## Impact of horizontal resolution on the tropical intraseasonal variability: Results from Project Athena

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One of the prevailing hypotheses in the intraseasonal variability research is that mesoscale circulation associated with cumulus convection is important for the successful simulation of the tropical intraseasonal oscillations (ISO) in general circulation models (GCM). Higher resolution models are likely to capture the mesoscale features better and therefore expected to show improvements in the intraseasonal variability. However, among the few studies reported in the literature, the impact of increasing the horizontal resolution on the ISO is inconsistent. Project Athena, an international collaborative project on high-resolution climate simulation, provided a unique opportunity to examine the above hypothesis. As part of this project, several runs using the European center for Mediumrange Weather Forecasts' (ECMWF) Integrated Forecasting System (IFS), an atmospheric GCM, were made at T159 (125 km), T511 (39 km), T1279 (16 km), and T2047 (10 km) resolutions. In all resolutions convection is parameterized similarly, and observed sea surface temperature is used as boundary condition. Intraseasonal variability, focusing on the northward propagating summer mode in these runs will be identified using the multi-channel singular spectrum analysis and will be compared against the ECMWF 40-year reanalysis. Spatial and temporal behavior, phase composites, vertical structure, convection-circulation coupling, contribution form tropical waves, moist processes etc will be examined to understand where and how spatial resolution becomes (does not become) important.