Estimation of forced trends of regional precipitation using large ensembles and ML
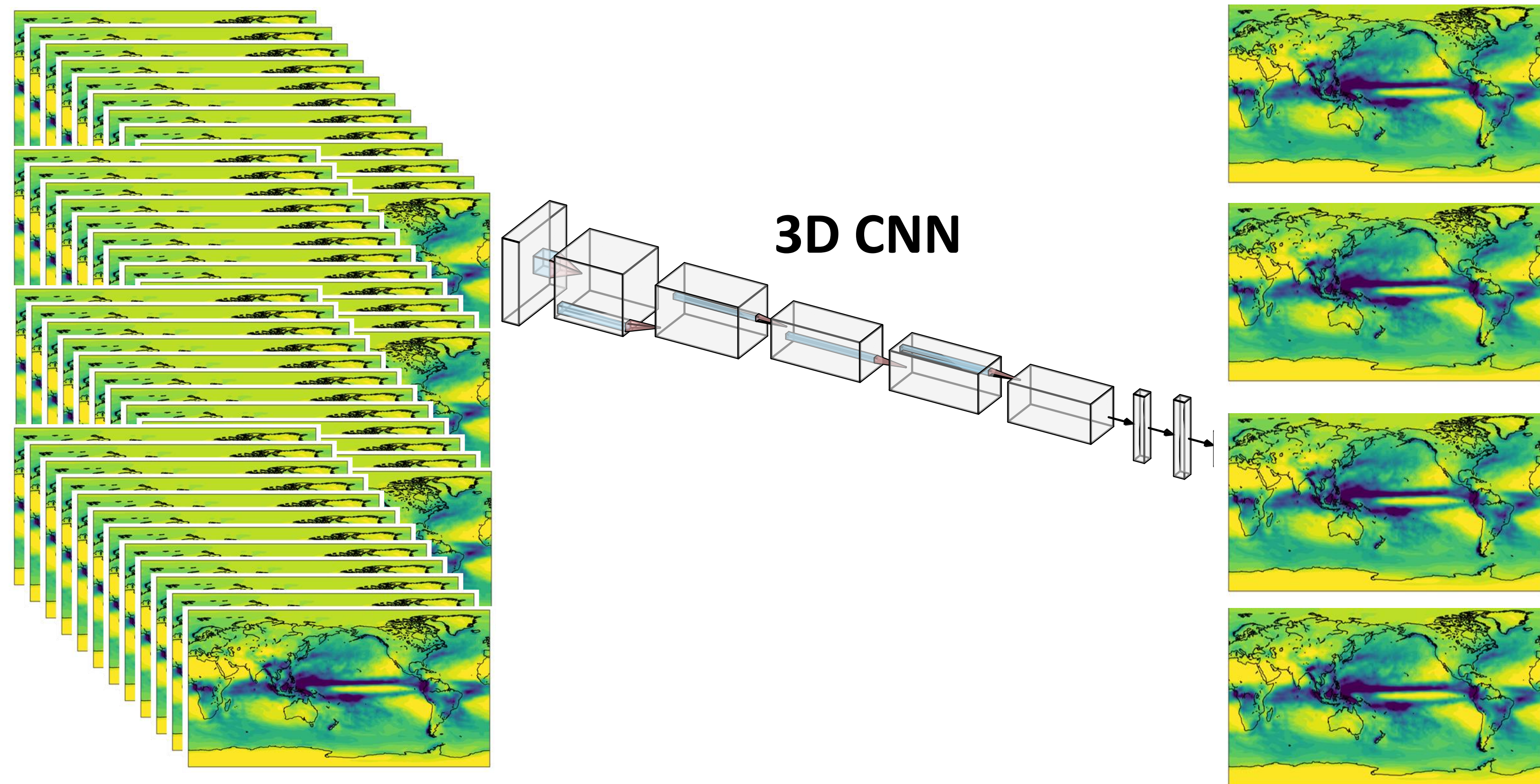
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Method : using large ensembles and ML to model spatiotemporal forced response
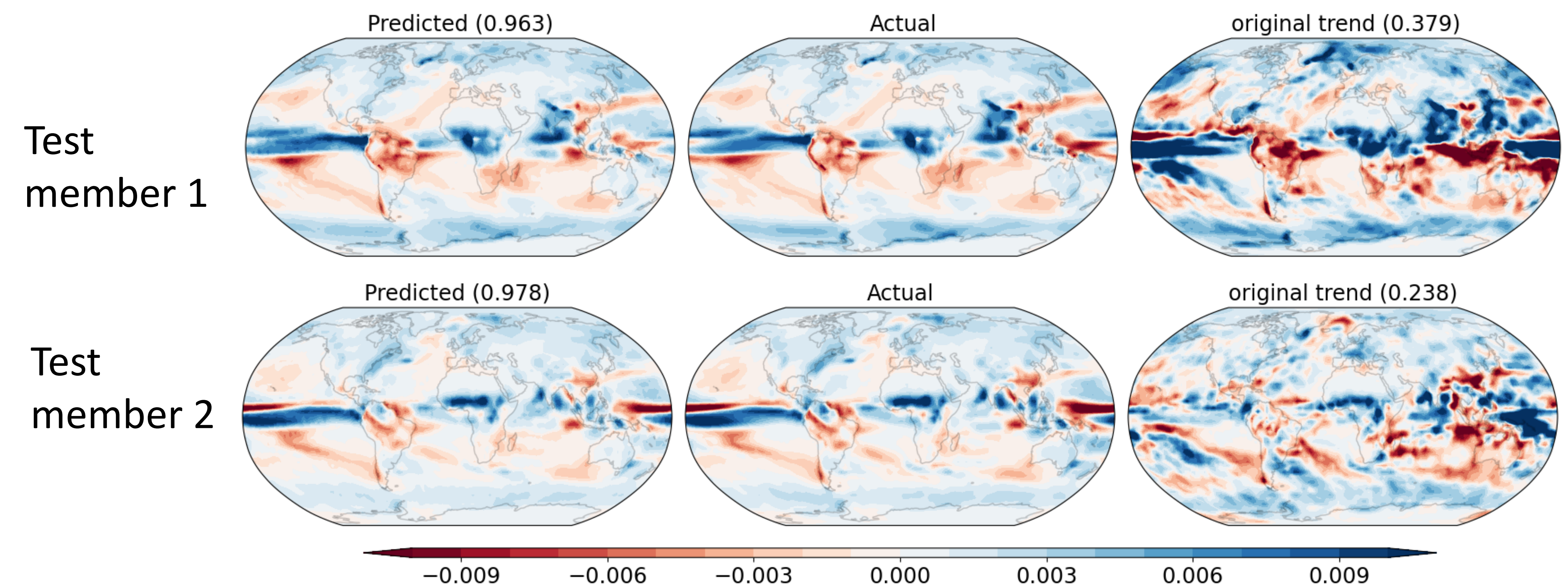

