



Arctic Science Summit Week 2021

19-26 March | Online, Portugal

Theme C: Arctic Climate Dynamics

Detailed session program



ID:64 - Arctic clouds, aerosols and climate effects

Arctic Climate Dynamics

26 March 2021 | 08:00 - 10:00 GMT | Room H

Conveners:

Claudia Mohr | Stockholm University

Paul Zieger | Stockholm University

Sophie Haslett | Stockholm University

Clouds, water vapour and aerosols are closely linked through various dynamic, microphysical and chemical processes and feedbacks, and strongly control the climate, especially in the Arctic. Atmospheric aerosols, natural or anthropogenic ones, are needed to form clouds since they act as cloud condensation nuclei (CCN). Aerosols in the Arctic are mainly known through observations of the Arctic Haze phenomenon and long-range transport studies. Less is known about natural Arctic aerosol sources, such as primary marine aerosol or new particle formation. Additionally, strong seasonal impact from biomass burning aerosol can occur. Clouds and the relative influence of aerosols and atmospheric dynamics on their microphysical and radiative properties are not well understood yet. The session is dedicated to the interplay of these key players in the Arctic atmosphere. It will cover latest results from currently ongoing experimental efforts investigating of clouds, aerosols and climate at Ny-Ålesund, Svalbard, by various international research groups from e.g. Germany, Korea, Japan, Switzerland and Sweden (NASCENT campaign <https://www.aces.su.se/research/projects/the-ny-alesund-aerosol-cloud-experiment-nascent-2019-2020/>), long-term observations, and modelling studies throughout the Arctic.

26 March 2021 | 08:00 - 10:00 GMT | Room H | Oral Presentations

Time	Title	Presenting author
08:00	Introduction by the conveners	
08:05	Arctic Mixed-Phase Clouds: The NASCENT 5-Days Case Study with HoloBalloon	Julie Pasquier
08:20	Colder summers and warmer winters: Role of sulfate aerosols in modulating Arctic climate	Asutosh Acharya
08:35	Elucidating Ice Nucleating Particle Concentrations in the Arctic: Investigating Predictability from Parameterizations and Fresh Snow Samples	Jörg Wieder
08:50	Impact of warm air mass intrusions on atmospheric chemistry and microphysics – Observations during MOSAiC	Julia Schmale
09:05	Modeling marine biogenic aerosol precursors in the Arctic Ocean	Moritz Zeising
09:20	Molecular composition of semi-volatile aerosols in the summertime central Arctic Ocean using FIGAERO-CIMS	Karolina Siegel
09:35	Open discussion on orals and posters	

E-Posters | View in the conference platform and discussion in the session

	Title	Presenting author
	Aircraft measurements of ice-nucleating particles and aerosol size-resolved composition in the Western North American Arctic	Alberto Sanchez-Marroquin
	Clustering derived Black Carbon size distribution at Zeppelin station, Svalbard and investigating source contribution with airmass trajectories	Roxana S. Cremer
	Comparison of characteristics of the new particle formation (NPF) event in the Arctic, urban, and agricultural environments	Haebum Lee
	Ice Formation Processes in climate models	Georgia Sotiropoulou
	One-year-long measurements of the chemical composition of aerosol particles and trace gases involved in cloud formation at the Zeppelin Observatory, Svalbard	Yvette Gramlich
	Studying the role of bioaerosols in the formation of Arctic clouds	Gabriel P. Freitas

ID:97 - Open Session on the Arctic Atmosphere

Arctic Climate Dynamics

25 March 2021 | 15:30 - 17:30 GMT | Room H

Conveners:

Daniele Bortoli | Institute of Earth Sciences, Evora University

Carlos Toledano | Universidad de Valladolid, Grupo de Óptica Atmosférica (Valladolid, Spain)

Kent Moore | University of Toronto, Canada

Chemical, dynamic and physical phenomena that occur in the Arctic atmosphere, are essential to understand the state of health of the planet and to implement conservation policies and abatement of the serious consequences caused by the well-known processes of global warming and climate change. In the arctic regions these latter aspects are amplified compared to the middle and low latitudes. Surface observation activities, from ground/ship-based or satellite platforms, with remote sensing or in-situ techniques, of trace gases, aerosol, clouds, radiation fluxes/budget and their effects on the environment, living beings and hydro/cryosphere are the basis of the theories formulated to mitigate and limit the damages of anthropogenic origin. Studies using global climate models are essential for predicting the future state of the Arctic biosphere. As evidence of this global concern, not only the countries directly related to the Arctic regions, but also those not bordering the Arctic Ocean, are active on this matter and they are joining/developing studies and policies to avoid the destruction of this ecosystem. The session deals with observational and modelling papers aiming to discuss and understand the development and impacts of climate changes in the Arctic

25 March 2021 | 15:30 - 17:30 GMT | Room H | Oral Presentations

Time	Title	Presenting author
15:30	Introduction by the conveners	
15:35	A new detailed long-term COSMO-CLM hindcast for Russian Arctic: first results of estimations	Vladimir Platonov
15:50	Case study of a polar low simulated with the Canadian Regional Climate Model	Marta Moreno Ibáñez
16:05	Does increase in vapour pressure lead to high precipitation in Ny Ålesund?	Athulya R
16:20	Observing water vapor in the Arctic from satellites: a multi-parameter retrieval	Janna E. Rückert
16:35	Reproduction of early twentieth century Arctic warming by global climate models	Mikhail Latonin
16:50	The role of the North Atlantic Oscillation over the Greenland Ice Sheet in a changing climate	Tiago Silva
17:05	Open discussion on orals and posters	

