



[Registration No.] 151

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[Abstract Title]

Estimates of future rainstorm and flood risk in the mainland of China

[Abstract]

Estimating future rainstorm and flood direct economic losses in the mainland of China is critical for disaster risk assessment under climate change. In this study, we employed the multi-variable linear regression of historical flood damage, extreme precipitation days, exposure and social vulnerability to produce estimates of rainstorm and flood risk, based on 19 models in Coupled Model Intercomparison Project Phase 5 (CMIP5) project under the Representative Concentration Pathway 4.5 (RCP4.5) and 8.5(RCP8.5) scenarios. The results show that (1) The annual exposed assets in 2050s is about 1.7-2.08 times higher than 2030s, and the provinces with the highest exposure are respectively Jiangsu (2030s) and Shandong (2050s). (2) The trend of rainstorm and flood disaster annual expected damage is relatively flat for RCP4.5 (about 200 billion), but obvious increase for RCP8.5 during 2016-2100 (up to 384 billion). At the regional level, the expected damage of 19 models are distributed more discretely at South China and Southwest China. These results suggest that rainstorm and flood disaster risk exist with large spatial heterogeneity across China, and assets growth may exacerbate disaster losses in the future.



[Keywords]

Rainstorm and flood risk; direct economic losses; China