

Water sector analysis in the ISI-MIP project

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The Inter-Sectoral Impact Model Intercomparison Project (ISI-MIP) aims cross-sectoral global impact assessment with recently developed climatic and socio-economic scenarios. The project is coordinated by a project team in the Potsdam Institute for Climate Impact Research, Germany. More than 30 modeling teams are participating in this project. Each team contributes to at least one of four specialized sectors (water, biomes, agriculture and health) by running its own model and submitting output results.

Impact studies have been playing one of important roles in future projections of our living world under ongoing climate changes. However, such projections largely depend on adopted models --- discrepancies between models would sometimes become larger than signals themselves. The ISI-MIP also aims to clarify characteristics of participating models, which also play an active role on impact studies, through multimodel comparison. For this reason, the ISI-MIP prescribes common settings for model calculation in its protocol and distributes common input meteorological forcing data sets.

The water sector is the largest sector in the ISI-MIP: 12 modeling teams are participating in this sector. Each team is required to report results on natural hydrological elements (e.g., runoff, river discharge, evapotranspiration, soil moisture, snow amount) and water consumptions by human activities (e.g., agricultural irrigation withdrawal, industrial water withdrawal). The target period covers 1970 to 2099. The ISI-MIP prepares meteorological forcing data generated by five general circulation models with four sets of warming-gas emission scenarios (RCPs 2.6, 4.5, 6.0 and 8.5). The model output data were once collected on the ISI-MIP server, and then they were redistributed to participants who would make a multimodel analysis. Through making multi-model and multi-scenario analyses, more reliable information on future hydrological environments could be obtained. Reported daily river discharge data will also be utilized in an analysis of occurrence of extreme events (such as flood, drought).

Representative authors of the project are now processing multimodel data and writing reports on their fast-track results. A special issue containing these reports is scheduled to be published in 2013. Eminent results will also be presented in an international symposium held in Potsdam, Germany, in May 2013. Further information on the ISI-MIP is available at <http://www.isi-mip.org/>.