Announcement of a topic for:

Seminar Research	**X**	
Seminar Methods	**X**	
Master Theses	**X**	(please mark one or more)

Topic	Improved characterization of Arctic multi-layer clouds based on radar observations
Release Date	15. July 2024
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Description:	Multi-layer clouds are more abundant in the Arctic than elsewhere on Earth. Their occurrence can be characterized with the help of collocated soundings and cloud-radar observations (Vassel et al., 2019). A cloud layer detected by this method, however, might actually be cloud, virga, or a mixture of both. The use of Doppler spectra enables a better separation between cloud layers and virga and, thus, an improved characterization of multi-layer clouds. The PEAKO algorithm (Kalesse et al., 2019) will be used to investigate measured Doppler spectra for the occurrence of local maxima to separate cloud layers (local maximum of around 0 m/s) from falling ice crystals (local maximum at negative speed. The work will be based on long-term cloud-radar observations at Ny Alesund and requires an interest in programming.
Literature:	Kalesse, H., Vogl, T., Paduraru, C., and Luke, E.: Development and validation of a supervised machine learning radar Doppler spectra peak-finding algorithm, Atmos. Meas. Tech., 12, https://doi.org/10.5194/amt-12-4591-2019, 2019. Vassel, M., Ickes, L., Maturilli, M., and Hoose, C.: Classification of Arctic multilayer clouds using radiosonde and radar data in Svalbard, Atmos. Chem. Phys., 19, https://doi.org/10.5194/acp-19-5111-2019, 2019.