



Minutes of the
16th Meeting
of the Baltic Earth
Science Steering Group

held online

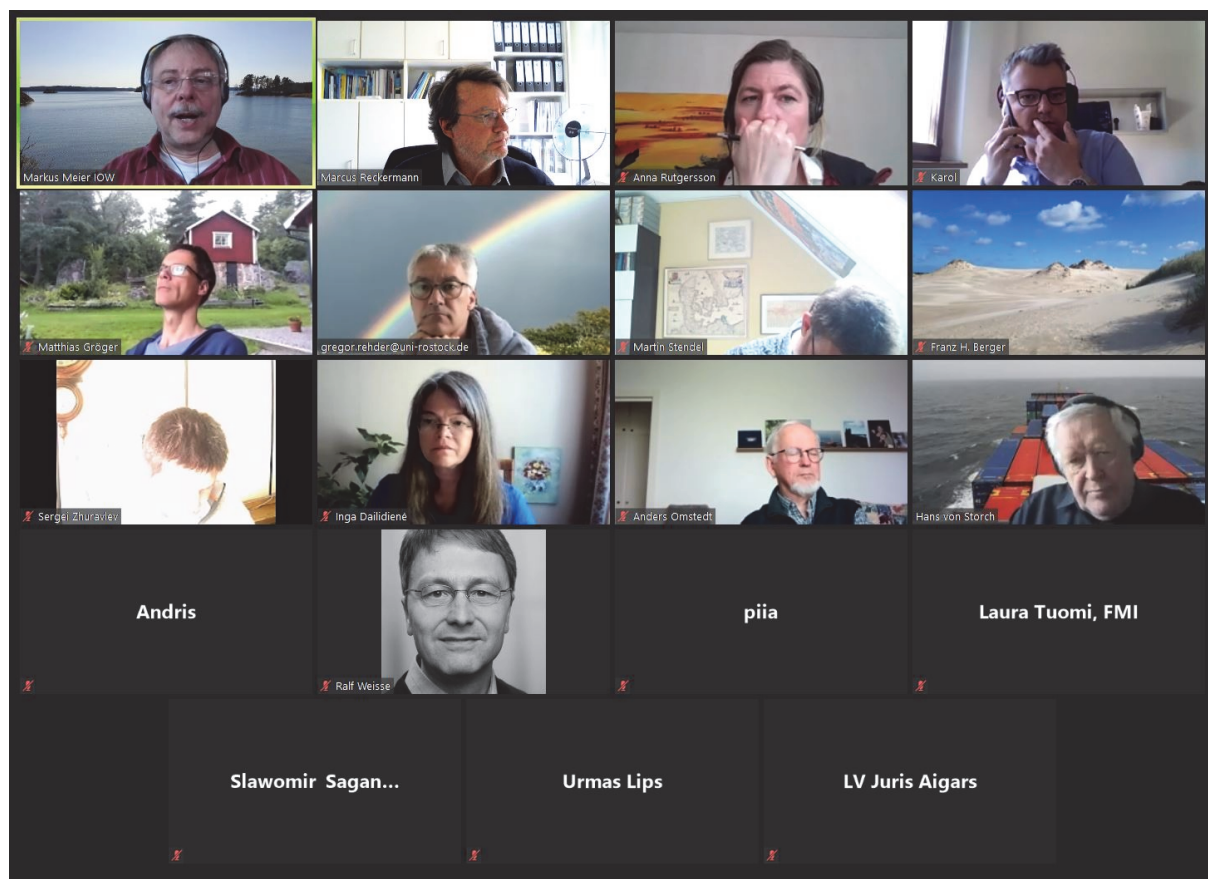
11 May 2021

Edited by
Marcus Reckermann

Participants at the 16th Baltic Earth Science Steering Group meeting

Last name	First name	Affiliation	Function
Aigars	Juris	Latvian Institute of Aquatic Ecology, Riga, Latvia	BESSG member
Andrusaitis	Andris	BONUS EEIG, Helsinki, Finland	BESAB member (observer)
Berger	Franz	Meteorologisches Observatorium Lindenberg - Richard-Aßmann-Observatorium, Deutscher Wetterdienst Tauche, Germany	BESAB member
Dailidiende	Inga	Marine Research Institute, Klaipeda University, Lithuania	BESSG member
Elken	Jüri	TalTech, Tallinn, Estonia	BESAB member
Gröger	Matthias	Leibniz Institute for Baltic Sea Research Warnemünde, Germany	BESSG member
Keevallik	Sirje	TalTech, Tallinn, Estonia	BESAB member
Kulinski	Karol	Institute of Oceanology IO-PAN, Sopot, Poland	BESSG vice chair
Lehmann	Andreas	Geomar, Kiel, Germany	BESSG member
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Meier	Markus	Leibniz Institute for Baltic Sea Research Warnemünde, Germany	BESSG chair
Myrberg	Kai	SYKE Finnish Environment Institute, Helsinki, Finland	BESSG member
Omstedt	Anders	University of Gothenburg, Sweden	BESAB member
Post	Piia	Institute of Physics, University of Tartu, Estonia	BESSG member
Reckermann	Marcus	International Baltic Earth Secretariat at Helmholtz-Zentrum Geesthacht, Germany	IBES, BESSG member
Rehder	Gregor	Leibniz Institute for Baltic Sea Research Warnemünde, Germany	BESSG member
Rutgersson	Anna	Uppsala University, Sweden	BESSG member
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Tuomi	Laura	Finnish Meteorological Institute, Helsinki, Finland	BESSG member
von Storch	Hans	Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Germany	BESAB chair
Weisse	Ralf	Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Germany	BESSG member
Zhuravlev	Sergey	State Hydrological Institute (SHI) and St. Petersburg State University, Russia	BESSG member

16th Baltic Earth SSG Meeting Minutes



Summary of Decisions and Action Items

