# Using cloud-resolving atmosphere simulations to improve climate models

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It is now feasible to run multi-day atmospheric simulations over large domains on the order of 1000 km at convection resolving resolutions below 200 m. But it is not clear how to bridge the gap between all the data generated in this new golden age of super-large LES and the large-scale climate and weather models. We try to bridge this gap by using the high resolution simulations to improve climate and weather models by better understanding and parameterizing the sub-grid variability not resolved by the large-scale models. By using the high resolution data we can analyze the performance of an individual parametrization independently of errors in model dynamics, initialization, and other parametrizations. In this poster we use the simulations from the ongoing HD(CP)$^2$ project, which cover Germany at a resolution of 156 meters, to test and improve a cloud parametrization designed for climate models. This poster will focus on the unique advantages such data offers us as well as the technical difficulties we encountered, such as efficiently calculating longitude-latitude domains on an unstructured grid with 22 million horizontal points.