



## Modelling ice nucleation due to dust

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Formation of cold clouds is enhanced if ice nuclei (IN) are available. Cold clouds contribute at global scale with 60% in average in precipitation and their presence significantly affects the atmospheric radiation properties. It is expected that better description of the IN process should substantially improve cloud parameterization in climate and numerical weather prediction models. Observations show that mineral dust particles are the dominant residuals found in cloud ice. In this study we employ the regional dust DREAM model based on high horizontal and vertical grid resolution to parameterize IN caused by mineral dust. DREAM has been already deployed in a study related to IN process (Klein et al, 2010), also in model experiments using several IN parameterization schemes in support of the IN field experiment CALIMA over Canaries. The model has been also extended by adding the major dust mineral fractions as tracers in order to facilitate studying a role of dust mineralogy in ice nucleation. This study will present parameterization of IN using the simulated dust concentration, water moisture and temperature. Preliminary results of simulated IN will be shown, as well as IN validation against lidar aerosol profiles and ice cloud water profiles observed by cloud radar in the Potenza EARLINET site. This study is an initial step in improving a cloud physics parameterization using IN as an input variable in an integrated dust-atmospheric modelling system.