

## **Understanding the systematic errors of GCMs in tropical regions**

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In recent years, considerable progress has been achieved in the simulation of the climatology flow by atmospheric GCMs. Still, relatively large systematic errors are present in the simulation of the tropical circulation, which affect both the time-mean flow and the response to interannual variations of SST. In particular, during the boreal winter the location and intensity of the West Pacific rainfall maximum is often misrepresented, while during summer significant errors are found in the mean flow and the variability associated with the Asian monsoon.

In the first part of the talk, such errors will be illustrated for a set of seasonal simulations performed with the ERA-40 version of the ECMWF model; comparisons with results other GCMs will be made for some parameters. The relationship between errors in the mean flow and in the simulation of interannual variability will be discussed.

In the second part, the sensitivity of tropical circulation to changes in parametrization of convection and surface processes will be illustrated using an intermediate complexity GCMs. Finally, an interpretation of such a sensitivity will be attempted, based on the properties of attractors of idealised 2-D models of the near-equatorial circulation.

**Tuesday IV (Keynote Talk)**