Final Preport for Project **1002** Project title: **Forcing in the long-wave spectrum due to aerosol-cloud interactions: satellite and climate modelling vs. HALO (FLASH)** Principal investigator: **Johannes Quaas** Report period: **July 1, 2016 - June 30, 2020**

The project FLASH was very successful and led to numerous publications. In particular it helped to develop and interpret the new satellite retrievals of ice crystal number concentrations (Ni; Sourdeval et al., 2018; Gryspeerdt et al., 2018) that is highly instrumental to assess the aspects of aerosol-cloud interactions that go beyond the much more often studied liquid clouds. In particular this addresses the forcing in the long-wave spectrum where ice clouds – especially cirrus – play a large role, and the data allow to assess the various freezing mechanisms. One of the important results on the basis of the modelling was the ability to split the effective radiative forcing due to aerosol-cloud interactions into its components, the radiative forcing (Twomey effect) and the rapid adjustments. This was accomplished with the help of simulations using the aerosol-climate model ECHAM-HAMMOZ (Mülmenstädt et al., 2019).

References

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