



## **Spatially inhomogeneous cirrus: Influence on atmospheric radiation**

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Inhomogeneous cirrus will be investigated by airborne radiation and microphysical measurements in the framework of the AIRTOSS (AIrcraft Towed Sensor Shuttle) – Project in cooperation with the University of Mainz and the Max Planck Institute for Chemistry in Mainz. The effects of microphysical inhomogeneity of the cloud on their radiative energy budget and remote sensing results will be studied. Collocated measurements by an airplane (Learjet) and the AIRTOSS, released on a 4-km long towing cable underneath the plane, are collected above and beneath the cirrus cloud. Spectral nadir – radiances and up- and downward irradiances will be measured to derive the spectral transmissivity, absorptivity and reflectivity of the observed cirrus. The AIRTOSS is dipped from above into the cloud, to obtain in situ microphysical measurements. Simultaneously, the microphysical cirrus properties are retrieved on the basis of the reflected radiance measurements collected on the Learjet. By using a multispectral CCD camera digital images of the cloud surface from above will be acquired. The data will be transformed into radiances and combined with the radiative data to obtain the effect of the cirrus inhomogeneity on the radiative properties of the cloud. Two field campaigns will take place in autumn 2012 and spring 2013 above the North Sea.