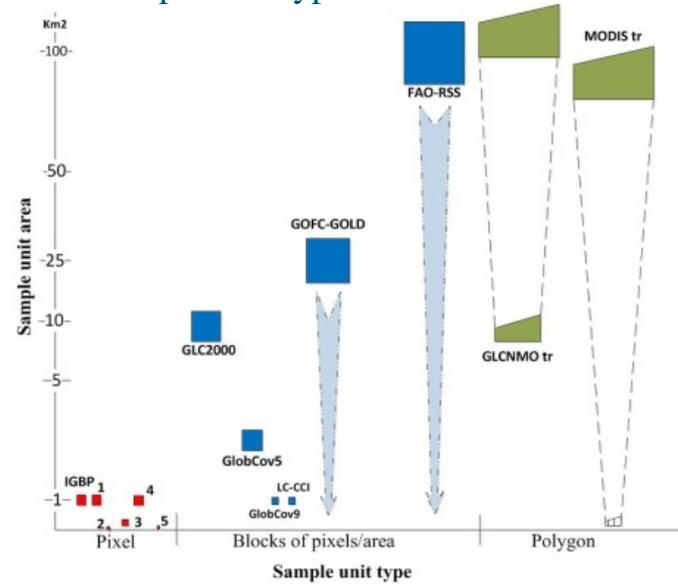


Global Land Cover Reference Datasets

Classification schemes of the datasets

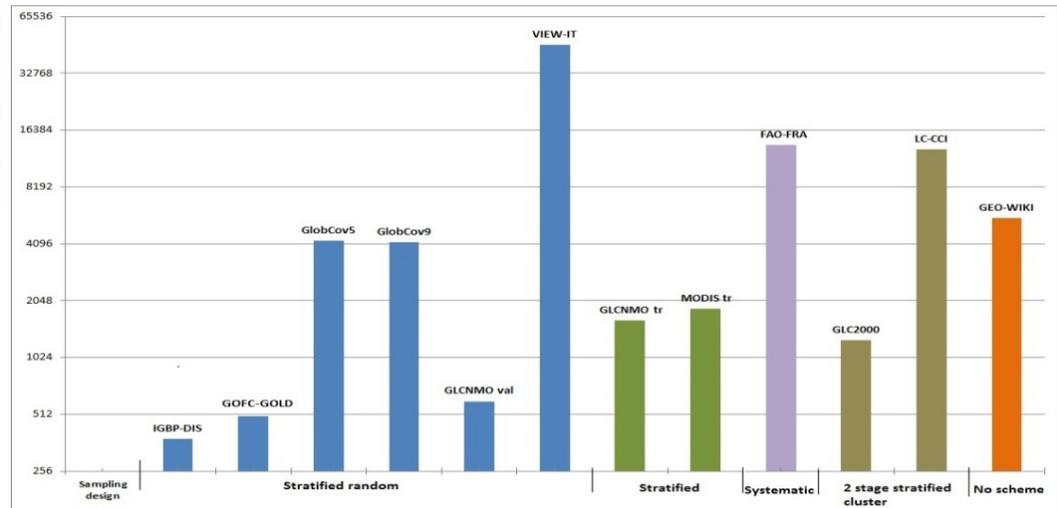
Datasets	IGBP	LCCS	Other	Number of classes
IGBP-DIS	✓			16
GLC 2000		✓		22
GlobCov5		✓		22
GlobCov9		✓		22
GLCNMO-val		✓		20
GLCNMO-tr		✓		14
MODIS-tr	✓			17
FAO-FRA		✓		9
LC-CCI		✓		22
GOFC-GOLD		✓		12
GEO-Wiki	✓	✓		17-22
VIEW-IT			✓	7

