Geophysical Research Abstracts
Vol. 20, EGU2018-16081, 2018
EGU General Assembly 2018

Cloud geometry from airborne stereo imagery, towards applications

Tobias Kölling, Tobias Zinner, and Bernhard Mayer
LMU München, Meteorologisches Institut, Physik, München, Germany (tobias.koelling@physik.uni-muenchen.de)

During the NARVAL-II and NAWDEX field campaigns, passive remote sensing in the visible and near infrared range of the electromagnetic spectrum allows to remotely investigate cloud microphysical properties like droplet effective radius, thermodynamic phase or optical thickness. However, as opposed to active remote sensing, passive data does not provide position information for the measured quantities directly. We have shown that it is possible to generate such position information for cloud surfaces by a stereographic method using images from a colocated video camera. In a first step, this method yields information in form of point clouds, an unstructured set of mostly independent position measurements.
Now we connect the dots and focus on enhancing this data to actually represent cloud surfaces and subsequently derive surface orientation. The resulting surfaces can be used to project measurements of other passive sensors (with different field of views) onto the cloud surface, thus providing a natural method of regridding data to a common location. Finally the surface orientation data is used as an additional input to retrieve cloud droplet effective radii and cloud optical thickness in order to resolve ambiguities due to the 3D structure of clouds at high spatial resolution.