The Challenge of Managing Climate Vulnerability: From Apps to Scenario Theaters

Caspar Ammann, NCAR-RAL-CSAP

Socio-economic systems respond to a myriad of stressors, climate with its inherent variability and change being only one factor. However, increasingly extreme weather (and climate) events together with a slowly changing baseline, if not properly managed, enhance the potential of triggering instability. Capabilities to better anticipate such situations and to properly plan for its broad consequences are required. Focusing on individual applications (hot-spots), the request is often to develop “an-app-for-that”, a simple solution that allows for quick insight into timing/likelihood and magnitude of future events. Unfortunately, simple solutions hardly ever exist. Rather, individual “apps” are generally compressions of selected data using a number of assumptions and adjustments for particular management problems. While constructions of such tools might incorporate the latest science, they are generally not transparent and thus of narrow use and not easily adaptable as conditions evolve.

Recent research strongly suggests that co-development with the end-users is by far the most successful approach. It not only results in a more optimal design to the actual application/decision process in an end-to-end fashion, but also increases the on-the-ground capacity amongst users through better understanding of the different flavors of uncertainty and capabilities of the decision support tools. These advantages play out particularly well, and offer flexibility, when non-climatic factors need to be included in the decision process. New IT infrastructures enable the broad discovery of such data and associated knowledge and offer platforms for collaborative problem solving. Furthermore, these platforms enable extension of tools to similar applications by sharing of data, knowledge and experience across a broad spectrum of interests.

As climate change across the globe continues to evolve, the additional danger of contemporary challenges across multiple regions and environments will rapidly emerge as a likely threat to stability. Therefore, capacity to manage individual events is not going to be sufficient. A broader and more flexible “umbrella capability” is required to evaluate and coordinate the available management tools. “Global Scenario Theaters” also offer more comprehensive insight about threat scenarios from seasonal to (multi-)decadal perspectives. They are flexible for discovery of resources and strategic needs as the threats and challenges evolve. Such a capability is helpful regionally, nationally, and internationally to play out possible threats in a globally connected world.