Geophysical Research Abstracts
Vol. 20, EGU2018-9669, 2018
EGU General Assembly 2018

HD(CP)^2 – A project on high-resolution modeling

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HD(CP)^2 is the acronym for High Definition Clouds and Precipitation for advancing Climate Prediction and a project funded by the German Federal Ministry of Education and Research. It aims at improving the representation of cloud and precipitation (CP) processes through high-resolution simulations with the ICON-LEM (ICOsahedral Nonhydrostatic - Large Eddy Model).
ICON-LEM operates at a horizontal resolution of up to 156m (also 312m and 625m) and can be applied in hindcast simulations on regions as diverse as continental Europe and the Tropical Atlantic. With its 150 vertical levels up to 21km it allows for a detailed representation of CP processes and helps to answer questions that are addressed in the various modules of HD(CP)^2. These span from radiative forcing to large-scale convection or the influence of aerosols on cloud formation. HD(CP)^2 gives examples of how different scientific communities exploit the same high-resolution simulations and combine their findings to better describe CP processes in a cloud-resolving model.