Geophysical Research Abstracts
Vol. 15, EGU2013-5884, 2013
EGU General Assembly 2013

Mixed phase clouds: observations and theoretical advances (overview)

Alexei Korolev

Environment Canada, Cloud Physics and Severe Weather Section, Toronto, Canada (alexei.korolev@ec.gc.ca, +1 (416) 739-4211)

Mixed phase clouds play important role in precipitation formation and radiation budget of the Earth. The microphysical measurements in mixed phase clouds are notoriously difficult due to many technical challenges. The airborne instrumentation for characterization of the microstructure of mixed phase clouds is discussed. The results multiyear airborne observations and measurements of frequency of occurrence of mixed phase, characteristic spatial scales, humidity in mixed phase and ice clouds are presented. A theoretical framework describing the thermodynamics and phase transformation of a three phase component system consisting of ice particles, liquid droplets and water vapor is discussed. It is shown that the Wegener-Bergeron-Findeisen process plays different role in clouds with different dynamics. The problem of maintenance and longevity of mixed phase clouds is discussed.