

## **WMO WGSIP INITIATIVE:**

### **Long-Range Forecasts of Asian Monsoon Intercomparison Project (LRFAMIP)**

#### **An international project aimed at evaluating Asian monsoon seasonal predictions**

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The purpose of the “Long-Range Forecasts of Asian Monsoon Intercomparison Project” (LRFAMIP) is to make a systematic and retrospective evaluation of initialized subseasonal climate predictions of the Asian monsoon. In support of the project, a “core” archive based on publically available hindcast datasets including the Climate-system Historical Forecast Project (CHFP), C3S (Copernicus Climate Change Service) and the Subseasonal to Seasonal Prediction Project (S2S), ENSEMBLES and DEMETER (Development of a European Multimodel Ensemble system for seasonal to inTERannual prediction) is being developed. Additional contributions are sought from forecast systems not represented in these projects.

In the past, the long-range forecasts of the Asian monsoon had been a challenge for climate modeling. Although its skill is still far from satisfactory and the model development is in an incipient stage, recent progress of climate modeling is making it possible to produce useful predictions up to a season ahead. Better understanding of dominant variability modes and processes to control them enables us to understand the predictable variability of the Asian monsoon. Based on the advanced knowledge of the Asian monsoon, we can diagnose model results and understand causes of errors and key factors of success better than before. In recent studies, a few key factors have been identified for the Asian summer monsoon: (1) developing-ENSO influence, (2) delayed ENSO influence through the so-called “Indian-western Pacific Ocean Capacitor” (IPOC) mode, (3) influence of the global warming/decadal variability, (4) the Indian Ocean Dipole mode (Wang et al. 2015, Kosaka et al. 2013). These modes modulate the Asian summer monsoon and give rise to its seasonal predictability. Thus, the analysis will focus on the reproducibility and predictability of these modes in climate prediction models.

#### **Expected outcome:**

- better understanding of the mechanisms and processes responsible for the seasonal predictability of the Asian monsoons
- development of a standard diagnostics describing model errors for seasonal predictions of Asian monsoon
- systematic and retrospective assessment of prediction skills in multiple latest climate models and models in the past, to inform progress and prospects of the Asian monsoon seasonal predictions
- identification and provision of key aspects to improve the seasonal prediction skill of the Asian monsoon to facilitate the model development at modeling centers.

#### **References:**

Wang et al. (2015) Asian summer monsoon rainfall predictability: a predictable mode analysis, *Clim. Dyn.*, 44, 1–2, 61–74.

Kosaka et al. (2013) Origin of seasonal predictability for summer climate over the Northwestern Pacific, *Proc. Nat. Acad. Sci. USA*, 110, 7574–7579.