3rd (AC)³ Science Conference on Arctic Amplification

October 25th – 27th, 2021

Seminaris SeeHotel Potsdam,
An der Pirschheide 40, 14471 Potsdam, Germany

Agenda

MONDAY, 25 October 2021

14:00 – 16:00	*Registration desk*
15:00 – 18:00	Meet & Mingle (coffee and cake)
16:00	Photos & Group photo
18:00 – 22:00	Icebreaker (drinks and finger food)

TUESDAY, 26 October 2021

08:30 – 17:00	*Registration desk*
09:00 – 09:10	**Welcome** by **Annette Rinke** *(AWI Potsdam)*
09:10 – 09:30	**Manfred Wendisch** *(University of Leipzig)* Opening of the Conference & Current State of the (AC)³ Project
09:30 – 09:45	**Marlen Brückner** *(University of Leipzig)* General Information & General Assembly (GA)

09:45 – 12:35 PART I - TOPICAL SESSIONS

09:45 – 10:35 Session I (Chairs: Giovanni Chellini, Andreas Macke):
Aerosols & Clouds

09:45 – 10:05 **Keynote** talk by **Ann Fridlind** *(NASA GISS)*
"High-latitude cloud processes in models: Challenges and Strategies"

10:05 – 10:20 **Tracy Kiszler et al.** *(University of Cologne)*
"Evaluation of high-resolution simulations with ICON-LEM to assess the performance in a complex Arctic environment"

10:20 – 10:35 **Carola Barrientos et al.** *(TROPOS)*
"Radiative closure and cloud effects on the radiation budget based on satellite and ship-borne observations during Arctic summer research cruise PS106"

10:35 – 10:55 *Coffee break*

10:55 – 11:45 Session II (Chairs: Janna Rückert, Gunnar Spreen):
Sea Ice

10:55 – 11:15 **Keynote talk** by **Julienne Stroeve** *(UCLA Earth Sciences)*
"Sea Ice & Arctic Amplification"

11:15 – 11:30 **Ran Tao et al.** *(AWI Bremerhaven)*
"The long term spatial and temporal variability of albedo and transmittance on the Arctic sea ice "

11:30 – 11:45 **Hannah Niehaus et al.** *(University of Bremen)*
"Remote Sensing of Melt Ponds and Surface Albedo in the Arctic"

11:45 – 12:45 *Lunch break*

12:45 – 13:35 Session III (Chairs: Olivia Linke, Dörthe Handorf):
Large Scale Dynamics

12:45 – 13:05 **Keynote talk** by **Timo Vihma** *(FMI, Helsinki)*
"Warm air intrusions in the Arctic"

13:05 – 13:20 **Benjamin Kirbus et al.** *(University of Leipzig)*
"Remote connections between RV Polarstern and Polar 5 aircraft during the MOSAiC airborne campaign"

13:20 – 13:35 **Melanie Lauer et al.** *(University of Cologne)*
"Association of Precipitation with Atmospheric Rivers and weather systems in the Arctic"

13:35 – 17:00 **PART II – BREAKOUT SESSIONS CROSSCUTTING ACTIVTIES (CCA)**

CCA 1
"Lapse rate feedback"
CCA-Lead: Johannes Quaas *(University of Leipzig)*

CCA 2
"Surface processes"
CCA-Lead: Marion Maturilli *(AWI Potsdam)*

CCA 3
"Arctic mixed-phase clouds"
CCA-Lead: Vera Schemann *(University of Cologne)*

CCA 4
"Air mass transport and transformation"
CCA-Lead: Susanne Crewell *(University of Cologne)*

15:00 – 15:30 *Coffee break*

18:30 *Dinner*

20:00 – 20:30 **Evening Talk by Esther Horvath**
"Impressions from the MOSAiC Campaign"

WEDNESDAY, 27 October

08:30 – 17:00 *Registration desk*

09:00 – 12:00 **Poster Session I (see table below)**:
A – *Fluxes in the Arctic Boundary Layer*
B (Group I) – *Clouds*
C – *Ocean, Atmosphere & Sea Ice Interaction*

10:30 – 11:00	*Coffee break*
12:00 – 13:00	*Lunch break*
13:00 – 16:00	Poster Session II (see table below): B (Group II) – *Aerosol & Water Vapour* D – *Atmospheric Circulation & Transport* E – *Integration & Synthesis*
14:30 – 15:00	*Coffee break*
16:00 – 17:00	**Concluding Remarks**
(max) 17:00	End of Conference

(AC)³ is going to cover all coffee and lunch breaks during the conference and non-alcoholic drinks and food during dinner via the central project Z01.

