

- Conference Title:

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- Title:

Projected Changes in Flood and Drought Risks in the 21st Century: A Multi-model Assessment

- Type of Presentation:

Poster

- Abstract:

Anthropogenic changes in global climate and alteration of Earth's hydrological cycle have resulted in increased heavy precipitation, with consequent increased surface runoff and flooding risk, which is likely to worsen in the future. We analyze the historical and future streamflow simulations from selected global climate models (GCMs) provided by the Inter-Sectoral Impact Model Intercomparison Project (ISI-MIP). We study the changes in low and high percentiles of streamflow discharge, as indicators of changes in drought and flood risk, in GCM projections for the 20th and 21st centuries. The discharge projections from climate models are affected by uncertainties arising from the utilized global hydrological models (GHMs), in addition to the basic uncertainties from the GCMs. We perform a global-scale multi-GCM multi-GHM study on the discharge projections (provided by the ISI-MIP), under high radiative forcing scenario (RCP8.5), to investigate probable changes in drought and flood risk, by the end of the 21st century. Results indicate that approximately 47.3 and 58.9% of the global land areas are exposed to increased flood and drought risk, respectively. Furthermore, nearly 13.2% of the global land areas are under the potential threat of simultaneous increase in flood and drought risk. We expect our findings to improve understandings of future climate conditions under the projected global warming and help inform assessments of flood and drought hazards.

Projected Changes in Flood and Drought Risks Under Climate Change in the 21st Century: A Multi-GCM Multi-GHM Approach

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Study Overview:

- ✓ Changes in Flood and Drought in 21C compared to 20C
- ✓ RCP2.6 and RCP8.5 Scenarios
- ✓ Study the changes in High and Low streamflow percentiles (95th and 5th)
- ✓ Using 5 GCMs and 5 GHMs (Total 25 dataset)
- ✓ Study the population affected by increase in Flood, Drought, or both

