

Climate Change Projection

1. Products

Projected temperature and precipitation changes (relative to 1986-2005) at annual scale under RCP4.5 and RCP8.5 emission scenarios.

2. Products specifications

Areal coverage: Sub-domain of the Northern Node (27.5°–55°N, 70°–105°E)

Spatial resolution: 0.25° × 0.25°

Temporal resolution: annual

Projection: Regular latitude-longitude projection

Availability: in 2021-2100 for temporal product, and in near-term (2021-2040), medium term (2041-2060), and long-term (2081-2100) for spatial products

Timeliness: one-off product

Format: PNG

Units: °C for temperature; % for precipitation

3. Data sources

RegCM4 downscale simulations over East Asia during 1986-2100, under both RCP4.5 and RCP8.5 emission scenarios, developed by NCC/CMA and driven by the CMIP5 outputs of HadGEM2-ES. The original outputs are at 6-hour interval and with 25km spatial resolution.

4. Methodology

Annual mean temperature and precipitation under the RCP4.5 and RCP8.5 emission scenarios were calculated based on 6-hourly outputs for each grid point.

- For the products of spatial changes, the annual values at each grid were first averaged for the periods of 2021-2040, 2041-2060, and 2081-2100, respectively, and then subtracted the corresponding averages in each grid during the period of 1986-2005.
- For the products of temporal changes, the annual values were first averaged for the whole domain at a certain year, and then subtracted the regional mean value during the period of 1986-2005.

5. References

Gao, X., J. Wu, Y. Shi, et al., 2018: Future changes in thermal comfort conditions over China based on multi-RegCM4 simulations. *Atmospheric and Oceanic Science Letters*, 11(4), 291–299, <https://doi.org/10.1080/16742834.2018.1471578>.

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