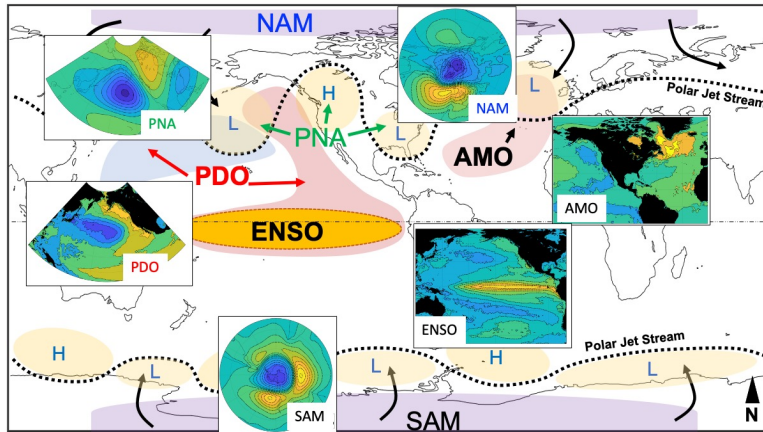


Differential credibility of climate modes in CMIP6 ESM



Schematic of key internal climate modes and their spatial expression

Scientific Achievement

All climate projections at the global, regional or local scale are contingent on credible representation of internally forced climate modes. We objectively characterize that credibility for 58 CMIP6 ESM realizations in terms of; (i) the spatial patterns and intensity of the modes, (ii) their probability distributions (variability), (iii) their power spectra and periodicities.

Significance and Impact

Internal climate variability (forced by air-sea interactions) is a major confounding factor in detection and attribution of greenhouse gas forced climate change. New metrics for quantifying differential credibility of Earth System Model (ESM) representation of modes of nature climate variability are introduced and applied to output from 11 ESM (58 realizations in total). This work enables ESM selection for downscaling and illustrates areas for ESM improvement.

Research Details

Indices of 6 prominent internal climate modes are computed using output from CMIP6 ESM and evaluated using values computed from the ERA5 reanalysis.

Coburn J.J. and Pryor S.C. (2021): Differential credibility of climate modes in CMIP6. *Journal of Climate* 34 8145-8164 doi: 10.1175/jcli-d-21-0359.1