Poster Session I:

#PP1 A01: New insights into Arctic cloud-turbulence-radiation interactions based on MOSAiC observations and simulations, *A. Macke, R. Neggers, C. Barrientos, R. Engelmann, H. Griesche, N. Schnierstein and P. Seifert*

#PP2 A02: Tethered balloon-borne energy budget measurements in the cloudy central Arctic, *E. Akansu, M. Lonardi, H. Siebert, and M. Wendisch*

#PP3 A03: Impact of multi-layer clouds on the atmospheric boundary layer structure and energy budget, *C. Lüpkes, M. Schäfer, S. Becker, J. Michaelis, and M. Wendisch*

#PP4 B01: Assessment of CCI cloud products with ARM measurements over the Arctic, *K. Vinjamuri, M. Vountas, L. Lelli, K. Bramstedt, Y. Ziegler, and J.P. Burrows*

#PP5 B03: Characterization of Arctic clouds over sea ice and open ocean by airborne in-situ and remote sensing measurements, *M. Klingebiel, M. Mech, L.-L. Kliesch, S. Mertes, A. Macke, S. Crewell, and A. Ehrlich*

#PP6 B07: Classification of cloud microphysical properties and sea ice concentration conditions in the western Arctic, *P. Saavedra Garfias, and H. Kalesse-Los*

#PP7 B08: Measuring snowfall properties with the Video In-Situ Snowfall Sensor during MOSAiC, *M. Maahn, M. Radenz, C. Cox, M. Gallagher, J. Hutchings, M. Shupe, and T. Uttal*

#PP8 C01: Surface property measurements during MOSAiC: spatial heterogeneity & temporal evolution, *E. Jäkel, T. Sperzel, H. Niehaus, R. Tao, M. Wendisch, G. Spreen, and M. Nicolaus*

#PP9 C03: Feedback of atmospheric composition and ocean colour to Arctic amplification, *A.-M. Blechschmidt, I. Bougoudis, A. Bracher, J.P. Burrows, S. Losa, S. Seo, M. Zeising, and B. Zilker*

#PP10 C04: Upper ocean processes in Fram Strait and the central Arctic, *M. Walter, Z. Hofmann, W. Körtke, B.L. Duong, W.-J. van Appen, O. Huhn, C. Mertens, T. Kanzow, and M. Rhein*

#01 Impact of clouds on the terrestrial energy budget of the surface and the atmospheric boundary layer, *S. Becker, J. Stapf, M. Schäfer, A. Ehrlich, and M. Wendisch*

#02 Impacts of Arctic leads on clouds and humidity inversions in large-eddy simulations constrained by MOSAiC data, *N. Schnierstein, J. Chylík, R. Neggers*

#03 One year of detailed macro- and microphysical properties of Arctic clouds from synergistic remote sensing above the frozen Arctic Ocean, *H. Griesche, P. Seifert, J. Bühl, R. Engelmann, M. Radenz, J. Hofer, and D. Althausen*

#04 Modelling of Arctic Multilayer Clouds using ICON-ART, *G. Wallentin, C. Hoose, P. Achtert, and M. Tesche*

#05 Characterising the spatial variability of ice water content in and below mixed-phase clouds, *N. Maherndl, and M. Maahn*

#06 Applicability of the Semi Analytical CloUd Retrieval Algorithm (SACURA) over the Arctic, *Y. Ziegler, K. Bramstedt, L. Lelli, K. Vinjamuri, M. Vountas, and J.P Burrows*

