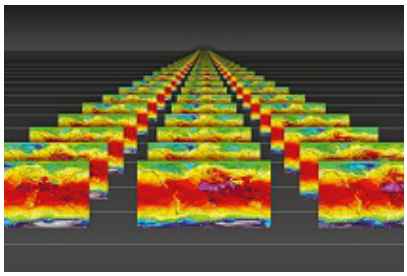

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Benefits of a multimodel approach for forecasting precipitation over New Caledonia (SW Pacific) at S2S timescales

Thursday, 4 April 2019 10:30 (15 minutes)

Located in the tropical Southwest Pacific, New Caledonia is prone to heavy rainfall events that may be related either to tropical or to mid-latitude perturbations. Precipitation over New Caledonia should therefore exhibit some subseasonal predictability owing to large-scale drivers, such as ENSO and the Madden-Julian Oscillation. This study aims to assess the skill in predicting precipitation over New Caledonia at the subseasonal range in GCM forecasts from the S2S project through multimodel ensembling. Gridded precipitation data from six S2S hindcasts (BoM, CMA, ECCC, ECMWF, Météo-France and UKMO) are combined on a common period for 12 startdates in the austral summer season December-January-February 1996-2013, which corresponds to the rainiest season. Given that the models do not share a common ensemble size, a subset of 4 members per model is selected so as to build a balanced 24-member ensemble multimodel. Verification is carried out on weekly periods so as to consider time spans for which predictability should be more relevant at intraseasonal lead times (week 1, week 2⋯). Hindcasts are verified against both gridded precipitation datasets and station data. The skill of the multimodel ensemble is compared to the skill of each individual model using deterministic metrics such as the spatial average of grid-point correlation and a probabilistic approach with the ROC Skill Score based on discrete rainfall categories (e.g occurrence vs non-occurrence of a day with more than 25 mm rain rate within a given week). Results show the multimodel performs alongside the best individual models for most lead times and scores considered. Moreover, the construction of a multimodel ensemble helps assess precipitation skill more robustly than with individual models with a small ensemble size. These first results therefore suggest that using a multimodel approach for intraseasonal rainfall prediction bears some added value compared to using a single model.

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Session Classification: Prediction and Verification Multi-model approaches to prediction

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