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## Atmospheric particle formation events at Värriö measurement station in Finnish Lapland 1998-2002

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**Abstract.** During the calendar years 1998-2002, 147 clear 8nm diameter particle formation events have been identified at the SMEAR I station in Värriö, northern Finland. The events have been classified in detail according to the particle formation rate, growth rate, event starting time, different trace gas concentrations and pre-existing particle concentrations as well as various meteorological conditions. The frequency of particle formation and growth events was highest during the spring months between March and May, suggesting that increasing biological activity might produce the precursor gases for particle formation. The apparent 8nm particle formation rates were around 0.1 /cm<sup>3</sup>s, and they were uncorrelated with growth rates that varied between 0.5 and 10nm/h. The air masses with clearly elevated sulphur dioxide concentrations (above 1.6ppb) came, as expected, from the direction of the Nickel and Monschegorsk smelters. Only 15 formation events can be explained by the pollution plume from these sources.

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