



The
University
Of
Sheffield.



Arctic Office
NATURAL ENVIRONMENT
RESEARCH COUNCIL

UK ARCTIC SCIENCE CONFERENCE 2015



The University of Sheffield
16th – 18th September 2015

With financial and administrative support from the NERC Arctic Office

Programme of Events

General information:

Venue: [Richard Roberts Auditorium, The Richard Roberts Building](#) (East Wing of Dainton), The University of Sheffield, Brook Hill, S3 7HF.

Date: Wednesday 16th September to Friday 18th September, 2015

Registration desk: This will be located just outside the [Richard Roberts Auditorium, The Richard Roberts Building](#). It will be open from 13:00 on the 16th September.

UK Arctic Science conference sessions – 16th – 18th September 2015: [Richard Roberts Auditorium, The Richard Roberts Building](#) (East Wing of Dainton), University of Sheffield.

UK Arctic Science Conference Reception: 18:00 on Thursday 17th September in the Atrium adjoining the Richard Roberts Auditorium.

UK Arctic Science Conference Buffet lunch (Thursday) and Coffee breaks: To be held in the Atrium adjoining the Richard Roberts Auditorium. *Please note: For the UK Arctic Science Conference, a buffet lunch is provided on Thursday only.*

UK Arctic Science Conference Poster session 1: 18:00 to 19:00 on Wednesday 16th September in the Atrium adjoining the Richard Roberts Auditorium.

UK Arctic Science Conference Poster session 2: 12:30 to 13:30 on Thursday 17th September in the Atrium adjoining the Richard Roberts Auditorium.

Social Media: If tweeting from the Conference, please use the #ArcticConf2015 hashtag.

Side meetings:

UK Sea Ice Group Meeting (Organiser: Jeff Ridley, Met Office - jeff.ridley@metoffice.ac.uk): 13:30 Tuesday 15th September to 12:00, Wednesday 16th September. **Venue:** Ron Johnston Research Room of the Department of Geography, Geography and Planning Building, University of Sheffield

UK Polar Network Panel Events: (Organiser: Camilla Rootes, UKPN - cmrootes1@sheffield.ac.uk):

UK Polar Network Social Sciences Gathering: Wednesday 16th September, 12:30, venue TBC

Panel Event: Past, Postdoc, Future: Wednesday 16th September, 19:15 to 20:00, followed by a UKPN dinner, Venue: University Arms Pub

UKPN Annual General Meeting: Friday 18th September, 14:00 to 15:00.

Venue: Ron Johnston Room in the Geography & Planning Building, University of Sheffield

The Challenger Society AGM 2015 (Organiser: John Bacon, CEFAS - john.bacon@cefasc.co.uk): Wednesday 16th September, 12:00. **Venue:** Ron Johnston Research Room of the Department of Geography, Geography and Planning Building, University of Sheffield.

UK Arctic Science Conference 2015 Programme

Wednesday 16th September

13:00 to 13:50 REGISTRATION

13:50 to 14:00 Welcome and opening address - Prof Grant Bigg

14:00 to 15:45 Oral session 1: Terrestrial biology
Session Chair: Dr Donatella Zona

14:00 Weathering and Chemical Cycles in Permafrost Regions: The Lena River Watershed
Prof Don Porcelli (*Oxford University*)

14:15 Methane ventilation through open system pingos in Central Spitsbergen, Svalbard
Prof Andy Hodson (*University of Sheffield*)

14:30 Effects of climate and nitrogen deposition on Greenland lakes
Dr Viv Jones (*University College London*)

14:45 Comparing soil GHG fluxes from sub-arctic wetlands and forests in Finland and Sweden; and upscaling from plot to landscape
Prof Ute Skiba (*Centre for Ecology and Hydrology*)

15:00 Influence of soil and vegetation characteristics on permafrost thaw
Dr Gareth Phoenix (*University of Sheffield*)

15:15 Obtaining a Pragmatic Representation of Fire Disturbance in Dynamic Vegetation Models by Assimilating Earth Observation Data
Dr Euripides Kantzas (*University of Sheffield*)

15:30 Using the Landscape Reconstruction Algorithm (LRA) to estimate Holocene regional and local vegetation composition in the Boreal Forests of Alaska
Emma-Jayne Hopla (*University of Southampton*)

