

Séminaire vendredi 6 juin 2014 11h TE

Seminar Friday June 6th 2014 11h ET

Sujet/Subject :A novel approach to describe supersaturation and CCN activation in liquid clouds

Conférencier/Lecturer: Alexei Korolev (Cloud Physics and Severe Weather Research Section)

Langue/language : Anglais / English

Resumé/Abstract :

Water vapor supersaturation is one of the most important cloud parameter determining activation of cloud condensation nuclei (CCN), rate of cloud droplet growth and their concentration. These microphysical parameters in its turn are directly linked to radiation transfer and precipitation formation. Treatment of supersaturation in cloud models remains a challenging task because of small time steps required for its calculation. It has been shown analytically that supersaturation in a vertically moving adiabatic parcel has a universal solution with a scaling factor dependent on the vertical velocity uz and droplet number concentration N as $uz^{3/4} N^{-1/2}$. The findings of this work open the door for an entirely new way of parameterization of cloud microphysical processes and specifically for the parameterization of CCN nucleation in cloud models. The new equation for the parameterization of CCN nucleation is discussed.