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Single Particle Analysis of Ice Forming Aerosols

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During January and February of 2010 ice forming aerosol particles were analyzed at Storm Peak Laboratory in north-central Colorado in the USA. Atmospheric particles were acquired through an isokinetic inlet during periods when free-tropospheric conditions with minimal local influence existed. The particles were then subject to low temperature and high relative humidity in order to mimic cloud formation conditions. Particles which nucleated ice were separated using a counterflow virtual impactor. The size and chemical composition of the ice nuclei was then characterized in situ using a single particle mass spectrometer . Samples were also collected for off line electron microscopic analysis. A particular emphasis was placed on determination of fractions associated with anthropogenic activity and biogenic components.