

# A high-level analysis of complex Arctic mixed-phase cloud dynamics

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Mixed-phase clouds play an important role in the Arctic climate system. However, accurate climate projections are seriously hampered due to uncertainties in representing these clouds. Understanding their dynamical behavior based on first principles is a challenging task which requires the disentanglement of mixed-phase micro-physical complexities and a multitude of cloud–surface–boundary layer interactions. Here we take an alternative route towards describing the cloud system and adopt a dynamical-systems perspective. Such an approach has already been successfully applied to describe and model a wide range of complex systems. This research focuses on data obtained at the permanent observatory in Ny-Alesund, Svalbard. We present our results concerning the analysis of distinct signatures of two preferred states. Further, preliminary results on the interdependence of the key variables and their temporal evolution are presented.

**Authors:** Dr VAN HOOFT, J. Antoon (TU Delft); EKMAN, Annica (Stockholm University); DEWEY, Maura (Stockholm University); GLASSMEIER, Franziska (TU Delft)

**Presenter:** Dr VAN HOOFT, J. Antoon (TU Delft)

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