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## Model evaluation for Heatwaves over South Korea in CMIP6 models

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In this study, we defined diagnostic indices to evaluate the CMIP6 models based on the heatwaves mechanisms of Korea presented in previous studies. Based on this, the simulation performance of the model was quantitatively evaluated using Relative Error (RE), Inter-annual Variability Skill-score (IVS), and Correlation Coefficient (CC). The REs in diagnostic indices are still large, especially in heat wave circulation index (HWCI) and Indian summer monsoon rainfall index (IMRI), which is mainly due to weak convective activity bias over the northwestern Pacific Ocean and the northwestern India. However, the IVSs in diagnostic indices have been improved overall in the CMIP6 compared to the CMIP5, especially in the IMRI. The CC between the daily maximum temperature (TMAX) and the diagnostic factors in the model is very higher in HWCI than other indices, indicating that the convective activity over the northwestern Pacific is very important in heat wave in Korea. As a result, the total ranking of the model performance for heatwaves in Korea suggested that EC-Earth3-Veg, EC-Earth3, and UKESM-1-0-LL ranked high in CMIP6.

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