

The HD(CP)2 Observational Prototype Experiment HOPE - Overview and Examples

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The “HD(CP)2 Observational Prototype Experiment” (HOPE) was executed as a major 2-month field experiment in Jülich, Germany, performed in April and May 2013, followed by a smaller campaign in Melpitz, Germany in September 2013. HOPE has been designed to provide information on land-surface-atmospheric boundary layer exchange, aerosol, cloud and precipitation pattern for process studies and model evaluation with a focus on the onset of clouds and precipitation in the convective atmospheric boundary layer.

HOPE-Jülich instrumentation included a radio sounding station, 4 Doppler lidars, 4 Raman lidars, 1 water vapour differential absorption lidar, 3 cloud radars, 5 microwave radiometers, 3 rain radars, 6 sky imagers, 99 pyranometers, and 4 Sun photometers operated in synergy at different supersites. The HOPE-Melpitz campaign combined ground-based remote sensing of aerosols and clouds with helicopter- and balloon-based in-situ observations in the atmospheric column and at the surface.

HOPE provided an unprecedented collection of atmospheric dynamical, thermodynamical, and micro- and macro-physical properties of aerosols, clouds and precipitation with high spatial and temporal resolution within a cube of approximately 10 x 10 x 10 km³. HOPE data will significantly contribute to our understanding of boundary layer dynamics and the formation of clouds and precipitation. The datasets are made available through the Standardized Atmospheric Measurement Data SAMD archive at <https://icdc.cen.uni-hamburg.de/index.php?id=samd>.

The presentation is based on an overview paper in ACP where results published in an ACP HOPE special issue are summarized, see http://www.atmos-chem-phys.net/special_issue366.html.

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