



Research infrastructure support to address ecosystem dynamics

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Predicting the evolution of ecosystems to climate change or human pressures is a challenge. Even understanding past or current processes is complicated as a result of the many interactions and feedbacks that occur within and between components of the system. This talk will present an example of current research on changes in landscape evolution, hydrology, soil biogeochemical processes, zoological food webs, and plant community succession, and how these affect feedbacks to components of the systems, including the climate system. Multiple observations, experiments, and simulations provide a wealth of data, but not necessarily understanding.

Model development on the coupled processes on different spatial and temporal scales is sensitive for variations in data and of parameter change. Fast high performance computing may help to visualize the effect of these changes and the potential stability (and reliability) of the models. This may then allow for iteration between data production and models towards stable models reducing uncertainty and improving the prediction of change.

The role of research infrastructures becomes crucial is overcoming barriers for such research. Environmental infrastructures are covering physical site facilities, dedicated instrumentation and e-infrastructure. The LifeWatch infrastructure for biodiversity and ecosystem research will provide services for data integration, analysis and modeling. But it has to cooperate intensively with the other kinds of infrastructures in order to support the iteration between data production and model computation. The cooperation in the ENVRI project (Common operations of environmental research infrastructures) is one of the initiatives to foster such multidisciplinary research.