

## **Potential Predictability of Regional Monsoon Climate in a Specio-Superensemble Prediction System**

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A specio-superensemble prediction system for regional monsoon climate is developed based on five dynamical models from different modeling groups of KMA, NASA, NCEP, SNU, and TWB. Prediction data utilized in this study are the 21-year hindcast products for 1979-99 from SMIP-II simulations for the three dynamical models of KMA, NCEP, and SNU and from AMIP-II simulations for NASA and TWB models. In contrast to the conventional superensemble method applied to a grid point data, the large-scale prediction patterns correlated with an observed grid data are used for the multi-model ensemble prediction system. A coupled pattern projection model (CPPM) is developed to obtain the coupled pattern between large-scale circulation fields predicted by a dynamical model and an observed grid data. This predicted large-scale pattern, a priori obtained in the training period, is projected to the prediction data to produce a regional prediction. The statistical correction procedure using CPPM is applied to each model, and the final prediction of a regional climate is obtained by compositing the five predictions, statistically corrected.

It is shown that the state-of-the-art atmospheric GCMs have not much capacity to simulate regional climate in most of the monsoon region. Thus, conventional point-wise superensemble scheme is not very effective because the scheme directly depends on the capabilities of individual models to simulate a regional climate. On the other hand, the specio-superensemble prediction system based on CPPM, developed in the present study, is found to be a powerful tool to produce the regional climate predictions, especially in the western Pacific. This improvement of prediction is due to the correction of the systematic error contained in the dynamical prediction system.

**Monday IV (Talk)**

