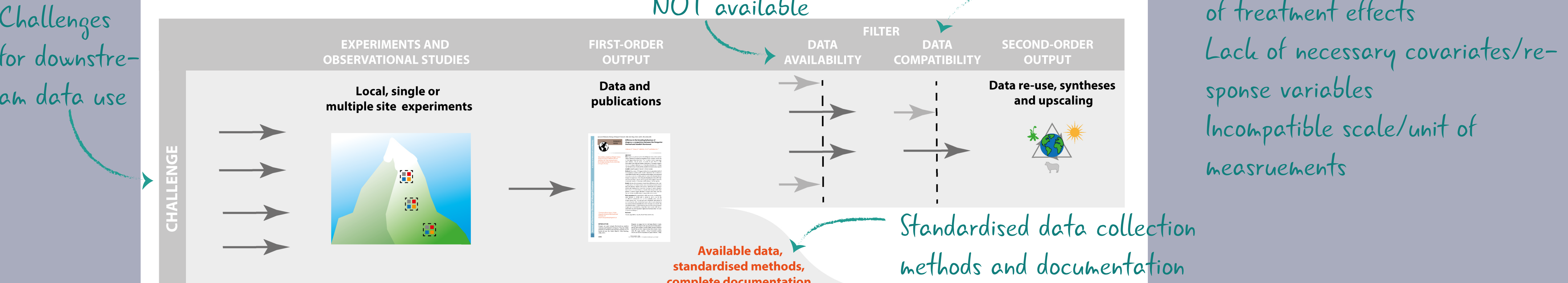




The handbook for standardised field measurements in terrestrial global-change experiments

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An increasing number of climate-change studies is creating new opportunities for meaningful and high-quality generalisations and improved process understanding. However, significant challenges exist related to data availability and/or compatibility across studies, compromising opportunities for data re-use, synthesis, and upscaling. Many of these challenges relate to a lack of an established “best practice” for measuring key impacts and responses. This restrains our current understanding of complex processes and mechanisms in terrestrial ecosystems related to climate change.