E-Posters | View in the conference platform and discussion in the session

	Title	Presenting author
	An analysis of surface and air temperature variability in a boreal wetland ecosystem, Whatì, Northwest Territories Canada.	Scott Vegter
	Anatomy of a Precipitation event in Arctic.	M. Nuncio
	Evaporation over glacial lakes of the Schirmacher oasis, East Antarctica	Elena Shevnina
	Hydropower risks in rapidly warming Arctic: towards long term prediction of hydrological extremes	Elena Shevnina
	Methodology and preliminary assessment of changes in abiotic component of the Ob-Taz estuarine ecosystem due to natural and anthropogenic impacts	M.V. Tretiakov
	Precipitation types and winds in Ny Alesund	Naveen Nandan
	Temperature inversions in Zackenberg	Sonika Shahi

ID:100 - Past climates and environments of the Arctic

Arctic Climate Dynamics

26 March 2021 | 11:30 - 13:30 GMT | Room E

Conveners:

Bianca Perren | British Antarctic Survey

Kwangchul Jang | Division of Glacier Environment Research, Korea Polar Research Institute

Joshua Evans | U. of New-Brunswick – ArcTrain

Jennifer Wesselbaum | U. of New-Brunswick – ArcTrain

26 March 2021 | 11:30 - 13:30 GMT | Room E | Oral Presentations

Time	Title	Presenting author
11:30	Introduction by the conveners	
11:35	Holocene rise and fall of the North Water polynya: a climate-sensitive Arctic sea-ice ecosystem	Sofia Ribeiro
11:50	Genetic signatures from glass houses deposited millennia ago: applying a new biological lens to multi-proxy paleoenvironmental reconstructions in the North Water polynya (Pikialasorsuaq) with targeted sedaDNA metabarcoding of Arctic diatoms.	Joshua R. Evans
12:05	Northeast Greenland polynyas: a Holocene perspective from the Sirius Water	Rebecca Jackson
12:20	Tracking the Atlantic multidecadal oscillation with highly resolved paleoclimate records	Francois Lapointe
12:35	Historical representations of winter on the coast of Nunatsiavut (Canada), from 1770 to 1950	Marie-Michèle Ouellet-Bernier
12:50	Marked 20th-century regional warming in the Hudson Bay Lowlands shown in a Holocene lake record	Kathryn E. Hargan
13:05	Open discussion on orals and posters	

E-Posters | View in the conference platform and discussion in the session

	Title	Presenting author
	Structure of microbial communities in lake sediments of the High Arctic	Anne-Marie Lapointe
	Application of neodymium isotopes for the reconstruction of glacial environmental changes in northern Svalbard over the last 16.5 kyr	Kwangchul Jang
	Climate-related sedimentary changes of Wijdefjorden, northern Svalbard, since the last deglaciation	Youngkyu Ahn
	Source of sedimentary organic carbon in Wijdefjorden in the Svalbard Archipelago	Dahae Kim
	Environmental changes and depositional processes in Woodfjorden of northern Svalbard since the last deglaciation	Joo, Young Ji
	Post-Yonger Dryas depositional environment of the Little-Storfjorden in the southern Spitsbergen, Svalbard	Young Jin Joe
	Northern biome changes synthesized from taxonomically harmonized and temporally standardized fossil pollen record since the Last Glacial Maximum in comparison to GCM simulations	Chenzhi Li
	Spatial distribution of microcharcoal and black carbon on the Greenland ice sheet	Sandra O. Brugger
	Limnological responses to anthropogenic climate forcing across the Arctic	Bianca Perren

ID: 102 Arctic Glaciers and Ice Sheets: Past, Present and Future

Arctic Climate Dynamics

26 March 2021 | 11:30 - 13:30 GMT | Room H

Conveners:

Marc Oliva | University of Barcelona, Catalonia, Spain

David Palacios | Complutense University of Madrid, Spain

Samantha Buzzard | Georgia Tech, USA

Al. Ramanathan | Jawaharlal Nehru University, India

26 March 2021 | 11:30 - 13:30 GMT | Room H | Oral Presentations

Time	Title	Presenting author
11:30	Introduction by the conveners	
11:35	Alfred Wegener's Greenland Expedition Revisited	Jakob Abermann
11:50	Biological darkening of the Greenland Ice Sheet.	Martyn Tranter
12:05	Fluctuations of Tungnahryggsjökull glacier (Tröllaskagi Peninsula, Northern Iceland) since the Neoglaciation: a multiple-dating approach	José M. Fernández-Fernández
12:20	Preliminary studies on MassBalance in VestreBroggerbreen and Feiringbreen glaciers in Svalbard	AL Ramanathan
12:35	Rapid and complex recent evolution of a glacier: Héðinsdalsjökull (Northern Iceland)	Manuel Rodríguez-Mena
12:50	The deglaciation of the Zackenberg Valley (NE Greenland)	Julia Garcia-Oteyza
13:05	Open discussion on orals and posters	

E-Posters | View in the conference platform and discussion in the session

	Title	Presenting author
	Melting glaciers in the Arctic.	Victoria Ivanova
	Recent characteristics of surface energy balance observed at the SIGMA-A site on the northwest Greenland Ice Sheet	Teruo Aoki
	The deglaciation of the Tröllaskagi valleys (Northern Iceland) according to ³⁶ Cl Cosmic-Ray Exposure dating	José M. Fernández-Fernández