



Universität
Rostock



Traditio et Innovatio



Topic-Workshop

Rostock, June 3-4, 2019

Internationales Begegnungszentrum Rostock

Bergstraße 7a, 18057 Rostock

(Seminarraum)

Polar coasts and processes

Host:

Universität Rostock,

Angewandte Ökologie und Phykologie

Albert-Einstein-Straße 3

18059 Rostock

Aims and scope of the workshop

The coastal zone is heavily impacted by geomorphological and climatic processes as well as anthropogenic influences. The fluid dynamics, cycling and transport of essential and trace elements and linkages to organisms at the land-ocean interface are closely related. Until now these interactions are not well understood hampering future planning and management.

Polar and subpolar coasts are distinctive because of extreme seasonality and the presence of ice (predominantly tidewater glaciers, ice shelves, sea ice, and ground ice). Sea ice plays a protective role but may be either erosional or constructive when mobile. Wave activity, though effective mainly during the short summer, imposes a strong morphological signature on most sedimentary coasts. Unlithified coasts in permafrost are widespread on the Arctic Coastal Plain, where combined thermal and mechanical processes promote rapid erosion in ice-rich deposits. Antarctic and sub-Antarctic coasts are mainly dominated by rock or ice, as are parts of the Arctic coast.



Figures 1 Floating tidewater glacier in Whisky Bay, James Ross Island, Antarctica (left photo by Bethan Davies). Permafrost melting into the sea at Arctic coast lines (right photo by USGS).

The workshop will focus on the following:

1. Geomorphology
 - Geology, soil science, permafrost, paleo-reconstructions of coastal morphology and climate
2. Environmental change
 - Meteorology, sea level rise, hydrodynamics, glacier retreat (glacier mass balance), coastal polynyas
3. Local consequences
 - Erosion, hydrology (e.g. due to terrestrial runoff, melt water, glacier melting), matter fluxes, biodiversity, structure and function of organisms and communities

4. Coastal observation networks

- Remote sensing, autonomous measuring stations/systems, modelling approaches

Short keynotes will highlight the challenges and future developments in the different science fields and provide incentives for break-out group discussions. We ask participants to provide input to the breakout groups from their experiences from e.g. existing networks and projects, from their specific thematic domain, strategic needs and perspectives.

Besides individual stimulation of new ideas and collaborations we aim at a review on current state of the art of polar coastal research across different disciplines. We want to show existing positive examples of large-scale data processing, networks, identify demands, needs and missing links that currently hamper a specific research, group or entire discipline to advance their research aims.

Agenda

Monday 3/JUNE/2019

-
- | | |
|-------|--|
| 12:00 | Lunch / snack |
| 13:00 | Introduction, status quo (Karsten, Uni Rostock)
Logistics, concept and idea of the workshop |
| 13:30 | Baltic TRANSCOAST – Exchange processes at coastal wetlands (Lennartz, Uni Rostock) |
| 13:50 | Permafrost thaw and the changing Arctic coast, science for socioeconomic adaptation (Overduin, Lantuit, AWI Potsdam) |
| 14:20 | Environmental change – Antarctic sea ice and polynyas (Heinemann, Uni Trier) |
| 14:40 | 30 years of Antarctic coastal change: observations and predictions (Abele, AWI Bremerhaven) |
| 15:00 | Wrap-up and aims of break-out groups (Karsten, Heesch, Uni Rostock) |
| 15:30 | Coffee break |
| 16:00 | Break-out groups |
| 17:15 | Report of break-out groups |
| 17:30 | Wrap-up and directions (Karsten, Heesch, Uni Rostock) |
| 18:30 | Dinner |

Tuesday, 4/JUNE/2018

- 09:00 Intro (Karsten, Heesch, Uni Rostock)
- 09:10 Soil formation processes - Biogenic triggering of soil formation processes in maritime Antarctica (Boy, Uni Hannover)
- 09:30 Biogeochemistry of the land-ocean interactions in the coastal interface zone (Böttcher, IOW)
- 09:50 Antarctic ice shelves: the link between continent and ocean (Jansen, AWI Bremerhaven)
- 10:10 Coastal observation networks - discussion and experience exchange (steering the discussion, Abele, Uni Rostock)
- 10:30 Wrap-up and work order for the groups (Karsten, Heesch, Uni Rostock)
- 10:45 Coffee break
- 11:00 Split-up in working groups
- 12:30 Short presentations of working group results
- 13:00 Lunch / snack
- 14:00 Final discussion and wrap-up: next steps; identification of lead author(s); feedback to workshop; closing (Karsten, Heesch, Uni Rostock)
- 15:00 Coffee break