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Convection across scales and challenges toward high-resolution

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The convection large-scale interaction is looked at globally, and in particular

in the tropics, using techniques like wave number frequency filtering (Wheeler and Kiladis, M Herman) and normal modes (Zagar). The global energy spectra and transfer of energy across scales are also informative, especially when going to higher resolution and comparing simulations with and without a deep convection parametrization scheme. Finally, we discuss new challenges such as microphysics and non-stationnarity that arise when using a classical convection parametrization at high resolution