





Inter-Ocean Gateways: Past, Modern and Future Processes and Environments

Convener: K. Husum 

Co-Conveners: R. F. Spielhagen , G. Lohmann , U. Schauer , L. Jonkers , M. Ziegler , G. Knorr 

[Oral Programme](#) / Fri, 27 Apr, 08:30–12:00 / Room 16

[Poster Programme](#) / Attendance Fri, 27 Apr, 13:30–15:00 / Hall Z

Recent changes in meridional transfer of ocean heat to the Arctic Ocean are considered as some of the most important factors contributing to the present polar amplification of global warming. Water mass exchanges between the Arctic and the North Atlantic take place in Fram Strait and the Barents Sea, and are intricately connected with atmospheric and cryospheric processes at play in this region.

We invite contributions based on paleo-proxies, instrumental data, as well as modelling experiment dealing with Interglacials (including Holocene), modern and future dynamics of ocean circulation and environmental changes in the vicinity of these Arctic-Atlantic gateways. This session is sponsored by the FP7 Initial Training Network “The Changing Arctic and Subarctic Environment (CASE)”.

ORAL PROGRAMME

Chairperson: K. Husum, U. Schauer

08:30–08:45

Holocene sea ice in the main Arctic gateway (solicited)

J. Müller, K. Werner, and R. Stein

08:45–09:00

Holocene Atlantic Water temperature reconstruction in the Nordic Seas based on foraminiferal Mg/Ca ratios

S. Aagaard-Sørensen, K. Husum, M. Hald, T. Marchitto, and F. Godtliebsen

09:00–09:15

The Influence of Greenland melt water on the temporal and spatial response of the Holocene Thermal Maximum in the Nordic Seas: a modelling study

M. Blaschek and H. Renssen

09:15–09:30

Transport of the East Greenland Current in Fram Strait (solicited)

L. de Steur, E. Hansen, C. Mauritzen, and A. Beszczynska-Moeller

09:30–09:45

Atlantic Water inflow into the Arctic Ocean through the St. Anna Trough

I. A. Dmitrenko, S. A. Kirillov, V. V. Ivanov, U. Schauer, Y. Aksenov, B. A. de Cuevas, I. V. Polyakov, M. Janout, M. Makhotin, and V. S. Lien

09:45–10:00

The air-sea transformation and diapycnal overturning circulation within the Nordic Seas

P. E. Isachsen and O. A. Nøst

Chairperson: G. Knorr, M. Ziegler

10:30–10:45

Arctic Freshwater Export: Prospects, Impacts, and Challenges (solicited)

T. W. N. Haine and K. Stewart

10:45–11:00

A mechanism for fluctuations between Atlantic inflow branches to the Arctic

V.S. Lien, F.V. Vikebø, and Ø. Skagseth

11:00–11:15

Saltwater transport through the Indian-Atlantic ocean gateway: Does it modulate the Atlantic MOC? (solicited)

R Zahn and GATEWAYS project members

11:15–11:30

Inter-ocean gateway flows during the present and last interglacial periods (solicited)

M. Prange, V. Varma, and M. Schulz

11:30–11:45

Millennial-scale ocean current intensity changes off southernmost Chile and implications for Drake Passage throughflow

F. Lamy, H.W. Arz, R. Kilian, O. Baeza Urrea, M. Caniupan, C. Kissel, and C. Lange

11:45–12:00

Constant flow speed of the ACC through Drake Passage between glacial maximum and Holocene.

I. N. McCave, S.C. Crowhurst, C.-D. Hillenbrand, and G. Kuhn

POSTER PROGRAMME

Display Time: Friday, 27 Apr 08:00–17:00

Attendance Time: Friday, 27 Apr 13:30–15:00

Hall Z

Chairperson: K. Husum, L. Jonkers

Z30

Sub-centennial Holocene fluctuations of surface water masses in the western Barents Sea

S. Berben, K. Husum, and M. Hald

Z31

Calibration and application of the IP25 biomarker for Arctic sea ice reconstructions

P. Cabedo Sanz, A. Navarro Rodriguez, S.T. Belt, T.A. Brown, J. Knies, K. Husum, J.

Giraudeau, and J. Andrews

Z32

Simulating the natural variability of the freshwater budget of the Arctic ocean from the mid to late Holocene using LOVECLIM

F.J. Davies, H Goosse, and H Renssen

Z33

Northward advection of Atlantic Water in Fram strait during the late Holocene: a view from mixed layer proxies

C. Dylmer, J. Giraudeau, E. Frédérique, A. de Vernal, J. Knies, K. Husum, and S. Belt

Z34

Geochemical investigations of fjord surface sediments as basis for Holocene climate change studies in the Trondheimsfjord area

J.C. Faust, J. Knies, J. Giraudeau, and G. Milzer

Z35

Holocene intermediate and bottom water mass reconstructions of the western Barents Sea

D.E. Groot, S. Aagaard Sørensen, K. Husum, and M. Hald
Z36

Analysis of sea ice and phytoplankton biomarkers in marine sediments from the Nordic Seas - a calibration study

A. Navarro Rodriguez, P. Cabedo Sanz, S. Belt, T. Brown, J. Knies, K. Husum, and J. Giraudeau
Z37

Historic surface water productivity changes in the Barents Sea

I. Maier, M. Felix, J. Knies, and U. Mann
Z38

Benthic Foraminiferal Stable Isotope and Dinocyst Assemblages in Sediments of the Trondheimfjord Area (Mid-Norway): Proxies for Regional Oceanographic and Climate Changes?

