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New climate models: Role of effective numerical diffusion on the ITCZ formation in ICON models

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Simulating the position and variability of the ITCZ realistically is a difficult test for general circulation models. The simulated ITCZ and tropical waves depend on the parameterization of the physical processes acting in vertical columns and on the horizontal organization by resolved scale dynamics. As the column-wise computed forcing is under-resolved, the effective numerical diffusion of the dynamical core acting near the grid-scale affects the organization of tropical convection. This poster investigates the effects of different configurations of the hydrostatic dynamical core of ICON, which have different grids - triangular or hexagonal - and different effective diffusivities, on the formation of the ITCZ in aqua planet experiments. These models use the same physical parameterizations as the ECHAM6 GCM, which therefore is used as reference. The analysis compares the strength and position of the ITCZ and wave-number frequency spectra for tropical waves.