1st ARTofMELT 2023 Open Science Conference

April 22-24, 2024 at Stockholm University, DeGeer Salen, Geohuset

supported by the Bolin Centre for Climate Research, the International Arctic Science Committee (IASC) and the International Meteorological Institute (IMI)

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Goals of the workshop:

1. Present and discuss first results from all participating groups
2. Planning and discussion of joint modeling activities
3. Planning and discussion of joint publications
4. Planning of joint database
5. Have fun!

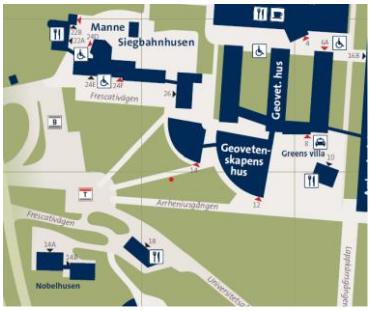
Zoom Link for all 3 days:

https://stockholmuniversity.zoom.us/j/63235018500?pwd=MVowWmpuTmpROHN5dHFVTDhZTkNwZz09

Location:

De Geersalen, Geohuset (2nd floor, Y-house), Frescati Campus.

First of the green buildings when you exit the T-bana station Universitetet



Preliminary program:

<u>Monday (22 April 2024): Summary & first highlights from ARTofMELT 2023</u>

12.00 – 13.00 **Lunch & registration**

13.00 - 14.30 **Session 1**

- 13.00 - 13.10 Welcome & logistics (Michael & Paul)
- 13.10 - 13.20 Some general impressions (Michael)
- 13.20 - 13.35 WP13 - Art and Science (Ida)
- 13.35 - 13.55 WP1 - Boundary Layer Meteorology (Ian)
- 13.55 - 14.15 WP3 - Aerosols and clouds (Paul & Jessie)
- 14.15 - 14.30 WP4 - Helikite vertical profiling (Julia S.)

14.30 – 15.00 **Fika**

15.00 – 17.00 **Session 2**

15.00 - 15.15 WP5 - Helipod survey & profiles (Falck)

15.15 - 15.30 WP7 - Secondary Marine Aerosol precursors and Links to aerosol growth at ice-melT onset in the Arctic (SMÄLTA) (Megan)

15.30 - 15.45 WP6 - Biogeochemistry (Penny)

14.45 - 16.00 WP8 - Sea ice physics (Philipp)

16.00 - 16.15 WP9 - Ice dynamics (Leif)

16.15 - 16.30 WP10 - Upper ocean structure and mixing (Julia M.)

16.30 - 16.45 WP2 - Water isotopes (Jeff)

16.45 - 17.00 Outreach - Why and how (Stella)

19.00 – 21.00 **Burgers & Beer Svea** (volontary, own cost)

Tuesday (23 April 2024): Detailed results from all work packages

08.30 – 10.00 **Session 3 - Meteorology, sea ice & ocean**

08.30 - 08.40 Synoptic situation during ARTofMELT23 (Sonja)

08.40 - 08.50 The state of the atmosphere during ARTofMELT: Cloud property retrievals and the surface energy budget (Heather & Ian)

08.50 - 09.00 Atmospheric forcing on sea ice drift in the Fram Strait (Timo)

09.00 - 09.10 Sea ice dynamics - Initial results from ARTofMELT (Leif)

09.10 - 09.20 Sea ice satellite backscatter evolution using L- and C-band SAR (Malin)

09.29 - 09.30 Upper ocean hydrography and turbulent mixing during ARTofMELT23 (Julia M.)

09.30 - 10.00 Discussion

10.00 – 10.30 **Fika**

10.30 – 12.00 **Session 4 - Sea ice & snow, aerosol sources**

10.30 - 10.40 Is spring melting in the Arctic detectable by under-ice radiation? (Philipp)

10.40 - 10.50 Snow and ice thermodynamics in the Fram Strait during spring and summer 2023 (Bin Cheng)

10.50 - 11.00 Near-surface particle concentration profiles above the Arctic sea ice (Theresa)

11.00 - 11.10 Assessing the sources of ice nucleating particles during the Arctic melt season (Jessie)

11.10 - 11.20 Characteristics of natural Arctic aerosols emitted from a wide range of local sources during ARTofMELT2023 (Gabriel)

11.20 - 11.30 The composition and sources of airborne bacteria and proteinaceous Ice Nucleating Particles in the High Arctic marine region during Spring (Jennie)

11.30 - 11.40 What we can learn from aerosol size distribution measurements during ARTofMELT 2023? (Julia A.)

11.40 - 12.00 Discussion

12.00 – 13.30 **Lunch**

13.30 – 15.00 **Session 5 - Aerosols & gases**

13.30 - 13.40 Continuous black carbon observations on the 4th deck (Lovisa)

13.40 - 13.50 Characterization of single particle chemical and physical properties by off-line analysis (Stefania & Diego)

13.50 - 14.00 Fog, precipitation and blowing snow (Lea)

14.00 - 14.10 Aerosol precursors during ARTofMELT: Implications of reduced and oxidized sulfur and reactive organic carbon (Cort)

14.10 - 14.20 Towards the climatology of the impacts of warm air mass intrusions on the aerosol-cloud interactions in the Arctic (Berkay)

14.20 - 14.30 Boron to Salinity Ratios in Annual and Multiyear Sea Ice (Samantha)

14.30 - 15.00 Diskussion

15.00 - 15.30 **Fika**

15.30 - 1700 **Session 6 - Profiling and permanent stations**

15.30 - 15.40 Group photo

15.40 - 15.50 Overview HELIPOD data yield while ARTofMELT (Falck)

15.50 - 16.00 Preliminary results of Helikite vertical measurements of aerosols (Roman)

16.00 - 16.10 Measurements from Zeppelin Observatory, Ny-Ålesund, during ArtofMelt (Radek)

16.10 - 16.20 Measurements from Villum Research Station, North Greenland, during ARTofMELT (Andreas M.)

16.20 - 16.30 Tracing ice-ocean-atmosphere interactions with coupled seawater and water vapor isotopic observations (Ben)

16.30 - 17.00 Discussion

18.30 **Workshop dinner**

<u>Wednesday (24 April 2024): Models, future and wrap-up</u>

08.30 – 10.00 **Session 7 - Modeling**

08.30 - 08.40 Modeling of aerosol size distributions during ARTofMELT: understanding mechanisms for new particle formation (Nicole)

08.40 - 08.50 Lagrangian simulations of warm air intrusions using the AOSCM (Michail)

08.50 - 09.00 Large eddy simulations of Arctic mixed-phase clouds with MIMICA - model overview and AoM case study setup (Luisa)

09.00 - 09.30 Nudged model runs (Annica, Tuomas), model evaluation (Gunilla)

09.30 - 10.00 Broader modeling discussion; why, what and how?

10.00 – 10.30 **Fika**

10.30 – 12.00 **Session 8 - Future activities & wrap-up**

10.30 - 11.00 Bolin Centre database; intro and discussion

11.00 - 11.15 Policy-related products, synthesis (incl. Åsa & Ulf)

11.15 - 11.45 Next steps (Joint publications, e.g. special issue & overview paper, co-authoring, topical papers, future workshops and/or conferences etc.)

11.45 - 12.00 Final discussion and end of workshop

12.00 - **Lunch**