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High resolution WRF downscaling of the SINTEX-F1 CGCM seasonal forecasts over the Kanto region

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The Weather Research and Forecasting (WRF) regional model is used to downscale an ensemble of the SINTEX-F1 generated seasonal forecasts over the Kanto region. WRF model with three two-way interacting domains at horizontal resolutions of 27km, 9km and 3 km and 30 vertical levels is used for the downscaling. The cloud resolving WRF models ability to reproduce the climate of the Kanto region was initially tested by making the model simulation with ERA-Interim reanalysis data as the boundary conditions. Comparing the WRF model simulated precipitation and temperature with the AMeDAS observed precipitation and temperature data showed that the model could realistically capture the variations of the parameters from seasonal to diurnal time scales.

Comparing the SINTEX-F1 downscaled forecasts of the last few years with the AMeDAS observed data shows that the WRF model improves the spatial and temporal distribution of the precipitation and temperature over the Kanto region with respect to the SINTEX-F1 forecasts. The improvements in the WRF forecasts are seen to be due to better representation of the orography over the Kanto region.

Keywords: WRF, SINTEX-F1, Seasonal Forecast