Geophysical Research Abstracts
Vol. 12, EGU2010-10152, 2010
EGU General Assembly 2010

Changes in weather extremes over East Asia due to global warming

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The changes in weather extremes due to the global warming induced by the emissions of anthropogenic greenhouse gases have received growing attention in climate research community. In this study, the authors introduce new indices that assess changes in extreme vulnerability over East Asia for the periods of past 100 years and future 100 years. Observed temperatures and precipitation at 895 meteorological stations in Korea, China, and Japan have been analyzed for 1960s-2000s. In addition, we examined data from a global climate model simulation using the National Center for Atmospheric Research Community Climate System Model for 1900-2099. The observations show increasing trends in warm and dry extremes, and decreases in cold extremes, particularly in northern East Asia. A notable regional anomaly is the increase in wet extremes over the Korean Peninsula. The temperature extremes in the model simulations are similar to the observed features in the same region during the for the 20th and 21st century periods.