#07 Evaluation of the representation of Arctic mixed-phase clouds in ECMWF forecasts during ACLOUD, *H. Müller, M. Schäfer, A. Ehrlich, and M. Wendisch*

#08 Interactions between Arctic surfaces, cloud thermodynamic structure and origin of Arctic cloud residuals, *O. Eppers, S. Mertes, U. Kästner, M. Zanatta, J. Schneider, D. Kunkel, A. Herber, P. Hoor, and S. Borrmann*

#09 Spatio-temporal variability of thermal sea ice properties and lead fraction from helicopter-borne infrared observations during the MOSAiC expedition, *L. Thielke, M. Huntemann, G. Spreen, S. Hendricks, A. Jutila, R. Ricker, and D. Murashkin*

#10 Derivation of the surface albedo of specific surface types from areal HELiPOD and aircraft observations during MOSAiC, *T. Sperzel, E. Jäkel, A. Lampert, F. Pätzold, and M. Wendisch*

#11 High resolution satellite observations and simulations of tropospheric BrO in a warming Arctic, *B. Zilker, A.-M. Blechschmidt, S. Seo, I. Boudoudis, A. Richter, J.P. Burrows*

#12 High-resolution modelling of seasonality and spatial distribution of marine organic aerosol precursors in the Arctic Ocean, *M. Zeising, S. Losa, J. Hauck, S. Thoms, and A. Bracher*

#13 Presentation of the HELiPOD dataset and first results, *M. Asmussen, F. Pätzold, I. Wiekenkamp, T. Sachs, and A. Lampert*

#14 Submesoscale Frontal Dynamics of the Marginal Ice Zone in Fram Strait, *Z. Hofmann, and W. J. van Appen*

#15 Decadal changes in the transient tracer distribution in the Arctic Ocean, *W. Körtke, M. Walter, O. Huhn, and M. Rhein*

Poster Session II:

#PP11 B02: Remote sensing of aerosol properties and surface reflectance in the Arctic from satellite observations, *B. Swain, M. Vountas, L. Mei, S. Jafariserajehlou, and J.P. Burrows*

#PP12 B04: Spatial distribution, sources and cloud processing of aerosol particles, *M. Hartmann, S. Zeppenfeld, M. Zanatta, F. Stratmann, M. van Pinxteren, A. Herber, H. Wex, C. H. Sze, H. Herrmann, and Z. Juranyi*

#PP13 B05: Variability and trends of water vapor in the Arctic, *J. Rückert, A. Walbröl, K. Ebell, and G. Spreen*

#PP14 D01: Large-scale atmospheric energy transport into the Arctic, *I. Höschel, D. Handorf, S. Mehrdad, and Ch. Jacobi*

#PP15 D02: Marine aerosol and its impact on Arctic clouds, *I. Papakonstantinou-Presvelou, A. Leon, J. Quaas, and B. Heinold*

#PP16 D03: Atmosphere-ice-ocean interactions: Contributions by open-water leads, sea-ice roughness, cyclones, *L. Aue, A. Mchedlishvili, W. Dorn, A. Rinke, G. Spreen*

#PP17 D04: Project Poster: Interaction of Meridional Ocean Heat Transport and Regional Processes in the Arctic Ocean, *F. Heukamp, E. Metzner, T. Kanzow, M. Salzmann, and R. Gerdes*

#PP18 E01: The Arctic lapse rate feedback: An energy budget analysis of CMIP6 models and perspective towards process-oriented analysis, *O. Linke, J. Quaas, J. Chylík, and R. Neggers*

#PP19 E02: Recent developments in observing the Ny-Ålesund atmospheric column and beyond, *K. Ebell, M. Maturilli, J. Notholt, S. Dahlke, R. Gierens, M. Palm, D. Ji, Ch. Ritter, and M. Buschmann*

#PP20 E03: Towards process-level assessment of Arctic mixed-phase clouds, *G. Chellini, T. Kiszler, S. Kneifel, and V. Schemann*

#PP21 E04: Precipitation & Snowfall: Processes, Extremes and Impacts, *M. Lauer, S. Krietenstein, C. Viceto, I. Gorodetskaya, A. Rinke, and S. Crewell*

