

EGU21-11608

<https://doi.org/10.5194/egusphere-egu21-11608>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Airborne Atmospheric Measurements with the Max Planck CloudKites

Marcel Schröder¹, Freja Nordsiek¹, Oliver Schlenczek¹, Antonio Ibañez Landeta¹, Johannes Güttler¹, Gholamhossein Bagheri¹, and Eberhard Bodenschatz^{1,2,3}

¹Max Planck Institute for Dynamics and Self-Organization

²Institute for Nonlinear Dynamics, Faculty of Physics, Georg August University of Göttingen

³Laboratory of Atomic and Solid State Physics and Sibley School of Mechanical and Aerospace Engineering, Cornell University, Ithaca, NY 14853, USA

To investigate cloud microphysics and turbulence in clouds and in the atmospheric boundary layer, we specially developed airborne platforms, one Max-Planck-CloudKite + (MPCK+) and two mini-Max-Planck-CloudKites (mini-MPCK). They are deployed aboard balloon-kite hybrids conducting *in situ* measurements of meteorological and cloud microphysical properties with high spatial and temporal resolution. During the EUREC4A-ATOMIC field campaign in the Caribbean January-February 2020, the MPCK+ and one mini-MPCK sampled clouds aboard a 250 m³ aerostat launched from the R.V. Maria S. Merian where both instruments were operated between MSL and 1500m MSL. In addition, one mini-MPCK profiled the atmosphere between MSL and 1000 m MSL aboard a 74 m³ aerostat launched from the R.V. Meteor. In total, we acquired 145 h of flight-data on RV Maria S. Merian and 52 h of flight-data on RV Meteor. For the MPCK+, this included 5 hr of Particle Image Velocimetry data and 3 hr of inline holography data inside clouds and near the cloud edges. We present *in situ* data measured by the MPCKs during the EUREC4A-ATOMIC field campaign and report on preliminary assessment of turbulence features.