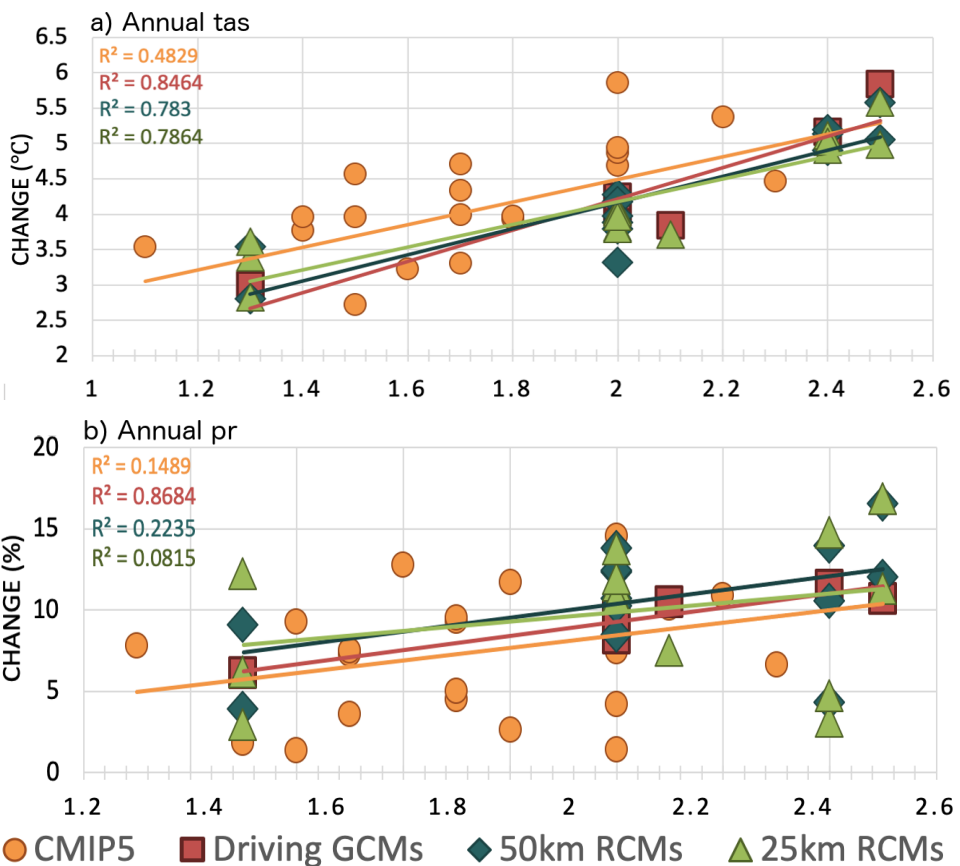


Regional Climate Change Projections from NA-CORDEX and their Relation to Climate Sensitivity



1951–1999 to 2051–2099 change in mean annual a) temperature and b) precipitation over the NA-CORDEX domain (y-axis) for the 25-km and 50-km NA-CORDEX RCMs, their driving GCMs, and a 28-member CMIP5 ensemble versus the Transient Climate Sensitivity (x-axis) of the relevant GCM.

Scientific Achievement

We show that global climate model (GCM) climate sensitivity is a very important source of spread in the region climate model (RCM) ensemble provided by the North American Coordinated Regional Climate Downscaling Experiment (NA-CORDEX), particularly for temperature from a local-to-regional-to-continental scale.

Significance and Impact

- The range of temperature projections sampled would be reduced if only low, mid, or high climate sensitivity simulations were considered, or if only the ensemble mean were considered.
- Precipitation projections correlate with climate sensitivity, but only at a continental scale during the cold season, due to the increasing influence of other process at finer scales.
- Additionally, under RCP8.5, the NA-CORDEX ensemble generally spans the full range of temperature and precipitation projections provided by CMIP5.
- Prior to this study, there had been little-to-no documented examination of the effect of the climate sensitivity of GCMs on RCM ensembles.

Bukovsky M.S., and L.O. Mearns, 2020: Regional Climate Change Projections from NA-CORDEX and their Relation to Climate Sensitivity. Climatic Change, <https://doi.org/10.1007/s10584-020-02835-x>