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- Recent Final Revised Papers
- Volumes and Issues**
- Special Issues
- Library Search
- Title and Author Search

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Submission

Review

Production

Subscription

Comment on a Paper



[Volumes and Issues](#) [Contents of Issue 6](#)

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New particle formation in the Front Range of the Colorado Rocky Mountains

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Abstract. New particle formation is of interest because of its influence on the properties of aerosol population, and due to the possible contribution of newly formed particles to cloud condensation nuclei. Currently no conclusive evidence exists as to the mechanism or mechanisms of nucleation and subsequent particle growth. However, nucleation rates exhibit a clear dependence on ambient sulphuric acid concentrations and particle growth is often attributed to the condensation of organic vapours. A detailed study of new particle formation in the Front Range of the Colorado Rocky Mountains is presented here. Gas and particle measurement data for 32 days was analyzed to identify event days, possible event days, and non-event days. A detailed analysis of nucleation and growth is provided for four days on which new particle formation was clearly observed. Evidence for the role of sesquiterpenes in new particle formation is presented.

[Final Revised Paper](#) (PDF, 2339 KB) [Discussion Paper](#) (ACPD)

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