- Item/Decision 1: BESSG members and Chairs as well as BESSAB members and chairs are asked to confirm in written form (e-mail) their willingness to continue for another 3-year term, if they intend to do so. This shall be done at latest 3 months before the 17th Baltic Earth Science Steering Group Meeting in Jastarnia, Poland; that means by 30 January 2022.
- Item/Decision 2: A questionnaire regarding the perception of Baltic Earth stakeholders (scientists, students, others) towards Baltic Sea issues shall be prepared (Hans von Storch with collaborators), to be presented at Baltic Earth events, workshops, conferences, educational events). Outcome should be a publication on this topic, following and extending the paper by Hans von Storch (Oceanologia).
- Item/Decision 3: Further ESA activities in the Baltic Sea region (oceanographic and coastal applications) shall be investigated.
- Item/Decision 4: Encourage submissions of Baltic Earth related contributions or even dedicated session at the 13th BSSC 2021 in Århus, Denmark, 18-22 October 2021. Registration and Abstract Submission Deadline is 1 September 2021.
- Item/Decision 5: Upon completion of BEARS: Analyze research gaps and recommend new Baltic Earth Grand Challenges
- Item/Decision 6: Establish an open call for suggestions for new Baltic Earth Grand Challenges to community; feedback to be presented and analysed at 4th Baltic Earth Conference

Item/Decision 7: Decide on sessions and prepare the Call for papers /2nd Announcement for the 4th Baltic Earth Conference

Item/Decision 8: Invite international keynote speakers for the 4th Baltic Earth Conference

Item/Decision 9: Investigate and prepare possibilities for additional online participation in the 4th Baltic Earth Conference

Introduction

The 16th Baltic Earth Science Steering Group Meeting was a full day online meeting. Main items on the agenda were the BEAR and EN Clime activities as well as the preparation of the 4th Baltic Earth Conference in Poland in 2022, and the prospects for Baltic Earth after 2022.

TOP 1: Organizational Issues

1.1 Approval of the agenda

The agenda was approved. A short round table introduction was done for new members.

1.2 Approval of the previous 15th Baltic Earth SSG meeting minutes

The previous meeting minutes were approved.

