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ClimDown: Climate Downscaling in R

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Software

- Review
- Repository
- Archive

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Summary

The ClimDown R package publishes the routines and techniques of the Pacific Climate Impacts Consortium (PCIC) for downscaling coarse scale Global Climate Models (GCMs) to fine scale spatial resolution.

PCIC's overall downscaling algorithm is named Bias-corrected constructed analogues with quantile mapping reordering (BCCAQ) (Cannon, Sobie, and Murdock 2015; Werner and Cannon 2016). BCCAQ is a hybrid downscaling method that combines outputs from Constructed Analogues (CA) (Maurer et al. 2010) and quantile mapping at the fine-scale resolution. First, the CA and Climate Imprint (CI) (Hunter and Meentemeyer 2005) plus quantile delta mapping (QDM) (Cannon, Sobie, and Murdock 2015) algorithms are run independently. BCCAQ then combines outputs from the two by taking the daily QDM outputs at each fine-scale grid point and reordering them within a given month according to the daily CA ranks, i.e., using a form of Empirical Copula Coupling (Schefzik, Thorarinsdottir, and Gneiting 2013).

The package exports high-level wrapper functions that perform each of three downscaling steps: CI, CA, and QDM, as well as one wrapper that runs the entire BCCAQ pipeline.

References

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