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Regional climate projection based on RCP scenarios in the CORDEX East Asia Domain Using RegCM4

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Regional climate projection data is essential to the adaptation and risk management for the expected climate change. In this stduy, we reproduced regional climate over CORDEX East Asia for 72 years from 1979 to 2050 with 50-km resolution using the latest regional climate model version 4, RegCM4, driven by HadGEM2-AO with about 135-km resolution under Intergovernmental Panel on Climate Change (IPCC) Representative Concentration Pathway (RCP) 8.5/4.5. Simulation skills of RegCM4 for the present climate (1980-2005, spin up time: 1979) over CORDEX East Asia are evaluated with CRU-TS (Climate Research Unit Time-Series) 3.0 and GPCP (Global Precipitation Climatology Project). And KMA ground observation data are also used for the detailed assessment of RegCM4 over South Korea. The evaluation results showed that RegCM4 reasonalbly simulated the spatial distribution, and inter-annual and seasonal variations of surface air temperature. However, it showed a non-negligible systemartic biases in the precipitation. In particular, the rainband accompanied by the seasonal march of East Asian summer monsoon was simulated too southward, below 30°N comparing to the GPCP. As a reulst, summer precipitation over South Korea and Japan island was significantly underestimated. Under RCP8.5 (RCP4.5) scenario, annual mean temperature over the CORDEX East Asia is expected to increase by + 1.6 ^{o}C(+1.4^{o}C) above the present level (1980-2005) by the end of the future simulation period. Most of the regions (South-Korea, South-China, North-China, India, Japan, Mongolia) show the increaseing trend of surface air temperature. On the other hand, the future changes of precipitation are not systemaic at the most of regions and seasons. More detailed results including projected regional climate change will be discussed in the presentation.