15:45 to 16:15 Break (refreshments provided)

16:15 Climate change and water sources in Arctic streams; effects on physiochemical variables and biotic communities
Prof Alexander Milner (*University of Birmingham*)

16:30 Diverging plant and ecosystem strategies in response to climate change in the High Arctic
Dr Kadmiel Maseyk (*Open University*)

16:45 to 18:00 Oral session 2: Oceanography
Session Chair: Dr Andrew Sole

16:45 When does the warmest water reach Greenland?
Dr Jeremy Grist (*National Oceanography Centre*)

17:00 Arctic ice and ocean fluxes and storage of heat and freshwater
Prof Sheldon Bacon (*National Oceanography Centre*)

Wednesday 16th September (continued)

- 17:15 Arctic sea surface height variability and change from satellite radar altimetry and GRACE, 2003 - 2014
Dr Tom Armitage (*Centre for Polar Observation and Modelling, University College London*)
- 17:30 Tides stir up deep Arctic heat
Dr Ben Lincoln (*Bangor University*)
- 17:45 Pathways, variability and modification of the Arctic Atlantic water
Dr Yevgeny Aksenov (*National Oceanography Centre*)

18:00 to 19:00 Poster session 1

Thursday 17th September

REGISTRATION DESK OPEN FROM 08:30

08:50 to 09:00 Opening remarks and announcements

**09:00 to 10:30 Oral session 3: Glaciers and Ocean-Ice
Session Chair: Dr Darrel Swift**

- 09:00 The distribution of freshwater from meteoric sources and sea ice melt across the western and northern fjords of Svalbard
Lewis Drysdale (*Scottish Association for Marine Science/British Antarctic Survey*)
- 09:15 Investigating the impact of Greenland ice sheet runoff on submarine ice melt and fjord oceanography
Dr Andrew Sole (*University of Sheffield*)
- 09:30 Challenges to remote hydrometry for Arctic regions: Evaluating a gauging-reach approach in West-Central Greenland
Dr Richard Hodgkins (*Loughborough University*)
- 09:45 Subaerial runoff dominates freshwater discharge from the tidewater glacier Kronebreen, Svalbard
Eleanor Darlington (*Loughborough University*)
- 10:00 Influence of glaciation on mechanisms of mineral weathering in two high Arctic catchments
Dr Ruth Hindshaw (*University of St Andrews*)
- 10:15 Resolving flow and deformation of Store Glacier, West Greenland, using phase-sensitive FMCW radar
TJ Young (*Scott Polar Research Institute*)

10:30 to 11:00 Break (refreshments provided)

**11:00 to 12:30 Oral session 4: Glaciers and Glacial Ecology
Session Chair: Dr Gunnar Mallon**

- 11:00 SHIMMER: Microbial community dynamics in the forefield of glaciers – a modelling perspective
James Bradley (*University of Bristol*)

Thursday 17th September (continued)

- 11:15 Basal properties of the Greenland ice sheet; bed elevation reconstruction with special consideration of bathymetric topography
Dr Chris Williams (*Bristol Glaciology Centre, University of Bristol*)
- 11:30 CryoSat-2: A new perspective on the Arctic
Prof Andy Shepherd (*University of Leeds and University College London*)
- 11:45 Ecosystem engineering on the Greenland Ice Sheet?
Dr Joseph Cook (*University of Derby*)
- 12:00 The UK Arctic Research Station
Dr Kevin Newsham (*British Antarctic Survey*)
- 12:15 BLACK and BLOOM: variations in the albedo of the Greenland Ice Sheet
Prof Martyn Tranter (*Bristol Glaciology Centre, University of Bristol*)
- 12:30 to 13:30 Poster session 2**
- 12:30 to 14:00 Buffet Lunch**
- 14:00 to 15:30 Oral Session 5: Terrestrial Biology 2 - Methane**
Session Chair: Dr Gareth Phoenix
- 14:00 Cold season emissions dominate the Arctic tundra methane budget
Dr Donatella Zona (*San Diego State University/ University of Sheffield*)
- 14:15 Airborne CH₄ measurements over a region of CH₄ hydrate instability near Svalbard
Joseph Pitt (*University of Manchester*)
- 14:30 Spatial and Temporal Variation of Arctic CH₄ and net CO₂ Fluxes Using Nested Chamber, Tower, Aircraft, Remote Sensing, and Modeling Approaches for Regional Flux Identification and Estimation
Prof Walter Oechel (*Open University and San Diego State University*)
- 14:45 Atmospheric Continuous Measurements of CO₂, CH₄, N₂O and CO at Kjølnes (70.85oN, 29.22oN), Northern Norway
Prof Andrew Watson (*University of Exeter*)
- 15:00 Constraining arctic methane emissions: a comparison of up-scaled estimates and satellite data
Prof Mary Edwards (*University of Southampton*)
- 15:15 Methane and other greenhouse gases in the Arctic –Measurements, Process Studies and Modelling (MAMM)
Prof Garry Hayman (*Centre for Ecology and Hydrology, Wallingford*)
- 15:30 to 16:00 Break** (refreshments provided)
- 16:00 to 17:45 Oral Session 6: Social Science**
Session Chair: Prof Grant Bigg
- 16:00 Arctic resource development: a sustainable prosperity project of co-management
Dr Gisele Arruda (*Oxford Brookes University*)
- 16:15 The Multi-Sectorial Impact Of Arctic
Dr Jeremy Wilkinson (*British Antarctic Survey*)

