

Your Abstract Submission Has Been Received

Click [here](#) to print this page now.

You have submitted the following abstract to AGU Fall Meeting 2021. Receipt of this notice does not guarantee that your submission was free of errors.

Classification of cloud microphysical properties as a function of sea ice concentration conditions during MOSAiC

Pablo Saavedra Garfias¹, Heike Kalesse¹, Gunnar Spreen², Valentin Simon Ludwig², Hannes Griesche³, Kerstin Ebell⁴, Andreas Walbröl Sr.⁴, Ronny Engelmann³, Martin Radenz³ and Patric Seifert³, (1)University of Leipzig, Leipzig, Germany, (2)University of Bremen, Bremen, Germany, (3)Leibniz Institute for Tropospheric Research, Leipzig, Germany, (4)University of Cologne, Cologne, Germany

Abstract Text:

As part of the (AC)³ Arctic Amplification project, we are studying the influence of specific sea ice conditions like the presence of leads or polynyas on micro- and macrophysical cloud properties such as cloud fraction, altitude, thickness, thermodynamic phase, and their coupling state with respect to the underlying surface during the MOSAiC expedition's legs 1 to 3. Micro- and macrophysical properties of surface-coupled clouds are analyzed as a function of sea ice concentration (SIC) in the vicinity of the ground-based atmospheric remote-sensing observations onboard the RV Polarstern. Only situations are analyzed where wind favored the transportation of air from location where open sea ice is detected.

Cloud microphysical properties are obtained from the CloudNet cloud target classification algorithm which uses the atmospheric remote-sensing instrumentation suite on board of RV Polarstern provided by the US Atmospheric Radiation Measurement (ARM) mobile facility, the TROPOS ship-borne Atmosphere observation suite (OCEANET) and liquid water path retrievals by the University of Cologne. Primarily, the classical Matlab-based CloudNet classifications retrieved by TROPOS are used. Furthermore, the recently released ARM "evaluation" Active Remote Sensing Clouds (ARSCL) data product for the KA-band cloud radar is also evaluated by the new Python CloudNet version developed at the Finnish Meteorological Institute. Discrepancies between those two CloudNet versions will be evaluated and reported as feedback for the ARM evaluation data set.

High resolution (1-km) merged AMSR2-MODIS satellite retrievals of Sea Ice Concentration by the University of Bremen are used as information for sea ice monitoring. The present contribution only exploits SIC data, however future studies will focus on MOSAiC specific products for the classification of leads.

Statistics for the cloud properties as a function of SIC will be presented as first approach to investigate the influence of sea ice conditions to central Arctic clouds.

Session Selection:

C013. Coupled-system Processes of the Central Arctic Atmosphere-Sea Ice-Ocean System: Harnessing Field Observations and Advancing Models

Submitter's E-mail Address:

pablo.saavedra@uni-leipzig.de

Abstract Title:

Classification of cloud microphysical properties as a function of sea ice concentration conditions during MOSAiC

Requested Presentation Type:

Assigned by Program Committee (oral, eLightning or poster discussion session)

Previously Published?:

No

Abstract Payment:

Paid (agu-fm21-904910-7876-4524-5171-1805)

For non-students only: I would like to volunteer as an OSPA judge.

First Presenting Author***Presenting Author***

Pablo Saavedra Garfias

Primary Email: pablo.saavedra@uni-leipzig.de

Affiliation(s):

University of Leipzig
Leipzig (Germany)

Second Author

Heike Kalesse

Primary Email: heike.kalesse@uni-leipzig.de

Affiliation(s):

University of Leipzig
Leipzig (Germany)

Third Author

Gunnar Spreen

Primary Email: gunnar.spreen@uni-bremen.de

Affiliation(s):

University of Bremen
Bremen (Germany)

Fourth Author

Valentin Simon Ludwig
Primary Email: vludwig@uni-bremen.de

Affiliation(s):

University of Bremen
Bremen (Germany)

Fifth Author

Hannes Griesche
Primary Email: griesche@tropos.de

Affiliation(s):

Leibniz Institute for Tropospheric Research
Leipzig (Germany)

Sixth Author

Kerstin Ebell
Primary Email: kebell@meteo.uni-koeln.de

Affiliation(s):

University of Cologne
Cologne (Germany)

Seventh Author

Andreas Walbröl Sr.
Primary Email: a.walbroel@uni-koeln.de

Affiliation(s):

University of Cologne
Cologne (Germany)

Eighth Author

Ronny Engelmann
Primary Email: ronny@tropos.de

Affiliation(s):

Leibniz Institute for Tropospheric Research
Leipzig (Germany)

Ninth Author

Martin Radenz
Primary Email: radenz@tropos.de

Affiliation(s):

Leibniz Institute for Tropospheric Research
Leipzig (Germany)

Tenth Author

Patric Seifert
Primary Email: seifert@tropos.de

Affiliation(s):

Leibniz Institute for Tropospheric Research
Leipzig (Germany)

If necessary, you can make changes to your abstract submission

To access your submission in the future, point your browser to: [User Portal](#)
Your Abstract ID# is: 904910.

Any changes that you make will be reflected instantly in what is seen by the reviewers.

After the abstract proposal is submitted, you are not required to go through all submission steps to make edits. For example, click the "Authors" step in the Abstract Submission Control Panel to edit the Authors and then click save or submit.

When you have completed your submission, you may close this browser window or submit another abstract proposal: [Call for Abstracts](#).

[Tell us what you think of the abstract submission process](#)