#16 Microwave emissivity of sea ice from airborne observations, *N. Risse, M. Mech, S. Trömel, C. Prigent, G. Spreen, and S. Crewell*

#17 Arctic methane - contributions of the junior research group "Greenhouse gases in the Arctic" at IUP Bremen to (AC)³, *J. Hachmeister, L. Heizmann, M. Buchwitz, M. Palm, O. Schneising, J.P. Burrows, J. Notholt, and M. Buschmann*

#18 A new tool to effectively analyze (AC)³ airborne campaigns, *M. Mech, N. Risse, G. Marrollo, and I. Schirmacher*

#19 Modelling snow and sea ice emissivity for satellite-based water vapor retrieval, *J. Rückert, M. Huntemann, and G. Spreen*

#20 Microphysical cloud characterization of arctic liquid, ice and mixed-phase clouds observed by airborne in-situ observations in spring and summer above sea ice and the open ocean, *M. Moser, C. Voigt, V. Hahn, O. Jourdan, C. Gourbeyre, R. Dupuy, G. Mioche, A. Schwarzenboeck, J. Lucke, T. Jurkat-Witschas, Y. Boose, S. Crewell, A. Herber, C. Lüpkes, and M. Wendisch*

#21 ICESat-2 Altimeter Sea Ice Roughness Analysis on a Pan-Arctic Scale, *A. Mchedlishvili, G. Spreen, C. Melsheimer, and C. Lüpkes*

#22 Statistical relationships between Arctic cyclones and surface properties with particular focus on cyclone-sea ice interaction, *L. Aue, P. Uotila, T. Vihma, and A. Rinke*

#23 Ice microphysics of low-level ice clouds in the Arctic: Satellite analysis, *I. Papakonstantinou-Presvelou, and J. Quaas*

#24 Modelling marine primary organic aerosol over tropical and Arctic regions, *A. Leon, B. Heinold, and M. van Pinxteren*

#25 Precipitation formation in Arctic shallow mixed-phase clouds: insights from dual-frequency radar observations in Ny-Ålesund, *G. Chellini, T. Kiszler, V. Schemann, and S. Kneifel*

#26 Marine Cold Air Outbreaks in the Fram Strait region: Effects on ocean-atmosphere fluxes and the vertical structure of the troposphere, *N. Slättberg, M. Maturilli, and S. Dahlke*

#27 Simulation of airborne radar measurements in the Arctic using weather models and an advanced forward operator, *D. Ori, and V. Schemann*

#28 Assessing airborne strategies to calculate the moisture budget of High-Latitude Atmospheric Rivers from HALO, *H. Dorff, H. Konow, V. Schemann, and F. Ament*