Sample unit type and size



1. GLCNMO v; 2. Geo-Wiki Globeover; 3. Geo-Wiki MODIS; 4. Geo-Wiki GLC2000; 5. View-IT

Sample selection scheme and sample size

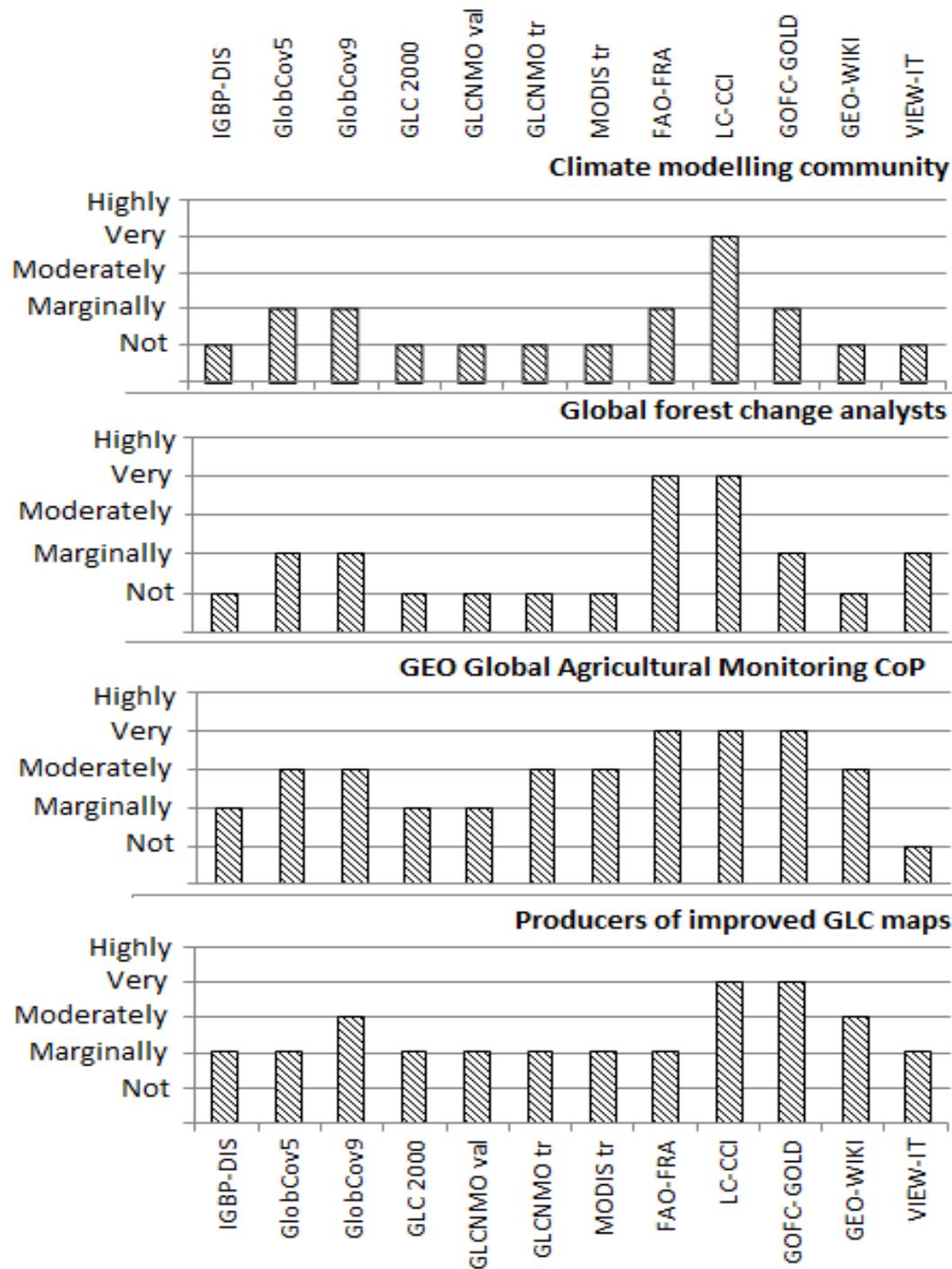


Suitability of GLCR

Datasets for Different Users

- The LC-CCI, GOFC-GOLD, FAO-FRA and Geo-Wiki datasets were generally more suitable for re-use than the other datasets.
- The analysed datasets are generally more suitable for agricultural monitoring and improving GLC maps.
- Climate modelling community and forest change analysis require stable multi-date sample which could not be met by many of the GLCR datasets.

Suitability



Access to GLCR Datasets

GOFC-GOLD reference data web portal:



Available datasets

Name	Sampling design	Sample size	Sample unit size	Source or reference data	Legend	Reference
GLC 2000	2 stage stratified cluster sampling	1265	3X3 pixels	Landsat 2000, aerial photographs, NDVI profile	LCCS 22 classes	Mayaux et al 2006
Glob Cover 2005	Stratified random sampling	4258	5X5 pixel	SPOT VGT-NDVI profile, Google Earth,	LCCS 22 classes	Defourny et al 2009
STEP	stratified	1780		Landsat, high and low resolution images (Google Earth)	IGBP 17 classes	Friedl et al., 2000 Sulla-Menashe et al., 2011
VIIRS	stratified random sampling	2500	1 km pixel	Google earth, VHSR images	IGBP 17 classes	BU

A Global Reference Database for Assessing Accuracy of Land Cover Maps

Pontus Olofsson, Curtis E. Woodcock, Christopher Holden, Mark A. Friedl and Damien Sulla-Menashe

