



[Registration No.] 152
[Author] Tingting Wang
[E-mail] wangtt778@163.com
[Co-Author] Fubao Sun
[E-mail] sunfb@igsnrr.ac.cn
[Abstract No.] 05033

[Abstract Title]

Spatio-temporal variation of world GDP exposure to floods and droughts

[Abstract]

A warmer climate is expected to accelerate the global hydrological cycle, causing more intense floods and droughts and resulting in billions of dollars of damage each year. The global economic exposure to floods and droughts, however, lacks spatial demonstration under different assumptions of current and future climate change and socio-economic development. Based on the framework of global and regional historical population distribution from multi data source and future population in Shared Socioeconomic Pathways (SSP) public database, we first develop a data set of high spatial resolution of 1 km of global spatial GDP projections consistent with five SSPs scenarios. Using hydrometeorological forcing from Coupled Model Intercomparison Project Phase 5(CMIP5) climate models to drive the Catchment-based Macro-scale Floodplain (CamaFlood) model and the Palmer Drought Severity Index (PDSI), we estimate and evaluate the GDP exposure to flood implementing with existing flood protection infrastructure extracted from the FLOod PROtection Standards database, and to drought in the future RCP2.6, RCP4.5 and RCP8.5 scenarios. The world and particularly those developing countries would experience an intensive increase in GDP loss due to drought and flood risk, especially by the end of the 21st century under RCP8.5 and SSP5(middle-of-the-road development) combination.



[Keywords]

GDP exposure, flood, drought