

Research Program “Changing Earth – Sustaining our Future” (PoF IV)

List of Topic 2 Talks

“Oceans and Cryosphere in climate change”

- monthly Fridays seminar at 11am -



List of talks in 2020 – 2021

27 November 2020: Mosaic: First results and questions, C. Haas (AWI)

29 January 2021: Ocean modelling at GEOMAR and AWI, A. Biastoch (GEOMAR) and S. Danilov (AWI)

26 February 2021: Solid Earth and Ice Sheets:

- The solid earth in the earth system, *V. Klemann (GFZ)*
- Evaluating ice sheet history for the past 80,000 years - are marine oxygen isotopes a reliable indicator of sea level? *E. Gowan (AWI)*

26 March 2021: Observing the Atlantic Ocean Circulation from pole-to-pole: GEOMAR and AWI perspectives, T. Kanzow (AWI) and P. Brandt (GEOMAR)

07 May 2021: Observing Mass Change in System Earth with current and future Gravity Field Missions, F. Flechtner (GFZ) and I. Sasgen (AWI)

28 May 2021: The international GEOTRACES programme: Reliable trace element distributions in a changing ocean for reconstructing the past (part I) and for discovering future trends (part II), W. Geibert (AWI) and M. Frank (GEOMAR)

25 June 2021: Abrupt climate change:

- Abrupt Climate and Weather Changes Across Time Scales, *G. Lohmann (AWI)*
- Decadal Atlantic Meridional Overturning Circulation (AMOC) slowing events in a climate model, *M. Latif (GEOMAR)*

24 September 2021: Digital Twins, T. Jung (AWI) and M. Visbeck (GEOMAR)

29 October 2021: Artificial Intelligence for Earth System Sciences with three talks on:

- AI & Earth System Models - Hybrid AI- and physical based simulation models for improving process understanding, *C. Irrgang (GFZ)*
- AI & Data Analysis and Prediction for Marine Big Data, *W. Rath (GEOMAR)*
- AI Enablement - Cross-compartment data analytics for the AWIPEV observatory - a use case for Enabling AI, *S. Frickenhaus (AWI)*



List of Topic 2 talks in 2022

28 January 2022: The glacial Arctic Ocean as a freshwater basin - a controversial issue:

- Glacial episodes of a freshwater Arctic Ocean covered by a thick ice shelf, W. Geibert (AWI); Nature Publication: <https://doi.org/10.1038/s41586-021-03186-y>
- No freshwater-filled glacial Arctic Ocean, R. Spielhagen (GEOMAR)
Reply to Geibert, Nature: <https://rdcu.be/cGeGU>
Reply to Spielhagen, Nature: <https://rdcu.be/cGeHn>

25 February 2022: Arctic and Tropical Atlantic Climate Variability and Linkages to the Mid-latitudes:

- Changes in atmospheric circulation regimes over the North-Atlantic-Eurasian region and Arctic-midlatitude linkages, D. Handorf (AWI)
- AMOC Impact on the Tropical Atlantic and Tropical Atlantic Climate Variability, J. Lübbecke (GEOMAR)

25 March 2022: Remote Sensing:

- Ice from Above: Satellite Remote Sensing - from Ice sheets to the Ocean, A. Humbert (AWI)
- Water from Above: Radar Altimetry - from High Mountains to the Ocean, T. Schöne (GFZ)

20 May 2022: Land-ocean transport of organic carbon:

- What happens in natural river landscapes and under human interventions? D. Sachse (GFZ)
- What happens at the land-ocean interface and the sea-floor? G. Mollenhauer (AWI)

24 June 2022: From science to society: examples of knowledge transfer in PoV IV:

- klimafit - a science based knowledge transfer project to build climate competence at citizen level, K. Grosfeld and R. Treffeisen (AWI)
- RASMUS - from ocean modelling to ship route optimization, A. Biastoch (GEOMAR)

07 October 2022: Changing Arctic Ocean circulation and transport pathways:

- Large-scale hydrographic variability of the upper Arctic Ocean, M. Vredenburg (AWI)
- Elucidating advective pathways using chemical provenance tracers, G. Laukert (GEOMAR)