*Dept of Geography and Environment, Boston University
675 Commonwealth Avenue, Boston, MA 02215, USA*

Stephen V. Stehman

*Dept of Forest and Natural Resources Management, State
University of New York, 1 Forestry Drive, Syracuse, NY 13210, USA*

Martin Herold

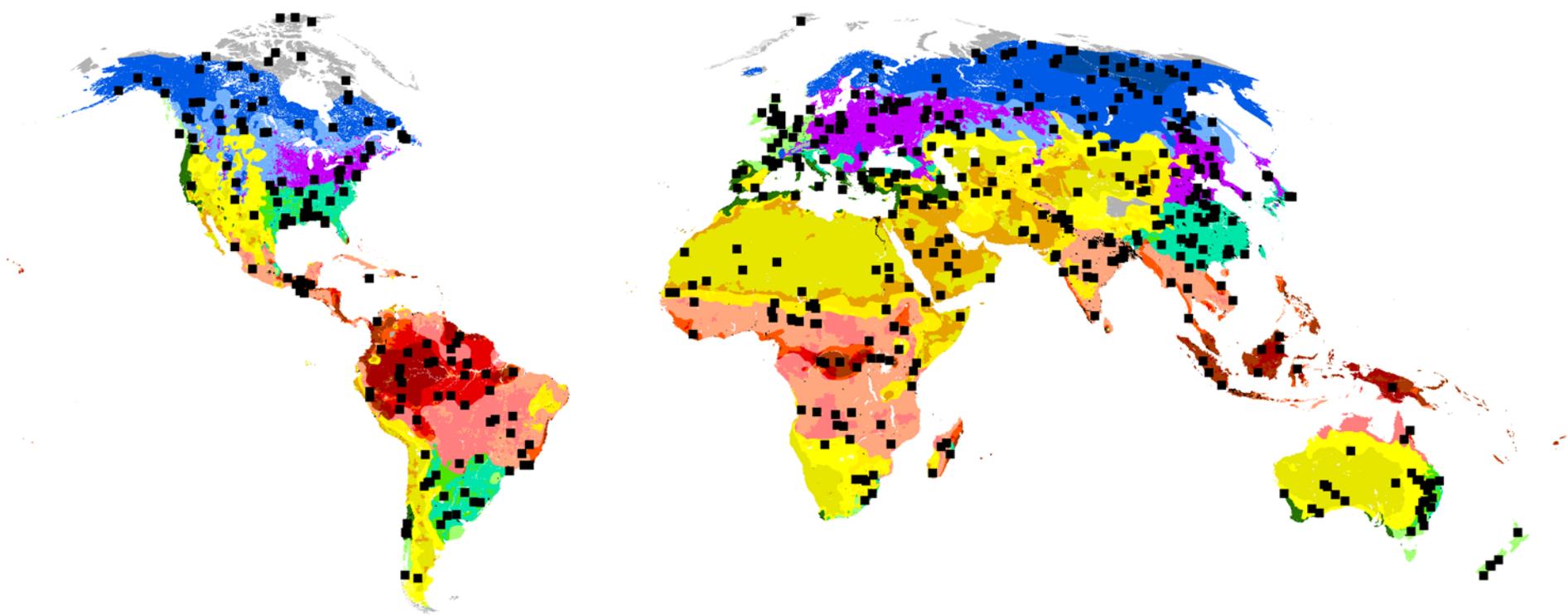
*Laboratory of Geo-Information Science and Remote Sensing,
Wageningen University, Droevendaalsesteeg 3 , Wageningen,
The Netherlands*