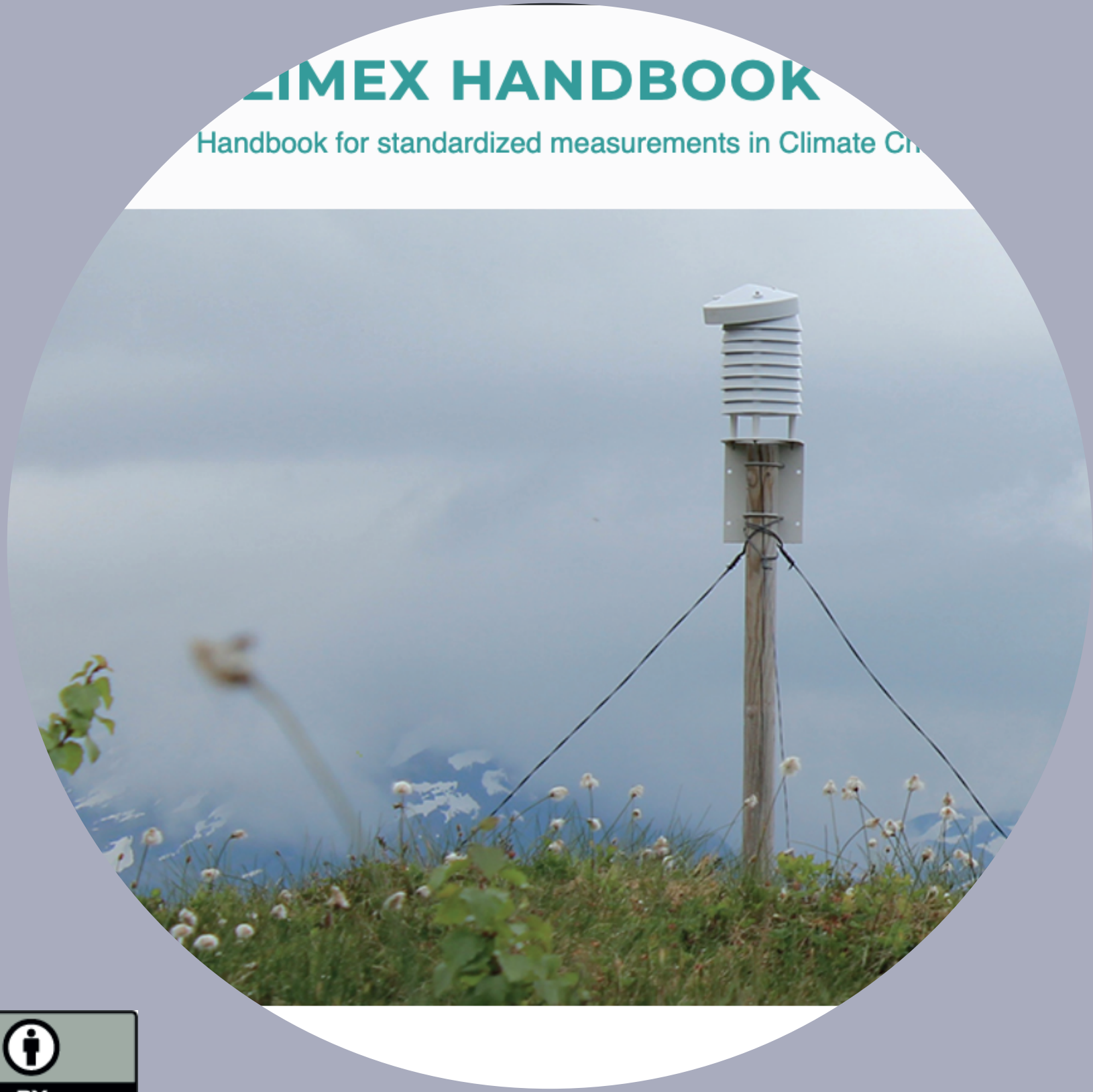
We, 115 experts, collected best-practice methods emerging from major ecological research networks and experiments. Our handbook contains guidance on the **selection of response variables** for different purposes, **protocols for standardised measurements of 66 such response variables**, and **advice on data management**. Specifically, we recommend a minimum subset of variables that should be collected in all climate-change studies to allow data re-use and synthesis, and give guidance on additional variables critical for different types of synthesis and upscaling.

1.3	Soil chemistry
1.4	Soil microbiology
1.5	Meteorological measurements
1.6	Open science practice, data management
2. Carbon and nutrient cycling	
2.1.1	Above-ground plant biomass
2.1.2	Below-ground plant biomass
2.1.3	Leaf-scale photosynthesis
2.1.4	Plant respiration
2.1.5	Root exudation (in situ)
2.1.6	Foliar stoichiometry and nutrient use
2.2.1	Soil microbial biomass – C, N, and P
2.2.2	Root and soil colonization by mycorrhizae
2.2.3	Soil CO ₂ (and other trace gas) fluxes
2.2.4	Soil carbon and nutrient stocks
2.2.5	Nutrient mineralization
2.2.6	Foliar litter decomposition
2.2.7	Root decomposition
2.2.8	SOM decomposition
2.2.9	Soil leachate

The goal of this community effort is to facilitate awareness of the importance and broader application of standardised methods to promote data re-use, availability, compatibility, and transparency. We envision improved research practices that will increase returns on investments in individual research projects, facilitate second-order research outputs, and create opportunities for collaboration across scientific communities. Ultimately, this should significantly improve the quality and impact of the science, which is required to fulfil society’s needs in a changing world.

ClimEx Handbook webpage
<https://climexhandbook.w.uib.no/>

Get engaged?



We want to ensure that the ClimEx Handbook will also be a useful resource for the community in the future. Comments and suggestions for updating the protocols are welcome.

If you want to get engaged in the ClimEx Handbook send an email to climexhandbook@uib.no