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Tropical Aerosol in the Arctic

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The Asian summer monsoon is an effective transport pathway for aerosols and gas phase species into the upper troposphere and lower stratosphere. Model simulations by CLaMS (Chemical Lagrangian Model of the Stratosphere) can show the transport and mixing of aerosol particles into the extratropical UTLS by making use of artificial tracers of air mass origin. Occasionally, CLaMS results show filaments of aerosol particles even in the Arctic.
On the northwestern coast of Svalbard in the European Arctic, Lidar measurements by KARL (Koldewey Aerosol Raman Lidar) are carried out during the entire year. Investigations of Arctic aerosol can be performed up to about 30 km altitude. For this study, we compared CLaMS simulations of aerosol transport and profiles measured by KARL. First results from the Lidar measurements reveal a seasonality of the background aerosol concentration in the lower Arctic stratosphere. The comparison between KARL and CLaMS is still ongoing work.

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