

# **SOURCEBOOK FOR BIODIVERSITY MONITORING IN TROPICAL FOREST WORKSHOP**

by GOFC-GOLD LC Office and GEO BON

Supported by START

24<sup>th</sup> May 2014, London, UK

**SUMMARY REPORT**

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## OBJECTIVES

The objectives for the workshop were to:

- Discuss overall context of the sourcebook (UN Conventions, ...),
- Discuss the details of the document (key biodiversity indicators to monitor, structure),
- Refine the first outline accordingly,
- Discuss the level of detail with respect to the target audience,
- Assign leaders for the development of the different sections of the document,
- Agree on the time schedule for the completion of Phases 2 and 3, and
- Discuss opportunity to establish a R&D Plan to address gaps and needs.

## OUTCOMES OF PRESENTATIONS

- The user survey (N>500) on remote sensing (RS) for biodiversity and conservation by Martin Wegmann identified main obstacles to the use of RS: data and software costs, access, lack of software skills and training, lack of information, capacity to conduct proper accuracy assessment. Sometime people do not know what their needs are (lack of knowledge regarding UN Conventions) and what the best RS product are to meet their needs.

**=> There is a need to present RS data and methods, including good practices, in link with policy targets (UNCBD Aichi targets, EBVs, link with REDD+).**

- The Group on Earth Observations – Biodiversity Observation Network (GEO BON) is a global network that:
  - gathers and shares information on biodiversity, combining in-situ and remote sensing data
  - provides tools for data integration and analysis
  - contributes to improving environmental management and human well-being
- It is one of nine societal benefit areas of the Group on Earth Observations initiative and involves nine working groups and partnerships around the globe.
- It is developing a harmonized approach to global biodiversity observations and is taking both:
  - A Top-Down approach:
    - Focus on a reduced set of variables, indicators and methodologies (e.g. Essential Biodiversity Variables)
  - A Bottom-Up approach (e.g. regional and national capacity building – BON in a Box)

- Presented by Julia Latham, the ZSL-GIZ Sourcebook for biodiversity monitoring for REDD+ proposes a cross-scale framework for help setting up a monitoring system (define objectives, select indicators, implement, inform). Aims to find synergies between UNFCCC and UNCBD.
- This sourcebook would be a higher level, less technical sourcebook than what is proposed by GOFC-GOLD.
- It will be released as a printable format pdf in early July

**=> There is good complementarity between the proposed sourcebook (RS-tool oriented, beyond REDD+) and the ZSL-GIZ sourcebook (framework, REDD+ oriented).**

## KEY DISCUSSION POINTS

- **Purpose:** To guide biodiversity monitoring (including proxies and pressures) via remote sensing (RS) to inform national and sub-national policy and decisions, convention commitments and targets (largely focusing on ecosystem health and function),
- **Target Users:** Project managers and technical level practitioners in national, sub-national government agencies, academic institutions, NGOs, large FSC certified logging operators, large companies (e.g. Nestle, etc.) assuming the audience has a background on RS,
- **Focus:** RS techniques that have been calibrated and validated (and can be applied in other areas), integration of in situ and RS observations, present and discuss sampling approaches (e.g. upscaling from ground data),

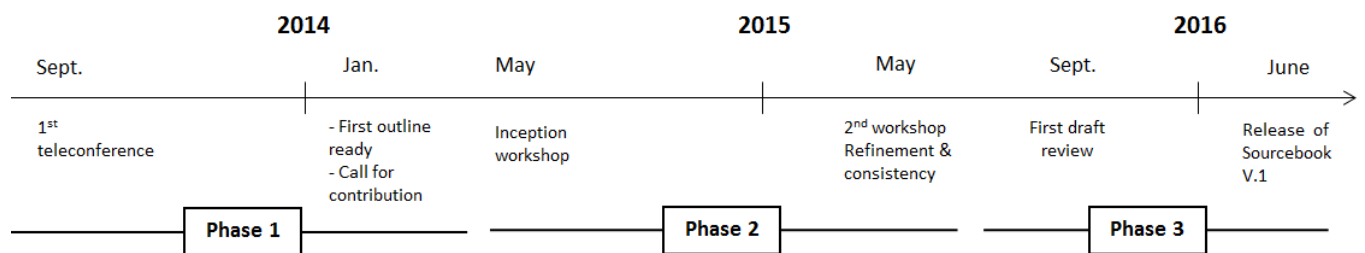
Should consider evolving technologies but in a shorter section. Should list available datasets (in situ and RS), field based-only methods out of the scope, tropical forests should include following ecosystems: rain forests, dry forests, mangroves, wetlands, peat swamps, savannah including miombo woodlands,

- **Approach:** Feasible, sustainable operational peer-reviewed method options focusing on a few key variables with simple methods that can be easily implemented (but with more ambitious, robust options also presented), multi-scale, include what sensors can and cannot tell you, include training opportunities/sources, taking a hierarchical, decision-tree approach, discuss pros and cons (including costs), structured around relevant Essential Biodiversity Variables (EBVs)

Bottom-up approach: GEO BON's BON (Biodiversity Observation Network) in a box concept (sourcebook could be a tool in the box),