1.3 Review of previous 14th Baltic Earth SSG meeting action items

The decisions/action items of the previous meeting were shortly recapitulated, see below:

- Marcus Reckermann with Markus Meier to prepare and send out acknowledgment letters to resigned members. *Pending*
- Organization of Argo Arctic and Baltic Users Workshop, 23-25 September 2020, Sopot, Poland was accepted as a Baltic Earth activity (open call). *Completed; workshop had been postponed to 8-9 April 2021 and conducted online*
- Organization of ESA-Baltic Earth Workshop on Satellite Applications in the Baltic Sea region to be organized together with ESA (by invitation). *Completed; workshop took place online on 21 September 2020. A workshop report is available at <https://baltic.earth/publications>*
- Baltic Earth educational activities to be analyzed and a short note or article to be published in a suitable format. *Pending; a short analysis and overview website is available at baltic.earth/schools*
- Activity on the perception of the Baltic Sea in the different Baltic Sea countries. *Ongoing, report by HvS; manuscript in Oceanologia Special Issue.*
- BEAR author meeting to be organized in the week after 10 August (if possible). *Completed; meeting took place on 21 January 2021. Minutes and presentations distributed to lead authors and internal reviewers on 29 January 2021.*

1.4 Membership issues:

The 4th Baltic Earth Conference and the completion of the first batch of Baltic Earth Assessment Reports (BEARs) mark the termination of the first phase of Baltic Earth and the beginning of a new phase. Thus it was agreed that prior to the 4th Baltic Earth Conference in May-June 2022, members of the Baltic Earth Science Steering Group and Advisory Board shall declare their

willingness to serve another 3-yr term as member of the respective committees. **This shall be confirmed by a written statement three months prior to the Baltic Earth Conference, starting 30 May; so by 31 January 2022.**

The current chair and co-chair shall also declare their willingness to serve another three years in this function. They shall be approved at the Baltic Earth Science Steering Group meeting accompanying the conference. **Suggestions for new members or a new chair/co-chair shall be submitted to the secretariat by 31 January 2022.**

TOP 2: Activities in 2020 and 2021

2.1 Past and upcoming events and activities

2.1.1. Past events

- *Climateurope Webstival, 18 June 2020*
This was the first of three, short half-day online “webstivals” to replace the 3rd Climateurope Festival, planned on 16-18 June in Riga, Latvia. Climateurope is a Europe-wide framework for Earth-system modelling and climate service activities in Europe. One goal is to assess the state-of-the-art in Earth-system modelling and climate services in Europe, and to identify existing gaps, new challenges and emerging needs. Four more Climateurope webstivals took place online until January 2021. <https://www.climateurope.eu/>
<https://www.climateurope.eu/events-climateurope/festival/webstival-2020-home-page/>
- *6th Baltic Earth Summer School, 24-31 August 2020*
was held online, with 19 students from different Baltic Sea countries, and 10 lecturers.
<https://baltic.earth/schools>
- *ESA-Baltic Earth Workshop on Satellite Applications in the Baltic Sea region, 21 September 2020*
Initiated by ESA, Baltic Earth co-organized with ESA a one-day online workshop on 21 September 2021. Selected lectures were given by Baltic Earth experts and the leading scientists of the ESA Baltic+ projects. This full one-day collocation meeting aimed at exposing the results of on-going/recently completed ESA projects conducted in the Baltic Sea region. The objective of the meeting was to define potential synergies and follow-up activities in support to science priorities in the Baltic Sea region. The workshop agenda, list of participants and abstracts are available at <https://baltic.earth/publications> (International Baltic Earth Secretariat Publication Series No. 20, December 2020).

The good collaboration between the different groups and good organisation by ESA was noted. Further activities in this field were requested, and further plans and initiatives by ESA shall be investigated.

- *Marginal Seas Conference 16-17 December 2020*
The online conference was the first initiative of a Task Group “Marginal Seas” within the frame of the Deep-time Digital Earth (DDE) Big Science Program of the “International Union of Geological Sciences (IUGS)”. This Task Group acts as a core of international and interdisciplinary network of scientists with the general mission to prepare computer-based methodologies for the integration of global marginal seas evolution data and the sharing of international knowledge to answer three basic questions:
 - How did marginal seas of different climatic zones and tectonic settings change their

paleo-geography, -oceanography, and -environment during the natural climate and environmental variation of the Last Glacial Cycle (last 130 kyr)?

- What are the future expectations for the development of marginal seas and their coastal zones, facing the challenge of climate change and increasing human impact on the environment for this century?
- What strategies for sustainable development of the marine and coastal realm can help to keep a balance between the protection of the environment and the economic use of marginal seas' resources?