25 November 2022: Generation, transport and fate of water mass sourcing and sea ice signals in Southern Ocean sediments - and their exploitation for paleo reconstructions:

- Weddell Sea water mass tagging with neodymium isotopes today and the challenges of signal preservation in Southern Ocean sediments, M. Gutjahr (GEOMAR)
- What molecular fossils tell us about past sea ice dynamics - and what they don't, J. Müller (AWI)



List of Topic talks in 2023

27 January 2023: Pushing the boundaries of high-resolution proxy records with two talks on:

- using analytical advances, E. Hathorne (GEOMAR)
- using statistical proxy understanding, T. Laepple (AWI)

24 February 2023: Physical and biological ocean carbon pumps:

- How do we observe changing ocean carbon fluxes and what are driving processes? T. Tanhua (GEOMAR)
- How do we model the changing ocean carbon fluxes and what are the roles of physics versus biology? J. Hauck (AWI)

24 March 2023: Innopool project SCENIC: Storylines of European extremes in warmer climates with four talks on:

- How are 7 Helmholtz Centres joining forces to push climate storylines to the next level? H. Goessling (AWI)
- Greenland meltwater experiments and AMOC weakening: implications for atmosphere-ocean coupling, sea level, T. Martin (GEOMAR)
- European weather and extremes in new climate model simulations, Q. Ma (AWI)
- Can we use neural networks as a shortcut from climate storylines to societal impacts? R. Schachtschneider (GFZ)

21 April 2023: Why do we need to drill up to 1.5 million years old ice in Antarctica? - Perspectives from paleoclimatology, Southern Ocean paleoceanography, and ice-core research with three talks on:

- The mid-Pleistocene Transition, P. Köhler (AWI)
- Dynamics of the Pacific Antarctic Circumpolar Current over the past five million years (IODP Expedition 383 - DYNAPACC), F. Lamy (AWI)
- Beyond EPICA oldest ice core – 800 m towards 1.5 million years, F. Wilhelms (AWI)

23 June 2023: Polar Fresh Water: Northern and Southern perspectives, T. Martin (GEOMAR) and B. Rabe (AWI), Recent publication: DOI: <https://doi.org/10.1175/BAMS-D-23-0046.1>

24 November 2023: Cosmic Constraints on Paleoenvironmental Dynamics, with two talks on:

- Temporal evolution of rockwall erosion rates in the Alps from cosmogenic ^{10}Be , D. Scherler (GFZ)
- A fresh view at ^{10}Be as a dating tool for Arctic Ocean sediments - implications for the Arctic Ocean freshwater hypothesis, F. Adolphi (AWI)



List of Topic talks in 2024

23 January 2024: Exploring climate extremes in Earth's past – crucial basis for improving future projections with two talks on:

- Pacemakers of extreme floods in the Nile River during the wetter-than-present Green Sahara phase, C. Blanchet (GFZ)
- Ice sheet-free West Antarctica during peak early Oligocene glaciation, J.P. Klages (AWI)

22 March 2024: It's all about data: The HGF DataHub Strategy:

- What is DataHub? Objectives and implementation plan, S. Frickenhaus (AWI)
- What can DataHub do for Topic 2 science? J. Karstensen (GEOMAR)

26 April 2024: Earth System Data Assimilation with two talks about this theme, L. Nerger (AWI) and J. Saynisch (GFZ)

24 May 2024: Transdisciplinary research for the ocean and the Arctic with two talks, B. Neumann (RIFS) and N. Doering (RIFS)

RIFS: Research Institute for Sustainability, Helmholtz Centre Potsdam

27 September 2024: Greenland ice sheet stability

- Overshooting the critical threshold of the Greenland ice sheet, A. Robinson (AWI)
- The North-Greenland Ice stream: from the material ice in cores to observations on the large scale, I. Weikusat and AWI Glaciologists (AWI)

22 November 2024: Melting, where ice meets ocean in Antarctica:

- From ice sheet subglacial properties to ice-ocean interaction, O. Eisen (AWI)
- From ice and continental shelves to open ocean, T. Martin (GEOMAR)