Geophysical Research Abstracts
Vol. 19, EGU2017-4600, 2017
EGU General Assembly 2017

Revealing the fine-scale structure of the North Atlantic ITCZ using ICON and observations

Matthias Brueck (1), Daniel Klocke (2), and Bjorn Stevens (1)

(1) Max Planck Institute for Meteorology, Hamburg, Germany (matthias.brueck@mpimet.mpg.de), (2) Deutscher Wetterdienst, Offenbach, Germany

The long standing question if the ITCZ is one elongated entity or a co-location of individual convective clusters is reviewed by exploring convection permitting simulations for the tropical Atlantic region (9000x3300 km) using the icosahedral non-hydrostatic (ICON) general circulation model with 2.5 km grid spacing.
Deactivating the convection parameterization facilitates the explicit evolution of convection across horizontal scales, enabling rich interactions with their environment and neighboring convective cells. The emerging fine scale structure of the ITCZ allows to answer the questions: are precipitation and surface convergence aligned?; does the ITCZ have different characteristics in different regions?; and to what extent is the ITCZ defined by its disturbances?
The analysis is supported using a wide range of observations and a segmentation method to identify individual convective objects. The convection permitting simulations offer the potential to make the "un-observable" visible, i.e. the internal structure of deep convective objects is usually hidden by cirrus anvils (looking from top) and by precipitation (looking from ground). Therefore, the question 'how high resolution simulations can bridge different observational perspectives' is explored.