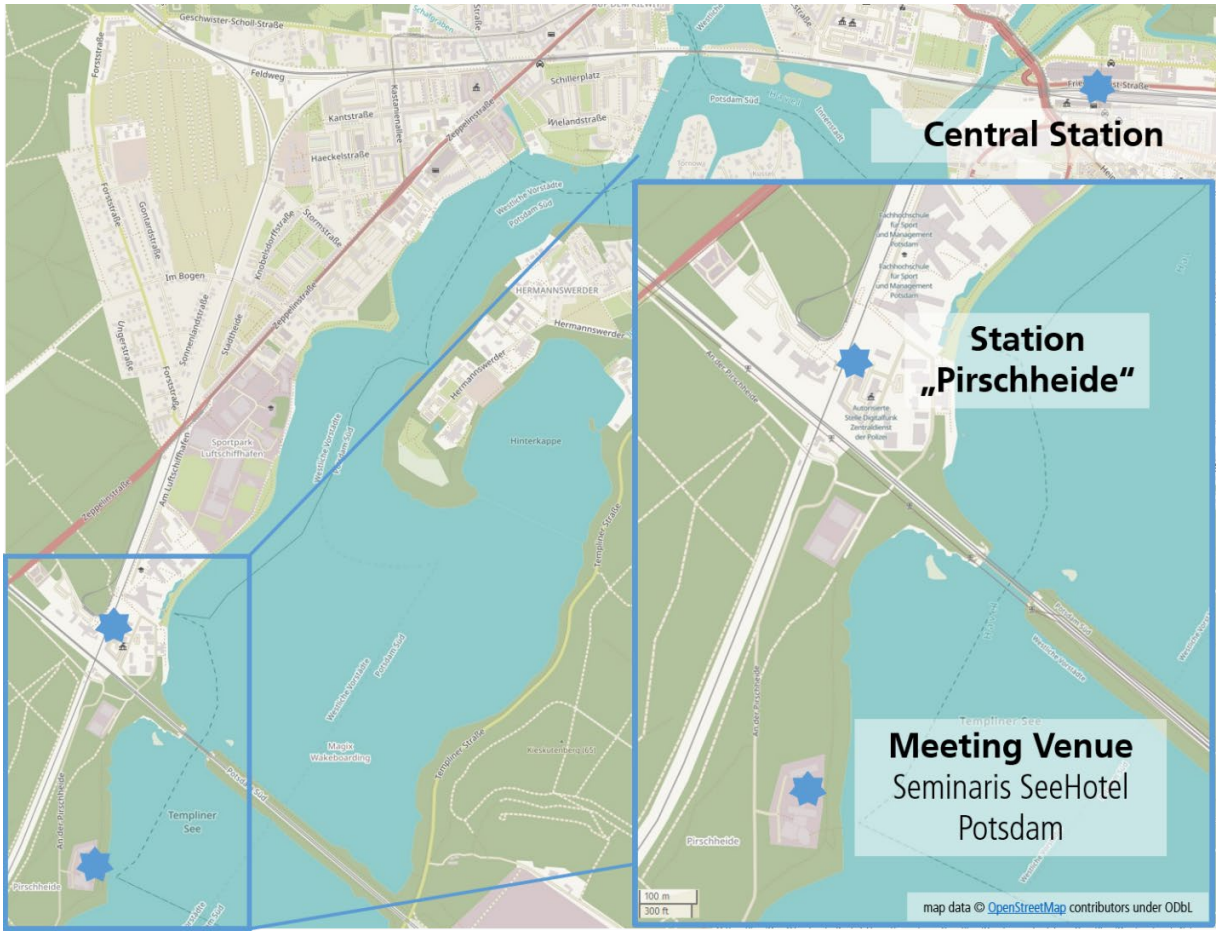
#29 Atmospheric rivers in the Arctic from 1980 to 2020 and their impacts on precipitation and temperature, *C. Viceto, I. Gorodetskaya, A. Rocha, A. Rinke, and S. Crewell*

#30 Does the Retreat of Barents Sea Ice Cover Enhance the Atlantic Water Inflow?, *F. Heukamp, T. Kanzow, and R. Gerdes*

How to get to the conference location?

The 3rd (AC)³ Science Conference will take place at the **Seminaris SeeHotel Potsdam** (https://www.seminaris.de/hotels/tagungshotel-potsdam-seehotel). Detailed travel information can be found here.

Address: Seminaris SeeHotel Potsdam
An der Pirschheide 40
14471 Potsdam, Germany



Arrival:

- If you come **by train (Potsdam, Hbf)**, the trip lasts:
  - About 4h30 min from Bremerhaven (2 connections in Hannover, Berlin)
  - About 5h from Köln (each hour)
  - About 3h40 from Bremen (connection in Hannover)
  - About 1h50 min from Leipzig (each hour)

  - From Potsdam, Hbf, you may take train RB23 Michendorf to Potsdam Pirschheide (6 min, 2 stations) or TRAM 91 (20 min, 13 stations), Direction Pirschheide Bahnhof, Potsdam
  - From Potsdam Pirschheide you may walk 850 m (9 min) to the hotel

- If you come by car, there are enough parking facilities in front of the hotel. Underground parking is available.

- If you come by plane, the easiest way is to land at BER Berlin Airport and take the train from terminal 1-2 RE 7 to Potsdam-Rehbrücke (about 1h35). From there may take tram 91 to Pirschheide Bahnhof, Potsdam.