Geophysical Research Abstracts
Vol. 21, EGU2019-17198, 2019
EGU General Assembly 2019

MiKlip – how a decadal climate forecasting system can contribute to the sustainable development goals

Sebastian Hettrich (1), Bente Tiedje (2), Andreas Paxian (3), Holger Pohlmann (1), Wolfgang A. Müller (1), Christopher Kadow (4), Jens Grieger (4), Katja Reinhardt (3), and Jochem Marotzke (1)

(1) Max-Planck-Institut für Meteorologie, Der Ozean im Erdsystem, Hamburg, Germany , (2) Climate Service Center Germany (GERICS), Hamburg, Germany , (3) Deutscher Wetterdienst, Offenbach, Germany , (4) Freie Universität Berlin, Berlin, Germany

Decadal climate predictions are bridging the gap between short-term seasonal forecasts and the long-term centennial climate projections. For politics and economy the decadal time scale is important to develop climate adaptation or mitigation strategies.
MiKlip (German: Mittelfristige Klimaprognosen) is a decadal climate prediction project coordinated at the Max-Planck-Institute for Meteorology (MPI-M), at times involving 35 sub-projects spread across 22 German research institutions. The goal of MiKlip is to foster basic research on decadal climate prediction and to develop an operational ensemble decadal prediction system with the Earth System Model of the MPI-M (MPI-ESM) and the regional climate model COSMO-CLM. The prediction time-scales range from the annual forecast for the next year to the climate prediction information for the upcoming ten years. This information includes parameters such as temperature, precipitation, droughts, wind, or the probability of severe weather events, where most (scientific) publications focus on the predictability of temperature and precipitation. The established method to evaluate the MiKlip system – initialised with atmosphere and ocean re-analyses of the ECMWF (European Centre for Medium-Range Weather Forecasts) – is to compare retrospective forecasts (hindcasts) and two standard reference forecasts (observed climatology and climate projections) with past observations leading to information about the forecast skill. The evaluation includes the accuracy (MSESS) of the ensemble mean and the probabilistic skill (RPSS) of the whole 10-member ensemble.
In two of MiKlip's sub-projects the direct contact with potential users of such a decadal climate forecast system was established to explore and incorporate user needs, and to generate an awareness of the offered service. Among the potential users interested in various aspects of future global and regional climate development of the next ten years were representatives from agriculture (growing condition for certain crops), forestry (adaptation towards more robust tree species), water management (ensuring a stable water supply), renewable energy (prognosis for future wind or solar parks), transport (especially river shipping), insurances (estimation of climate-related damages), health (emergency plans for heat waves), international collaboration or humanitarian crisis management (preparation for natural catastrophes, food security and security).
As such, information from decadal climate prediction systems in combination with information from long-term climate projections can contribute to the UN Sustainable Development Goals. We will present preliminary results (which could result in potential future service products) for possible agriculture, water supply, and humanitarian aid applications.