Baltic Earth co-organized this conference in the effort to reach out to the global community of coastal regions and marginal seas similar to the Baltic Sea. A joint Special Issue with contributions from this conference will be published in *Oceanologia*, together with contributions from the 3rd Baltic Earth Conference (held online in June 2020).

<https://baltic.earth/EMS2>

- *2nd Baltic Earth Winter School, 17-26 March 2021*

The 2nd Baltic Earth Winter School took place online, with 24 students and 9 lecturers from various Baltic Sea countries.

<https://baltic.earth/schools>

- *Argo Arctic and Baltic Users Workshop, 8-9 April 2021, Online*

The workshop was held online and was intended to bring together scientists and stakeholders who are engaged or interested in Argo floats in the Arctic and Baltic Seas. Topics involve ongoing and planned Argo activities in the Arctic and Baltic Seas and international collaboration, as well as technical issues like the equipment with sensors, the recovery of floats or the deployment in shallow and ice-covered regions, as well as data issues.

It is envisaged to hold a second workshop face-to-face in Poland in autumn 2021 or spring 2022 (possibly as a side meeting of the 4th Baltic Earth Conference), focusing on user engagement, discussing co-operation and providing hands-on training on Argo data use.

<https://www.euro-argo.eu/EU-Projects/Euro-Argo-RISE-2019-2022/Meetings/2020-Arctic-Baltic-workshop>

- *EGU General Assembly 2021, 19-30 April 2021: Baltic Earth Session "Climate change and other drivers of environmental change: Developments, interlinkages and impacts in regional seas and coastal regions"*

22 presentations were given at the virtual PICO session, and 50 participants joined the lively discussions.

2.1.2. Future events and activities 2021 and 2022

- *7th Summer School, Askö, Sweden, 23-30 August 2021.*

It is not yet clear whether this year's summer school can be held on the spot on Askö, Sweden, or must be held online.

- *Presentation HELCOM-Baltic Earth Climate Change Fact Sheet, 3 September 2021*

The HELCOM-Baltic Earth Climate Change Fact Sheet (CCFS), elaborated by the HELCOM EN Clime Group including Baltic Earth scientists, will be published on 3 September 2021. The event will be accompanied by a press conference.

- *BSSC 2021, 18-22 October 2021*
The 13th Baltic Sea Science Congress will be held in Århus, Denmark. A specific Baltic Earth or BEAR session, or dedicated single presentations on BEAR are envisaged.
- *3rd Winter School March 2022, dates tbd*
- *HELCOM-Baltic Earth Stakeholder Conference, 9-10 March 2022*
At this event, the EN Clime CCFS will be presented and discussed with the scientific and stakeholder communities.
- *4th Baltic Earth Conference 30 May-3 June 2022*
The next (4th) Baltic Earth Conference will take place where the 3rd had been planned. The topic of the conference shall be “Assessing the Baltic Sea Earth System”. A first announcement and dedicated website have been published: <https://baltic.earth/hel2022>
More on this conference below. The 5th Baltic Earth Conference is currently planned to take place in St. Petersburg (or vicinity), Russia, in June 2024.
- *8th Baltic Earth Summer School, Askö, Sweden, August 2022 (dates tbd)*
- A dedicated Workshop on Hydrology/Water and Energy Cycles is envisaged to bring together this community in the Baltic Sea region in order to establish a current state of knowledge in the fields of hydrology, hydrological modelling and the “water and energy cycle” of the Baltic Sea region, with the ultimate goal to establish a writing team for a BEAR report on this subject.

TOP 3: EN Clime

The work on the HELCOM EN Clime Climate Change Fact Sheet of the Baltic Sea (CCFS) was terminated. The CCFS will be published at a dedicated launch event which involves presentations and a press conference.

There will be a dedicated joint HELCOM-Baltic Earth stakeholder workshop on 9-10 March 2022. At this event, the EN Clime CCFS will be presented and discussed with the scientific and stakeholder communities.

TOP 4: BEAR

The BEAR reports are in the process of finalization; an extension of the submission deadline was given by ESD until 31 July 2021. Currently, four manuscripts have been submitted and are in the discussion phase (https://esd.copernicus.org/articles/special_issue1088.html). The other manuscripts are well on track.

