

## Remote Sensing for Essential Biodiversity Variables

Andrew Skidmore <sup>a</sup>, Martin Wegmann <sup>b</sup>, Sander Mucher <sup>c</sup>, Nathalie Pettorelli <sup>d</sup>, Tiejun Wang <sup>a</sup>

<sup>a</sup> Faculty of Geo-Information Science and Earth Observation of the University of Twente - a.k.skidmore@utwente.nl

<sup>b</sup> Department of Remote Sensing, University of Wuerzburg in cooperation with German Aerospace Center (DLR), Earth Observation Center, German Remote Sensing Data Center – martin.wegmann@uni-wuerzburg.de

<sup>c</sup> Alterra - Earth observation and environmental informatics - sander.mucher@wur.nl

<sup>d</sup> Zoological Society of London - [Nathalie.Pettorelli@ioz.ac.uk](mailto:Nathalie.Pettorelli@ioz.ac.uk)

### THEME: BIOD 4

**KEY WORDS:** EBV, Essential Biodiversity Variable, RS4EBV, monitoring, biodiversity

### ABSTRACT:

EBVs attempt to describe a discrete set of essential variables for describing and monitoring biodiversity. The concept of Essential Biodiversity Variables (EBVs) aims to define those variables which are key to track changes in biological diversity at all spatial scales, including information such as changes in plant and animal community composition and structure. Traditionally ecologists have relied on field surveys that are laborious, cover relatively small extents and short temporal periods to track biodiversity changes. Yet ecosystems are degrading rapidly due to the combined effects of anthropogenic (e.g., fragmentation) and climatic disturbances. Effective monitoring of rapidly changing ecosystems requires efficient and effective methods that allow covering extensive areas at a fine spatial resolution and with a high temporal frequency. Remote sensing imagery provides interesting solutions. It is indeed possible to directly measure and monitor some EBVs using Remote Sensing, and to place this in the context of ecological theory. However there is no commonly agreed set of EBVs which are based on remote sensing. Such a list of RS-EBVs is highly relevant for data providers and biodiversity researchers to ensure a standardized set of RS-EBVs providing globally continuous spatio-temporal information. The conceptual approach for using remote observation systems to measure and monitor Essential Biodiversity Variables (EBVs) has been explored during two workshops. The first workshop reviewed the background to the use of Remote Sensing for these Essential 'Earth' Variables and designed interdisciplinary case studies. Studies within this workshop analyzed the impact of scale (grain, extent) as well temporal and thematic resolutions in order to define the limitations of remote sensing for EBV monitoring. The second meeting follows up on these findings and focuses on the developments needed from space agencies and biodiversity research institutes for implementing a successful EBV monitoring program based on remote sensing information (RS-EBV). The results of these workshops are reported here.