Geophysical Research Abstracts
Vol. 21, EGU2019-12150, 2019
EGU General Assembly 2019

Ice nucleation activity of dust particles emitted from cattle feeding operations in the Texas Panhandle

Naruki Hiranuma (1), Nsikanabasi Umo (2), Ottmar Möhler (2), and the TXDUST01 Team

(1) Dept. of Life, Earth and Environmental Sciences, West Texas A&M University, Canyon, United States (nhiranuma@wtamu.edu), (2) Institute of Meteorology and Climate Research – Atmospheric Aerosol Research Department, Karlsruhe Institute of Technology, Karlsruhe, Germany

This poster presents a parameterization of the ice-nucleating propensity of open-air feedlot dusts by the AIDA (Aerosol Interaction and Dynamics in the Atmosphere) chamber, ice crystal residual (ICR) analysis and other modern suite of online and offline aerosol characterization instruments for the first time for the feedlot sample. The overall objective of the study is characterizing physical, chemical and biological properties of ice-nucleating particles (INPs) from a cattle feedlot in Texas, USA, and their relation to immersion freezing processes in simulated cloud systems using the AIDA chamber. New data on the ice nucleation properties of agricultural dust at a wide range of heterogeneous freezing temperatures will be generated. We also target assessing heat influence on abundance and composition of feedlot INPs. Our INP and ICR measurements will be useful to generate new ice nucleation parameterizations that would help predict primary ice crystal concentrations representative for the particle-laden agricultural source. Sample analyses are just beginning.