Bavarian research & innovation

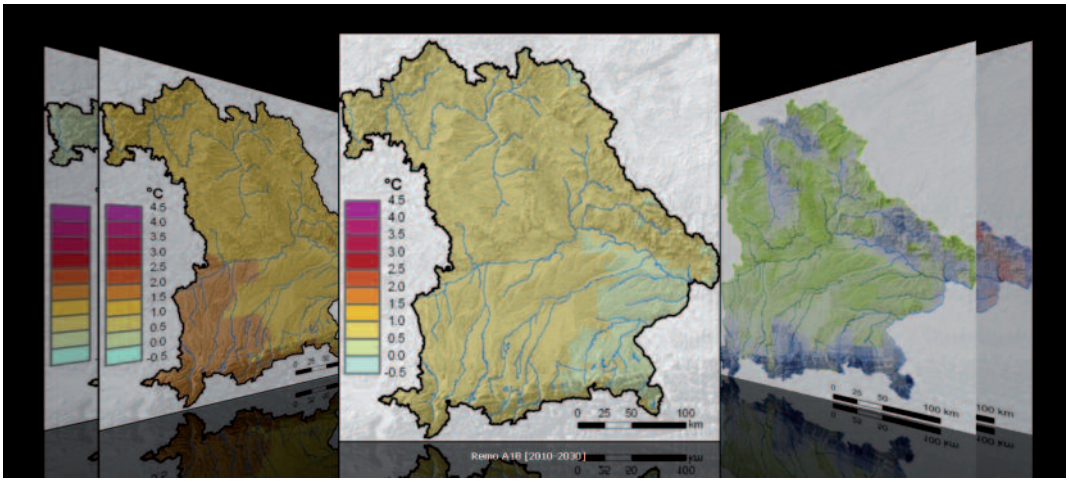
FORKAST

Bavarian Research Cooperation "Impact of climate on ecosystems and climatic adaption strategies"

UNDER THE SIGN OF CLIMATE CHANGE

Ecosystems research regarding climate adaptation

Impacts from changes in the global climate are increasingly manifesting themselves in terms of the regional sphere. Ecological impacts in all their dimensions are still not completely visible to date, hence there exists such a sense of urgency regarding solutions for the challenges we are facing in climate and ecological systems research. Forests, grasslands and lakes are ecological systems with longevity, thus causing to be considerably impacted by future climate changes. These ecological systems cover a large proportion of Bavaria and carry considerable economic significance. In light of current climate changes, the probability is increasing that seldom-seen and extreme climatological events will occur more often and with rising intensity. Moreover, novel forms of extreme conditions can be expected. Economic damages can be presumed. Possibly negative developments must therefore be immediately addressed with sufficient adaptive measures.



Modelling of future expected climate changes is a useful tool for ecosystem research (here: A1B-climate-scenario for Bavaria; database: Remo)

There are researchers involved at the research cooperation FORKAST from 19 chairs and faculties at the universities of Bayreuth, Regensburg, Würzburg, Erlangen-Nuremberg as well as the Technical University of Munich. They research the impacts of climate upon ecosystems and make thorough investigations in reference to the following central issues: How do extreme climatic conditions (e.g. drought and torrential rains) affect the characteristics of ecological systems and functions? How are ecological processes, such as the production of biomass or the interaction between animals and plants, affected? How resilient are our ecological systems? Research results in this matter are essential prerequisites in order to evaluate how ecological services (e.g. stability of mountain slopes, agricultural and silvicultural production) will be affected. Moreover,

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RESEARCH TOPICS

eventual positive developments should be recognised and developmental opportunities in the offing should be utilised early on.

To facilitate the realisation of these subject-overlapping and inter-structural demands, FORKAST has inter-linked research competencies of Bavarian universities with technical authorities. FORKAST is, furthermore, included in the network of international research consortiums. Up-to-date developments in methodology are continuously implemented and combined within the research cooperation.

In this manner, the various qualities of monitoring, manipulative experiments and modelling (i.e. simulations) can be optimally networked. The fundamental research results sought after within the co-operation offer opportunities for implementation in commerce and society in, for example, agriculture and silviculture, prognosis of natural hazards, nature conservation, planning of spaces and water management. In this manner, this crucial Bavarian enterprise is able to assume the role of trailblazer within the sphere of climate impact research in Germany.

Research Strategies
-Ecological Consequences of Climate Change-

Analysis and prognosis of climatic processes

Monitoring — Modelling — Experiments

shall refer to mutual questions,
such as impacts of extreme events upon:

vegetation, animal kingdom, micro-organisms, biotic interactions, bio-diversity, soil science, soil ecology, balance of matter, ecosystem functions

and long-lived model eco-systems
such as forests, grasslands and bodies of water!

Experimental area for extreme climate events (EVENT-Experiment at the University of Bayreuth)

Dry out phenomenom at maple as result of drought in the summer of 2003

Academic Partners

University of Bayreuth
- Chair of Biogeography
- Department of Micrometeorology
- Department of Agroecosystem Research
- Working Group Soil Physics
- Working Group Animal Population Ecology
- Junior Professor for Disturbance Ecology and Vegetation Dynamics
- Junior Professor for Biogeographical Modelling

Friedrich-Alexander University of Erlangen-Nuremberg
- Chair for Physical Geography

Technical University of Munich
- Chair of Vegetation Ecology
- Chair of Forest Yield Science
- Chair of Soil Ecology
- Chair of Atmospheric Environmental Research
- Chair of Soil Sciences
- Section of Limnology
- Section of Geobotany
- Section of Eco-Climatology

University of Regensburg
- Chair of Botany

Julius-Maximilians-University of Würzburg
- Chair of Zoology III

Bavarian State Institute of Forestry (LWF)

Bavarian Office of Forest Seeding and Planting (ASP)

Helmholtz Zentrum München (former GSF)

Institute for Atmospheric Environmental Research Garmisch-Partenkirchen, Karlsruhe Institute of Technology (KIT)
- Research Group "Ecosystem Matter Fluxes"