Chandra Giri and Tom Loveland

USGS

GOFC-GOLD / Boston U. VHSR Reference Dataset

Stratification and locations of 500 sample sites



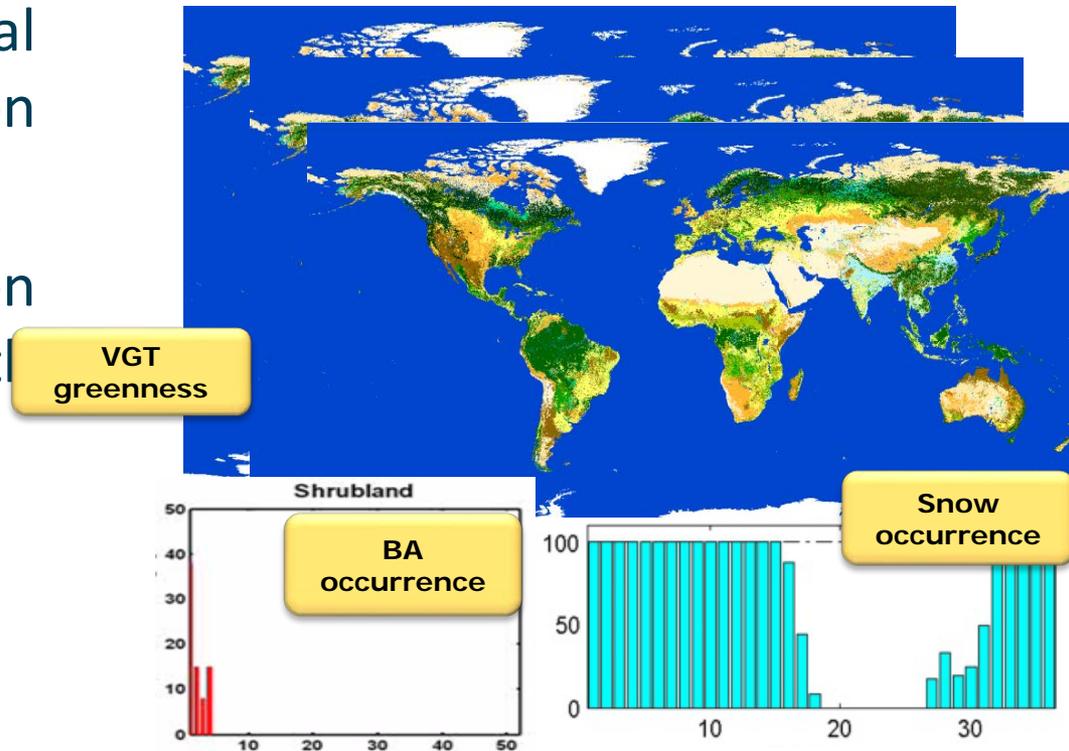
- | | | | |
|--------------------------|---------------------------|----------------------------|-----------------------------|
| Tropical Rainforest | pTropical Rainforest | Mediterranean | pTemperate Evergreen Forest |
| Tropical Seasonal Forest | pTropical Seasonal Forest | Temperate Evergreen Forest | pContinental Forest |
| Tropical Savannah | pTropical Savannah | Marine West-coast | Urban |
| Desert | pDesert | Continental Forest | Tundra |
| Steppe | pSteppe | Boreal Forest | Snow and Ice |
| | | | Cold Boreal Forest |

Support to ESA Land Cover Climate Change Initiative - Phase 2

- User requirement survey
- Reference data portal
- Engage GOFC-GOLD Regional Network in validation activities
- Online interface for validation exercises, partnerships with EC JRC, Geo Wiki