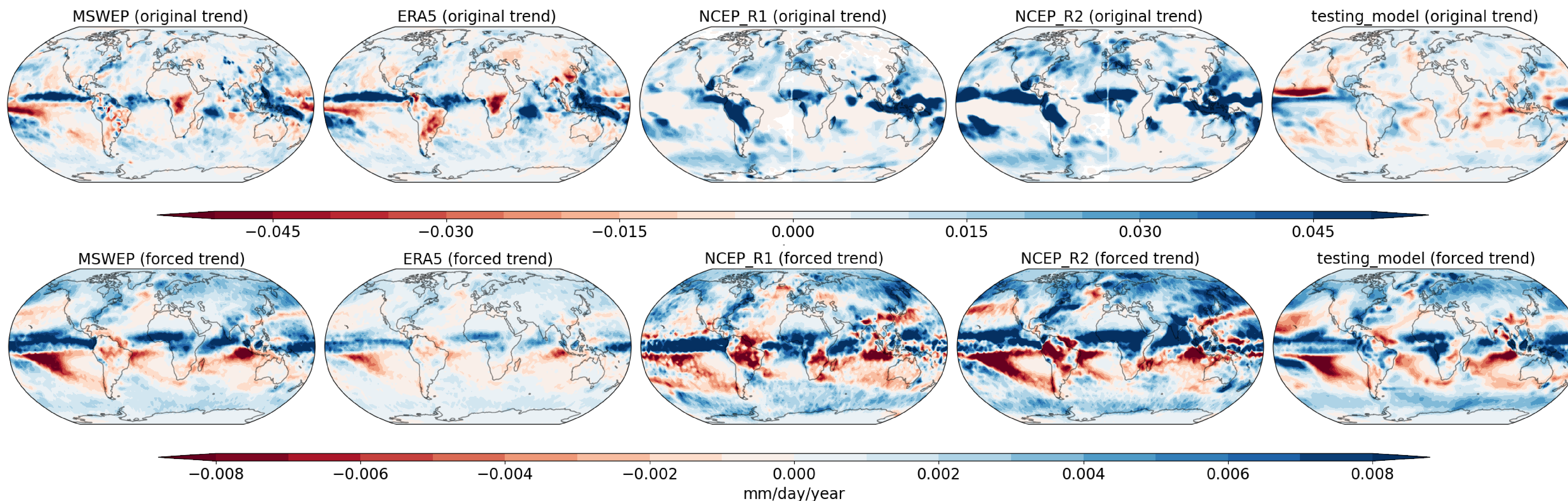3D Pr input : lat x lon x [t-10 to t years]   Year t forced response

3D CNN

185 members x **63years** x lat x lon x 10 time lags
(5 large ens)   **(1959-2022)**

185 x **63** x lat x lon

Model performance : trend calculated from the predicted and original spatiotemporal data (1959-2022) (mm/d/year)

Test member 1

Test member 2

Predicted (0.963)   Actual   original trend (0.379)

Predicted (0.978)   Actual   original trend (0.238)

Observations : trend calculated from the predicted and original spatiotemporal data (1959-2022) (mm/d/year)

MSWEP (original trend)   ERA5 (original trend)   NCEP_R1 (original trend)   NCEP_R2 (original trend)   testing_model (original trend)

MSWEP (forced trend)   ERA5 (forced trend)   NCEP_R1 (forced trend)   NCEP_R2 (forced trend)   testing_model (forced trend)

mm/day/year

Acknowledgments