

Regional climate models resolving convective processes and hydrological applications

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Given the significance of climate models for assessing climate change impacts, and recent increases in their resolution, there is a need to understand the strengths and weaknesses of climate models in reproducing key atmospheric processes, and to assess their performance against accurate ground-based observations. Furthermore, atmospheric models in a convection permitting scale integrate physical processes at a relevant spatiotemporal scale required to force hydrological models. This is of particular interest in remote environments, analysis of extreme events and assess future scenarios.

In this presentation I will address an example of uncertainties on ground-based observations in cold environments, their role for empirical model validation over complex terrain, the benefits of the regional climate model to describe a mesoscale process associated with precipitation and their changes in a simulated future climate, and finally, a hydrological application using a regional climate model in a convection permitting scale.