

Informing Species Distribution Models and Essential Biodiversity Variables using Remote Sensing

Workshop organized by ESA's GlobDiversity and Future Earth's Global Mountain Biodiversity Assessment, bioDISCOVERY and Global Land Programme

5-9 Feb. 2018, University of Zurich, Switzerland

The ESA GlobDiversity consortium and Future Earth's Global Mountain Biodiversity Assessment GMBA jointly organize a workshop on the **use of remote sensing for biodiversity assessments with foci on**

- Species Distribution Modeling (Part I, 5-7 Feb, GMBA) and
- Essential Biodiversity Variables (Part II, 7-9 Feb, GlobDiversity).

Species Distribution Models (SDM) have become a powerful tool in relating species observational data to land cover, land use, climate and other environmental conditions. Applications include projections of future species distribution, habitat fragmentation and range shifts under the drivers of global change. Remote sensing contributes, for instance, to the detection of invasive species, functional trait diversity, mapping of ecosystem extent, ecosystem functions and services and to mapping land change. The goals pursued by the SDM and EBV communities are highly synergetic and both benefit from recent developments in Earth observation, which provides the basis for the workshop.

Understanding patterns of biodiversity, predicting potential changes in response to drivers of global changes, and developing sustainable biodiversity management and conservation strategies are urgent necessities in line with the Convention for Biological Diversity Aichi targets and the United Nations' Agenda 2030. Monitoring biodiversity has therefore made a leap forward and recent efforts resulted in suggestions for measurable variables that are deemed essential for studying, reporting, and management of changes in global biological diversity (Pereira et al. 2013). It is the goal of ESA's GlobDiversity project to **short-list and prioritize EBVs** that can be informed by remote sensing (Skidmore et al. 2015) and to **test methodological approaches** for a selection of variables.

The first part of the workshop aims at **identification of remote sensing data and products that inform species distribution models**, including assessment of uncertainties and future steps. The second part focuses on **observation requirements for selected remotely sensed EBVs** that are informed by satellites. Specific observational approaches will be discussed for three EBVs (i.e., fragmentation, land-surface phenology and canopy chlorophyll content). This discussion includes links between ecological processes and functional diversity, as well as required indicators and properties.

The workshop is hosted at the University of Zurich.

For further questions, please contact info@globdiversity.net

Overview Program:

Time/Date	5 Feb. 18	6 Feb. 18	7 Feb. 18	8 Feb. 18	9 Feb. 18
8:30 – 12:30	Arrival participants	P1: SDM Group Work	P1: SDM Plenary Discussion and Summary	P2: EBV Break-out sessions	P2: EBV Plenary Discussion and Summary
14:00 – 18:30	P1: SDM Welcome & Keynote talks		P2: EBV Welcome & Keynote talks		Departure participants

Venue:

University Zurich, Campus Irchel, Department of Geography

From the airport:

The campus can be reached directly (no transfer required) using tram number 10 (bound for 'Bahnhofplatz / HB'). The two tram stops 'Milchbuck' and 'Irchel' are closest to the Irchel campus of the University of Zürich. The tram ride from the airport takes about 20 minutes.

Confirmed participants (Status 15 Dec. 2017)

Last Name	First Name	Affiliation
Ali	Abebe	University of Twente ITC, NL
Alpin	Paul	University of Nottingham, UK
Billing	Maik	University of Potsdam, GER
Cavender-Bares	Jeannine	University of Minnesota, USA
Coomes	David	University of Cambridge, UK
de Jong	Rogier	University of Zurich
Fernandez	Nestor	GEO BON Valencia, ESP
Jetz	Walter	Yale University, USA
Litsios	Glenn	BAFU/FOEN, CH
Moorcroft	Paul	Harvard University, USA
Mucher	Sander	Wageningen University and Research, NL
O'Connor	Brian	WCMC, UK
Rösli	Claudia	University of Zurich
Schaepman	Michael	University of Zurich
Schimmel	David	NASA, USA
Thornicke	Kirsten	Potsdam Institute for Climate Impact Research, GER
Van de Kerchove	Ruben	Vito, BE
Verburg	Peter	Vrije Universiteit Amsterdam, NL
Wang	Tiejun	University of Twente ITC, NL
Woodcock	Paul	Joint Nature Conservation Committee, UK

Preliminary Program Workshop Part II ***“Essential Biodiversity Variables using Remote Sensing”***

Wednesday February 7, 2018
(Public)

- 11:15-12:00 **Keynote talk by Jeannine Cavender-Bares** (Univ. of Minnesota):
Topic: How can RS-enabled EBVs contribute to SMD
- 12:00-13:30 *Lunch*
- 13:30-14:15 **Welcome & Introduction to GlobDiversity**
M. Schaepman, R. de Jong, C. Rösli
- 14:15-15:00 **Keynote lecture David Schimel** (JPL, NASA)
Topic: sampling design and bias in regional and global biodiversity studies
- 15:00-15:30 *Coffee break*
- 15:30-16:15 **Keynote lecture Paul Moorcroft** (Harvard University)
Topic: tbc
- 16:15-17:00 **Keynote lecture Nestor Fernandez (GEO BON)**
Topic: GEO BON visions on key aspects of EBV selection, production, and mainstreaming
- 17:00-18:00 Panel Discussion
Topic: How can RS-enabled EBVs inform about global biodiversity
- 19:00 *Dinner*

Thursday February 8, 2018
(Break-out sessions, room Y25-H-79)

- 08:30-09:00 Introduction to the objectives of the break-out sessions
- 09:00-11:30 Break-out sessions (including coffee break) Part I:
Topic: Observation requirements for RS-enabled EBVs
Fragmentation, Canopy Chlorophyll Content, Land Surface Phenology
- 11:30-13:00 **Reporting and Plenary Discussion on Part I**
- 13:00-14:15 *Lunch*
- 14:15-14:30 Introduction to the objectives of break-out session part II
- 14:30-16:30 Break-out sessions (including coffee break) Part II:
Topic: Best observational approaches for the RS-enabled EBVs and verification and validation strategies
Fragmentation, Canopy Chlorophyll Content, Land Surface Phenology
- 16:30-18:00 **Reporting and Plenary Discussion on Part II**

Friday February 9, 2018
(Plenary sessions, room Y25-H-79)

08:30-10:30	Discussion: <i>Topic: Contribution of RS-enabled EBVs to inform on biodiversity</i> Fragmentation, Canopy Chlorophyll Content, Land Surface Phenology
10:30-10:00	Coffee break
11:00-12:00	Plenary discussion: Wrap up and Conclusion Part I & Part II
12:00-12:30	Outlook and Closing words
12:30	Lunch

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