Geophysical Research Abstracts
Vol. 12, EGU2010-5690, 2010
EGU General Assembly 2010

The behavior of cold surge occurrences over East Asia in present and future climates

Tae-Won Park (1) and Chang-Hoi Ho (2)

(1) School of Earth and Environmental Sciences, Seoul National University, Seoul, South Korea (park2760@gmail.com), (2) School of Earth and Environmental Sciences, Seoul National University, Seoul, South Korea (hoch@cpl.snu.ac.kr)

For the past few decades, an increase of mean temperature by global warming has led to a decrease in extreme cold days, so that it is expected that the occurrences of cold surges have also decreased. However, changes in cold surges defined as a day-to-day temperature drop are different with those in extreme cold days defined as a cold anomalous temperature. In the present study, changes in cold surges, which are identified by the strong Siberian high and steep day-to-day temperature decrease, over East Asia for the last three decades are investigated using observation. Being different from a general consensus, cold surge occurrences do not decrease but slightly increase, with a large increasing trend of temperature anomalies related to recent strong global warming. In agreement with observation, the behavior of East Asian cold surges irrelevant to global warming is also replicated in output from several Atmosphere-Ocean General Circulation Models (AOGCMs) simulation under late-twentieth century and projected twenty-first century conditions suggested by the Intergovernmental Panel on Climate Change's Fourth Assessment Report (IPCC AR4). Therefore, this result indicates that a study on influence of cold surges on human activities and its characteristics is still important.