G. Milzer, J. Giraudeau, J. Faust, J. Knies, S. Schmidt, and C. Rühlemann
Z39

Modern distribution of planktic foraminifers in the Fram Strait (Arctic Ocean) compared to sea floor species assemblages

T. Pados and R. F. Spielhagen
Z40

Sedimentary record of postglacial variability in near-bottom currents, sediment supply and ice rafting on the continental shelf off SW Spitsbergen

B. Sternal, W. Szczuciński, M. Forwick, M. Zajączkowski, S. Lorenc, and T.O. Vorren
Z41

Late Glacial and Holocene paleoceanography of the central and northern Greenland Sea based on foraminifera, stable isotopes and sediments

M. M. Telesiński and R. F. Spielhagen
Z42

Stepwise transition from deglacial/Early Holocene to modern-like conditions in the eastern Fram Strait, sub-Arctic north, inferred from planktic foraminifer fauna and sea surface temperatures

K. Werner, R.F. Spielhagen, E. Kandiano, and H.C. Hass
Z43

Holocene fluctuations of neodymium isotope ratios in eastern Fram Strait sediments - An indication for deepwater variability?

K. Werner, M. Frank, C. Teschner, M. Zieringer, and R.F. Spielhagen
Z44

Sub-arctic and Arctic sea surface temperature and its relation to ocean heat content 1982-2010

G. Chepurin and J. Carton
Z45

Statistical analysis of oceanographic fields in Fram Strait

F. Greil and A. Beszczynska-Möller
Z46

Response of the Fram Strait transport to surface density forcing

B. I. Moat, S. A. Josey, B. Sinha, and J. P. Grist
Z47

Numerical modelling of the Atlantic Water inflow in Arctic Ocean and Beaufort Gyre fresh water content climatic variability

S.N. Moshonkin, **A.V. Gusev**, V.B. Zalesny, A.V. Bagno, and N.A. Diansky
Z48

The impact of the Atlantic-Arctic exchange on rising ocean bottom temperatures and the fate of gas hydrates

C. Roth, E. Behrens, and A. Biastoch

Z49

Warming of the Atlantic water in Fram Strait and its impact on the ice cover

U. Schauer, A. Beszczynska-Möller, T. Krumpfen, F. Greil, and E. Fahrback

Z50

The piercing of the Atlantic Layer by a dense water cascade in an idealised modelling study inspired by the Storfjorden overflow

F. Wobus, G.I. Shapiro, J.M. Huthnance, and M.A.M. Maqueda

Z51

Quantifying the influence of Atlantic heat on Barents Sea ice variability and retreat

M. Årthun, T. Eldevik, L. H. Smedsrud, Ø. Skagseth, and R. B. Ingvaldsen

Z52

Impact of opening of the Central America Seaway on climate in a coupled atmosphere-ocean-sea-ice model

N. Barrier, D. Ferreira, and J. Marshall

Z53

Influences of the Agulhas Current on South African terrestrial climate as inferred from speleothem stable isotope records

K. Braun, M. Bar-Matthews, A. Ayalon, C. Marean, A. I. R. Herries, R. Zahn, and A. Matthews

Z54

Can inter-ocean gateways explain long-term cooling since the early Pliocene?

C. Brierley and A. Fedorov

Z55

80 kyr record of palaeoceanographic conditions from southeastern Africa

E. Khadun, J.v.d. Lubbe, T. Blanz, and R. Schneider

Z56

Impact of the salt leakage through the Indian-Atlantic ocean gateway on the Atlantic MOC

G. Marino, R. Zahn, P. Ziveri, M. Ziegler, I.R. Hall, and H. Elderfield

Z57

Do variations in Mozambique Channel hydrography impact the marine climatology of the Agulhas gateway between the Indian Ocean and Atlantic?

M. Parari and R. Zahn

Z58

The influence of Agulhas Leakage dynamics on the Atlantic Meridional Overturning Circulation during glacial-interglacial transitions

C. Purcell, G. Knorr, I. Hall, and G. Lohmann

Z59

Northward intrusion of South Pacific intermediate water along the Philippine coast as seen from a global GCM

T. Qu and T.-L. Chiang

Z60

Evolution of the southeast Atlantic thermocline during Marine Isotopic Stages 6-5: is it related to variations in the Agulhas Leakage?

P. Scussolini and F.J.C. Peeters

Z61

Investigating the impact of millennial scale Agulhas Current System variability on global ocean circulation and climate

M. Simon, I.R. Hall, S. Barker, and M. Ziegler

Z62

Core top particle component analysis from the southwestern Indian Ocean

J. Steinhardt, U. Fallet, R. Tjallingii, and G-J. A. Brummer

Z63

Pleistocene ice-rafted debris events recorded at the Agulhas Plateau - indicators of intermittent Indian-Atlantic gateway closure

M. Ziegler, I.R. Hall, P.J. Siret, and R. Zahn