Thursday 17th September (continued)

16:30 When Imagination Meets Reality: the role of rare earth elements in Greenland's future

Dr Beverley Gibbs (*University of Sheffield*)

16:45 Cairn in Greenland – Keynote Speaker

Dr John Clayburn (*Cairn Energy Ltd*)

18:00 to 19:00 Reception

Friday 18th September

REGISTRATION DESK OPEN FROM 08:30

08:50 to 09:00 Opening remarks and announcements

09:00 to 10:30 Oral session 7: Marine Biology

Session Chair: Prof Grant Bigg

09:00 Constraining Arctic Ocean denitrification rates

Dr Sinhue Torres-Valdes (*National Oceanography Centre*)

09:15 Zooplankton in the polar night: What controls their behaviour?

Laura Hobbs (*Scottish Association for Marine Science*)

09:30 Response of Arctic pelagic food-webs to predicted changes in ocean chemistry

Prof Geraint Tarling (*British Antarctic Survey*)

09:45 Estimation of primary productivity in the Arctic Ocean: A case study from the Atlantic

Dr Heather Bouman (*University of Oxford*)

10:00 Modelling present and future of the Arctic Biogeochemistry

Dr Ekaterina Popova (*National Oceanography Centre*)

10:15 Responses in Arctic marine carbon cycle processes: conceptual scenarios and implications for ecosystem function

Dr Helen Findlay (*Plymouth Marine Laboratory*)

10:30 to 11:00 Break (refreshments provided)

11:00 to 12:45 Oral session 8: Atmosphere

Session Chair: Richard Hall

11:00 Recent provision of NERC aircraft in the Arctic in support of science campaigns and developing science capabilities with the DASH 7

Rod Arnold (*British Antarctic Survey*)

11:15 The Arctic Cloud Summer Experiment (ACSE)

Prof Ian Brooks (*University of Leeds*)

11:30 Climate Impacts of Icelandic dust

Dr Jo Browse (*University of Leeds*)

11:45 Towards a Combined Surface Temperature Dataset for the Arctic from the Along-Track Scanning Radiometers (ATSRs)

Emma Dodd (*University of Leicester*)

Friday 18th September (continued)

- 12:00 A climatology of Northern Hemisphere polar lows
Chris Fairless (*University of Manchester*)
- 12:15 The Transition from Layer Clouds to Open Cellular Convection during Cold Air
Outbreaks from Polar Regions
Dr Gary Lloyd (*University of Manchester*)
- 12:30 Greenland Blocking Index 1851-2015: a regional climate change signal
Prof Edward Hanna (*University of Sheffield*)
- 12:45 Concluding remarks**
- 13:00 End of Conference**
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UK ARCTIC SCIENCE CONFERENCE POSTERS

