Uncertainty assessment tool for climate change impact indicators

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A major difficulty in the study of climate change impact indicators is dealing with the numerous sources of uncertainties of climate and non-climate data . Its assessment, however, is needed to communicate to users the degree of certainty of climate change impact indicators.

This communication of uncertainty is an important component of the FP7 project "Climate Information Portal for Copernicus" (CLIPC). CLIPC is developing a portal to provide a central point of access for authoritative scientific information on climate change. In this project the Climate Service Center 2.0 is in charge of the development of a tool to assess the uncertainty of climate change impact indicators.

The calculation of climate change impact indicators will include climate data from satellite and in-situ observations, climate models and re-analyses, and non-climate data. There is a lack of a systematic classification of uncertainties arising from the whole range of climate change impact indicators. We develop a framework that intends to clarify the potential sources of uncertainty of a given indicator and provides - if possible - solutions how to quantify the uncertainties.

To structure the sources of uncertainties of climate change impact indicators, we first classify uncertainties along a 'cascade of uncertainty' (Reyer 2013). Our cascade consists of three levels which correspond to the CLIPC meta-classification of impact indicators: Tier-1 indicators are intended to give information on the climate system. Tier-2 indicators attempt to quantify the impacts of climate change on biophysical systems (i.e. flood risks). Tier-3 indicators primarily aim at providing information on the socio-economic systems affected by climate change. At each level, the potential sources of uncertainty of the input data sets and its processing will be discussed.

Reference:

Reyer, C. (2013): The cascade of uncertainty in modeling forest ecosystem responses to environmental change and the challenge of sustainable resource management, Math. Fak. II Humbodt Unviversität. Berlin, 168. Available from: http://edoc.hu-berlin.de/dissertationen/reyer-christopher-2013-04-25/METADATA/abstract.php?id=40150.