- **Other points:** Include glossary (tropical forests, biodiversity), clearly articulate purpose and focus and definition of biodiversity (e.g. EBVs) in introduction (noting that most EBVs are not covered by RS), using concrete peer reviewed examples, include expert contact list by topic?, have an Executive Summary for senior officials/decision-makers (indicating how the sourcebook will lead to better information to make decisions (e.g. Aichi Targets), foster regional collaboration, colocation of field campaigns biodiversity/carbon monitoring (e.g., West Africa case), list regional biodiversity networks, provide information on stakeholders (practitioners, donors, international local networks) for each EBV: use VantagePoint?; consider how to target main users (E.g. engagement strategy); need to consider how to link to carbon monitoring activities and how to connect to land managers (e.g. large logging FSC certified concession operators).
- **Medium/format:** Live document on the internet (need resources to maintain) that can be printed and translated (French, Spanish, English); a web portal of relevant resources? Could consider development of training materials and a R&D plan (to identify gaps and needs) on a midterm perspective.

## TIMELINE OF THE PROJECT



## TASK LIST

- Refine the outline of the sourcebook (see current outline below)
- Identify leaders for the development of the sections
- Invite key persons to contribute to the development, ensuring representation of key networks/institutions (e.g., IUFRO, IPBES)
- Tentative progress meeting as side-event of ISRSE Symposium <http://www.isrse36.org/>

## OUTLINE OF THE SOURCEBOOK

**Note:** Main sections should start with a sub-section presenting its scope, and be concluded by a list of references specific to the section. The methods reported should be supported by peer-reviewed literature accessible to the scientific community. For clarity the scope and reference sub-sections are not mentioned below.

1. Introduction
  - 1.1. Purpose and scope of the sourcebook  
Why this sourcebook, target audience, selection of key EBVs and link with Aichi Targets and national policies, link between EBVs and national reporting, synergies with REDD+, key definitions (biodiversity, tropical forest, use habitat classification schemes)
  - 1.2. Structure of the sourcebook
2. Monitoring key EBVs with remote sensing (synthetic/general information, study cases)
  - 2.1. Introduction
  - 2.2. Vegetation phenology
    - 2.2.1. Leaf Area Index (LAI)
    - 2.2.2. Fraction of Absorbed Photosynthetically Active Radiation (fAPAR)
  - 2.3. Net primary productivity
  - 2.4. Ecosystem composition by functional type
  - 2.5. Ecosystem extent and fragmentation
  - 2.6. Habitat structure
  - 2.7. Disturbance regime (burned areas, vegetation condition index, vegetation productivity index),
  - 2.8. Summary (include table providing appropriate RS methods that can serve different EBVs linked to policy requirements: will refer to sub-sections in section 3)
3. Guidance on using remote sensing data and methods (discuss pros & cons, adequacy, study cases)
  - 3.1. Available Earth observation data (list of platforms and sensors, availability, operational level, guidance on how to choose appropriate data sets) and map products (GlobCover, LC CCI, ...)
  - 3.2. In-situ data: definitions and approaches (for use with RS data, sampling design, discuss cost efficiency, use of ground remote sensing (e.g., TLS))
  - 3.3. Mapping forest extent
  - 3.4. Monitoring changes in forest extent
  - 3.5. Good practices for accuracy assessment
  - 3.6. Habitat fragmentation and connectivity (estimation, monitoring)
  - 3.7. Forest species mapping (discuss seasonality in this section)

- 3.8. Species distribution modeling (for both floral and faunal diversity)
4. Emerging techniques
  - 4.1. Earth Observation missions (products specifications, data access policy)
  - 4.2. Airborne sensors (hyperspectral, lidar, including UAVs)
  - 4.3. In-situ data acquisition tools and opportunities for data integration (smartphones, TLS)
5. Drivers of biodiversity loss
6. Community-based monitoring (experiences)
7. Regional biodiversity networks (lists by continent, contact points, websites)
8. Synergies between biodiversity monitoring with REDD+ activities
  - 8.1. Fieldwork
  - 8.2. Map products



## PARTICIPANTS

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## AGENDA

<b>Saturday, 24.05.2014</b>		
<b>General session</b>		<b>Presenters</b>
09.00- 10.00	Introduction, rationale of the sourcebook	B. Mora
	Outcomes of user survey (RS for biodiversity)	M. Wegmann
	Presentation of the GOFC-GOLD and GEO BON general objectives and main activities	B. Mora - M. Gill
	Presentation of the ZSL-GIZ Sourcebook project	J. Latham
<i>10.00-10.15 Break</i>		
10.15- 12.15	Discussion (scope, sections, work plan, coordination)	All
<i>12.15-13.30 Lunch</i>		
13.30- 14.30	Discussion (scope, sections, coordination, work plan)	All
<b>Break out groups</b>		
14.30- 15.30	To be organized by main sections (identify section leaders, refine outline and content)  Part. 1	All
<i>15.30-16.00 Break</i>		
16.00- 17.00	Part. 2	All
<b>Wrap up session</b>		
17.00- 17.30	Define action items, coordinate next steps	All
<i>17.30 Adjourn and informal discussions</i>		