

DEMETER: A multi-model ensemble system for seasonal to interannual forecasting

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A growing demand for seasonal to interannual climate predictions has appeared in recent years. The potential end users span a wide range of different sectors from agriculture, food, energy, and health up to insurance and finance applications. Reliable predictions of the seasonal climate would allow for more effective planning in all these sectors and, therefore, improve the quality of life, health, and safety.

Known limitations for producing reliable forecasts using dynamical models are uncertainties in both initial data and model formulation. To account for these inaccuracies a multi-model ensemble prediction system is being developed in a joint European effort known as DEMETER project. The model system consists of six different global coupled atmosphere-ocean models and runs from sets of initial conditions, each slightly different from one another, but consistent with available observations. The last generation of atmosphere and ocean analyses is used to initialise the models.

To assess the potential skill of the multi-model system, an extensive set of hindcast ensemble integrations over about 40 years (1960-2000) is being run. For each single model, nine-member ensemble integrations are run four times per year over six month periods. These hindcasts of seasonal climate variables are verified as deterministic (ensemble mean) as well as probabilistic hindcasts. Emphasis is placed on assessing skill at predicting sea surface temperature anomalies in the tropical Pacific during ENSO cycles. Preliminary results for the tropical areas, where seasonal forecast skill uses to be the highest, will be presented with the main focus on the Indian and African monsoons. In particular, the skill improvement due to the multi-model approach will be enlightened.

Thursday II (Talk)