

## Conference Abstract

# Building Essential Biodiversity Variable netCDFs with the ebvcube R Package

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## Abstract

The concept of [Essential Biodiversity Variables](#) (EBVs) was conceived to study, report, and manage biodiversity change. The EBV netCDF structure was developed in order to support publication and interoperability of biodiversity data. This standard is based on the [Network Common Data Format](#) (netCDF). Additionally, it follows the [Climate and Forecast Conventions](#) (CF, version 1.8) and the [Attribute Convention for Data Discovery](#) (ACDD, version 1.3).

The standard allows several datacubes per netCDF file (see Fig. 1). These cubes have four dimensions: longitude, latitude, time and entity, whereby the last dimension can, for example, encompass different species or groups of species, ecosystem types or other aspects. The usage of hierarchical groups enables the coexistence of multiple EBV cubes (see Fig. 2). The first level (netCDF group) are scenarios, e.g., the modelling for different [Shared Socioeconomic Pathways \(SSP\)](#) scenarios. The second level (netCDF group) are metrics, e.g., the percentage of protected area per pixel and its proportional loss over a certain time span per pixel. All metrics are repeated per scenario, if any are present. The result is a rather complex raster dataset (see example dataset in Fig. 3).

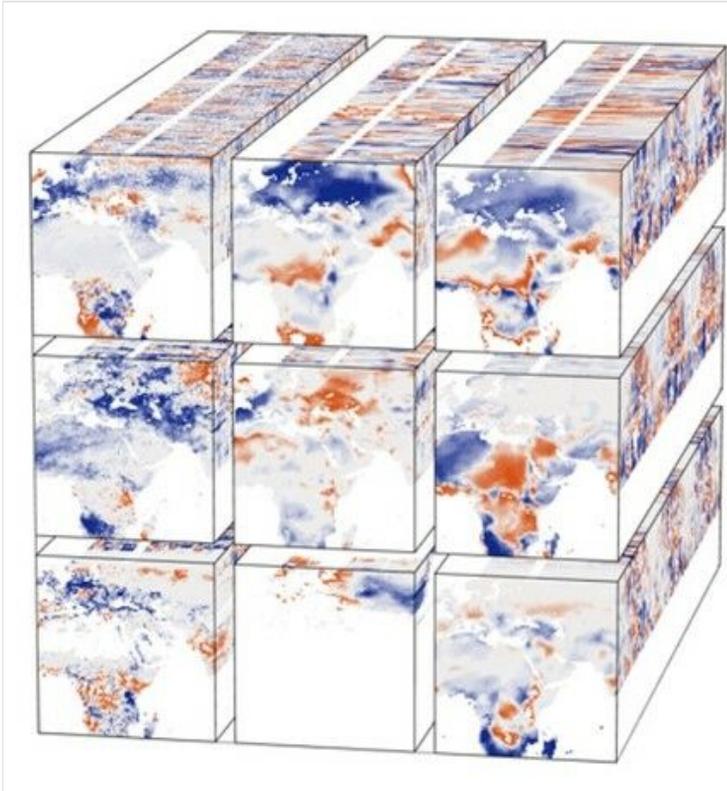


Figure 1. Abstract visualization of the EBV cube (Mahecha 2017, [License CC BY 4.0](#)).

```
ebv-dataset
├── global attributes
├── dimensions [lon, lat, time, entity]
├── (coordinate) variables
├── metric_1
│   ├── group attributes
│   └── ebvcube [lon, lat, time, entity]
│       └── datacube attributes
```

(a)

```
ebv-dataset
├── global attributes
├── dimensions [lon, lat, time, entity]
├── (coordinate) variables
├── scenario_1
│   ├── group attributes
│   ├── metric_1
│   │   ├── group attributes
│   │   └── ebvcube [lon, lat, time, entity]
│   │       └── datacube attributes
│   ├── metric_2
│   └── ...
├── ...
├── scenario_2
└── ...
```

(b)

Figure 2. EBV netCDF hierarchical data structure: (a) shows the structure of a minimal dataset and (b) shows the structure of an exhaustive dataset.



## Presenting author

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## References

- Mahecha M (2017) Earth System Data Cube. figshare. Figure. <https://doi.org/10.6084/m9.figshare.4822930.v2>