Session 1: Wednesday 16th September 1800 – 1900		
Venue: Atrium adjoining the Richard Roberts Auditorium		
Presenter	Title	Affiliation
Yevgeny Aksenov(#1)	Predicting the Arctic Ocean Environment in the 21st century	National Oceanography Centre
Estanislao Gavilan Pascual-Ahuir(#2)	Source-sink driven planetary flows in a polar basin	Newcastle University
Mike Dinn (#3 to #6)	BAS Operations – series of four posters describing operational capabilities of various BAS supported installations	British Antarctic Survey
Katy Buckland (#6a)	Arctic Data Management	British Antarctic Survey
Georgia Hole, Marc Macias-Fauria (#7)	Investigating Holocene Arctic Sea Ice extent at high-resolution timescales through dendro-provenance analysis	University of Oxford
Gunnar Mallon(#8)	LowPerm - more than methane	University of Sheffield
Adam Monier (#9)	Arctic Ocean structure drives the assembly processes of microbial eukaryotic communities	University of Exeter
Aneta Pacyna (#10)	Contaminants in Arctic environment- water samples from Hornsund fjord	Gdańsk University of Technology
Alison Small (#11)	Variations in the summer phytoplankton community structure in Atlantic sub-Arctic and Arctic waters	University of Oxford
Lukas Smik (#12)	Identification of paleo Arctic winter sea ice limits and the marginal ice zone: optimised biomarker-based reconstructions of late Quaternary Arctic sea ice.	Plymouth University
Alexander Todd and Jamie Rae (#13)	Arctic Cyclones and Sea Ice in HadGEM3	Met Office
Rachael Treharne (#14)	Arctic Browning; vegetation damage and implications for carbon balance.	University of Sheffield
Simon Turner (#15)	Recent palaeolimnological research in Nenets Autonomous Okrug (NAO), Siberian Russia	University College London

Session 2: Thursday 17th September 1230 – 1330
Venue: Atrium adjoining the Richard Roberts Auditorium

Presenter	Title	Affiliation
Michelle Cain (#16)	Identifying Sources of Long-Distance Transported Methane to the Arctic using C in CH ₄ and Lagrangian Particle Dispersion Modelling.	University of Cambridge
Lucy Carpenter (#17)	Dimethylsulfide and other gaseous aerosol precursors in the Arctic Ocean during the ACCACIA project	University of York
Scott Davidson (#18)	Vegetation type dominates the spatial variability in CH ₄ emissions across multiple Arctic tundra landscapes	University of Sheffield, San Diego State University
Markus Frey (#19)	Arctic sea salt aerosol from blowing snow and sea ice surfaces –the search for a missing source in winter	British Antarctic Survey
Tika Gurung (#20)	Reconstruction of annual mass balance of Rikha Samba Glacier Nepal, from 1995 to 2013 using energy-mass balance model	Himalayan Cryosphere, Climate and Disaster Research Center (HiCCDRC), Kathmandu University
Edward Hanna (#21)	The Greenland Blocking Index, 1948-2015: A key indicator of Arctic-mid latitude weather/climate coupling?	University of Sheffield
Garry Hayman (#22)	Wetland methane modelling over the Scandinavian Arctic	Centre for Ecology and Hydrology, Wallingford
Amelie Kirchgassner (#23)	Observations with the MASIN aircraft during the ACCACIA field campaigns	British Antarctic Survey
Thomas Mockford (#24)	Characterising High Latitude Cold Climate Dust sources: A field study from Markarfljot, South Iceland	Loughborough University
Yvonne Smith (#25)	Exploring Northern Hemisphere Ice Sheet Variability in the Pliocene using IRD and Iceberg Trajectory Modelling	University of Leeds
Toby Tonkin (#26)	Moraine de-icing progression in high-Arctic proglacial environments: the use of unmanned aerial vehicles and 'Structure-from-Motion' photogrammetry for monitoring geomorphological change	Nottingham Trent University
Nicola Warwick (#27)	Using isotopes to constrain Arctic methane emissions	University of Cambridge
TJ Young (#29)	The UK Polar Network: Engaging the next generation of polar scientists	UK Polar Network
Fang Zhao (#30)	Pleistocene iceberg dynamics on the west Svalbard margin: evidence from bathymetric and sub-bottom profiler data	National Oceanography Centre
Jo Bullard and Eleanor Darlington (#31)	The High Latitude and Cold Climate Dust Network	Loughborough University