Oral.3: **14:45-15:00. Advantages of global storm resolving models in representing seasonal characteristics of tropical precipitation**

[1]**Hans Segura**, [1]**Cathy Hohenegger**, [1]**Christian Wengel** and [1]**Bjorn Stevens**

[1]*Max Planck Institute for Meteorology*

contact: hans.segura@mpimet.mpg.de

Abstract

In this work, we use one year of simulation of the global storm resolving model ICON coupled with the ocean with a resolution of 5km to analyze the different characteristics of the seasonal variability of precipitation in the tropics. We use the SAL (structure, amplitude, and location) method to identify and characterize the monsoon systems over land and the tropical rainbelts over the ocean. Regarding the tropical rainbelt, we select five ocean regions, namely the Atlantic, the eastern Pacific, the central-western Pacific, the southern Pacific, and the Indian ocean. Monsoon regions considered in this study are South America, Africa, India, and Southeast Asia. We also use the climatology of IMERG (2001-2020) to have a reference point of comparison. Tracking the areas of high values of monthly precipitation over land, we demonstrate that ICON can adequately reproduce the seasonal changes in the structure and location of monsoon systems in South America, Africa, and SE. Asia. A similar conclusion is reached when analyzing the tropical rainbelt in the eastern Pacific and the Atlantic. For instance, ICON can reproduce the area increase in the Eastern Pacific and Atlantic rainbelts during their northward migration. However, we observe some issues in the zonal migration of the rainbelts in the central and western Pacific and the Indian ocean. Thus, these results confirm that by resolving convection explicitly, important characteristics of tropical precipitation can be represented.