Geophysical Research Abstracts
Vol. 17, EGU2015-12570, 2015
EGU General Assembly 2015

Why Interfaces are the Key for Developing Climate Services

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Responding to climate change today involves both mitigation to address the cause and adaptation as a response to already on-going and expected changes. But to what exactly do we have to adapt? And what happens, when environmental, economical or administrative boundary conditions changes? In recent years the concept of climate services has evolved to provide user tailored information to meet individual adaptation needs. According to the Global Framework for Climate Services, climate services involve high-quality data e.g. on temperature, rainfall, wind, etc., as well as maps, risk and vulnerability analyses, assessments, and long-term projections and scenarios. Depending on specific user's needs, these data and information products may be combined with non-meteorological sector-specific data, such as agricultural production, flood risk maps or health trends, and other socio-economic variables to support decision-making of stakeholders who are affected by climate change.
This, still non-exhaustive list already indicates that many different scientific disciplines are involved in the development and provision of climate services. Integrating different and equally important scientific approaches to contribute to the solution of one specific problem is challenging. In economics, for instance, many different and promising methods and tools such as cost-benefit-analyses are available which play a key role in providing policy makers and other stakeholders with data and information in order to create a robust decision-making basis for efficiently using scarce budgets. Cost-benefit-analysis is a well-established method in economic theory, its application in the field of climate change adaptation, however, is still new. The bulk of cost and benefit assessments currently pursues a top-down-approach. That is, the required data is generated by downscaling cost and benefit estimations of global impact assessment models to a specific region. In many cases global information are not fully capable to solve regional adaptation problems, since it does not account for the heterogeneous and highly context-dependent character of local conditions. Conducting a sound cost-benefit-analysis with respect to adaptation measures requires input from numerous disciplines. While cost estimations are mostly easily manageable, calculating benefits usually requires further input on different time and spatial scales. Depending on the object of interest this could be, for example, climatological, hydrological and environmental information. Of course, this is not specifically an economic issue. Practical examples such as for local water supply or from planning adaptation measures in urban areas clearly indicate that overcoming disciplinary borders is always challenging.
Even though the integration of different scientific disciplines is progressing, there is still no how-to guideline and it can be doubted there will be one some day. Lessons learnt show that upcoming questions must be solved on a case-to-case basis. This means the interfaces between disciplines must be identified and designed with respect to the existing context and participating stakeholders, which requires much effort, a local multiplier and the willingness of all participating partners to find adequate solutions.