MERIS FR & RR 7-day composites SR time series from 2003 to 2012

3 LC state products for the 2000, 2005 and 2010 epochs





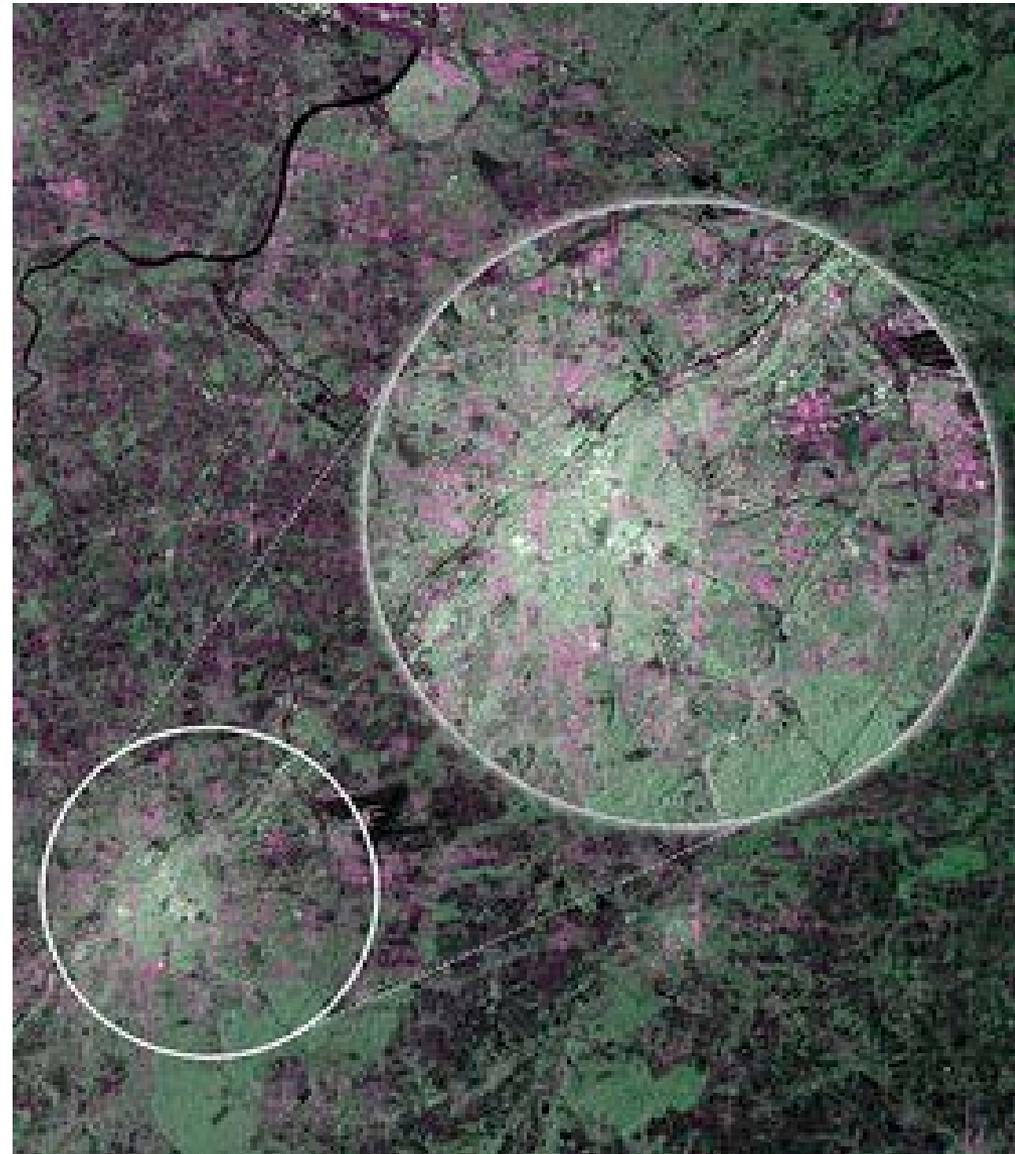
Remote Sensing to Support Biodiversity/ Conservation Initiatives: a New Sourcebook

- An initiative from GOFC-GOLD LC Office and the GEO BON, supported by CEOS Biodiv. Group, and START as sponsor
- To support objectives of UNCBD (Aichi targets), GEO BON (EBVs), IPBES
- Overlapping needs with the 'Carbon Community' (REDD+) in terms land cover information
=> synergies sought
- Inception workshop in London, UK on May 24



Copernicus Sentinel Missions

- Sentinel 1A launched on April 3 C band SAR
- Launch of 1B scheduled for 2016
- Free and open access data policy
- Applications in urban planning, agriculture monitoring, mapping deforestation, water resource management



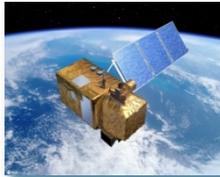
Copernicus Sentinel Missions



Sentinel 1 – SAR imaging

All weather, day/night applications, interferometry

2013 (A), 2014+ (B)



Sentinel 2 – Multispectral imaging

Land applications: urban, forest, agriculture,..
Continuity of Landsat, SPOT

2014 (A), 2015+ (B)



Sentinel 3 – Ocean and global land monitoring

Wide-swath ocean colour, vegetation, sea/land
surface temperature, altimetry

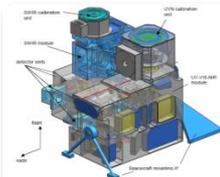
2014 (A), 2015+ (B)



Sentinel 4 – Geostationary atmospheric

Atmospheric composition monitoring, trans-
boundary pollution

2018



Sentinel 5 and Precursor – Low-orbit atmospheric

Atmospheric composition monitoring

2014 (5P), 2019



Free data policy

Summary

- Climate Change: REDD+, ESA Land Cover CCI user requirements, IPCC reports*
- Global Land Cover Mapping: GCOS ECV, validation data portal, GEO GLC&C Task Leader (SB-02)
- Biodiversity and Conservation: new sourcebook on RS methods
- Capacity development: REDD+ training material, GOFC-GOLD Regional Networks, Reports

Web Resources

- GOFC-GOLD:
<http://www.fao.org/gtos/gofc-gold/>
- GOFC-GOLD land cover project office:
<http://www.gofcgold.wur.nl/>
- GOFC-GOLD REDD sourcebook:
<http://www.gofcgold.wur.nl/redd>
- ESA Land Cover CCI
<http://www.esa-landcover-cci.org>



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Agence spatiale européenne

THANK YOU

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