



Mechanisms of the Extreme Temperatures and the Precipitation Events in the Future over Korean Peninsula using CORDEX Data

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This study investigates the formation mechanisms of the extreme temperatures and the extreme precipitation in the future Korean Peninsula due to global warming. CORDEX-East Asia data such as the 2 m air temperature, precipitation, sea level pressure, 850 hPa wind, 850 hPa temperature, and 850 hPa specific humidity are analyzed to characterize atmospheric conditions related to future extreme events. The extreme temperatures ($>38\text{ }^{\circ}\text{C}$) in the mid-southern regions of Korea tend to occur as a result of the heat accumulation by the warm advection originating from eastern China. Adding to advection, the Föhn phenomenon seems to produce more warming. In the case of precipitation, extreme events ($>500\text{ mm day}^{-1}$) tend to occur as a result of the transport of water vapor by the south-westerly flow, with precipitation belt stretching from eastern China to Korea. A climate change also leads to an increase in the mean, variance, frequency, and 95 percentile value of the extreme events. This study will facilitate a better understanding of the formation mechanisms of the extreme events over Korea in a warming environment.