TOP 5: 4th Baltic Earth Conference – Topics and 1st Announcement

A discussion was initiated on the scope and the topics of the 4th Baltic Earth Conference. A shortlist of topics is given in the 1st Announcement which may represent the scientific sessions at the conference, but this is still open for discussion. <https://baltic.earth/hel2022>

It was discussed vividly whether the topic of “geoengineering” should be a dedicated session at the conference; this was discussed controversially. It was decided that this topic should be part of

a dedicated topic/session on human impacts and actions, named “Sustainable management options” (as such now in the 1st Announcement). The topic of “geoengineering” will be mentioned in the session description; it was further suggested to invite an expert to give an overview presentation on the “history of geoengineering”.

It was further suggested to include the North Sea somehow, and other comparable marginal seas; that had been on the Baltic Earth agenda in any case. It was decided to have a dedicated session on “Comparing marginal seas around the world” (as such now in the 1st Announcement).

It was further discussed how to present the BEAR reports. One suggestion to incorporate the other marginal seas and to add an international and global perspective to the presentation of the BEAR reports was not to have the lead authors give the key presentation on their respective topic but to invite dedicated experts of each BEAR report, from another marginal sea. The content of the respective BEAR papers could be displayed in a dedicated poster session.

It was decided to have the lead authors give the overview or key note talk on their respective topic, followed by submitted contributions from the community. Suggested names for general keynote speakers were *Alice Newton* (<https://www.alicenewton.eu/>) and *Sabastian Ferse* (IOP Future Earth Coast, <https://www.futureearthcoasts.org/international-project-office/>).

Further tentative names of international experts to invite for keynote talks are *Mike Elliott* (<https://www.hull.ac.uk/staff-directory/mike-elliott>), *James Syvitsky* (<https://www.colorado.edu/geologicalsciences/jai-syvitski>), *Ragnar Elmgren* (<https://www.su.se/english/profiles/ragnare-1.192387>).

The format of the conference is envisaged to be on-site in Hotel Dom Zdrojowy, Jastarnia, Poland. The lecture hall can accommodate up to 160 participants. In addition to that, the option to have additional online participants, both as active, discussing participants, and as lecturers, shall be investigated.

TOP 6: The future of Baltic Earth after 2022

The format of Baltic Earth was considered as successful as informal international organisation, independent of funding constraints, trends and fashions, ready to respond to new challenges on short time scales; a true scientific bottom-up network which has no counterpart in the world. As such it was recommended to continue and develop.

Topics which had been on the Baltic Earth agenda but have not been completed for different reasons have been the Grand Challenge on “Regional variability of water and energy exchanges”, and the establishment of a meta-database of Baltic Earth relevant data. A further suggestion for the future was to expand the practical activities to include citizen science (to be investigated and elaborated).

The completed BEAR reports act as sort of “final reports” for what we could designate as a “first phase” of Baltic Earth. They represent reviews of most Grand Challenges:

- Grand Challenge 1: Salinity dynamics in the Baltic Sea;
- Grand Challenge 2: Biogeochemistry of the Baltic Sea;
- Grand Challenge 3: Natural hazards and extreme events in the Baltic Sea region;
- Grand Challenge 4: Sea level dynamics and coastal erosion in the Baltic Sea region;
- Grand Challenge 6: Multiple factors of Earth system changes in the Baltic Sea region

plus assessments of some closely related topics:

- Climate change and the Baltic Sea ecosystem
- Atmospheric and oceanographic projections and coupled regional Earth system modelling in the Baltic Sea region
- Current knowledge about past and future climate changes in the Baltic Sea region (BACC III)
- New methods in climate observing systems

They shall be used to present open research questions/gaps to elaborate recommendations for future Grand Challenges. The 4th Baltic Earth Conference in Jastarnia shall present and discuss the BEAR reports including the revealed research gaps.

Furthermore, it was suggested that Grand Challenges should automatically phase out with the termination of the first Baltic Earth phase (i.e. the 4th Baltic Earth Conference); however, if there are good arguments for a continuation, the GC may be continued. The logistical process how to handle this will be elaborated in the coming months.

It was decided to ask the scientific community for ideas and new Grand Challenges for the future, prior to the conference; at the same time, an analysis of the BEARs and other literature on research gaps and open research questions shall provide ideas for future activities. Both outcomes, the call to the scientific community, and the analysis of the BEAR, shall be discussed at the conference.

TOP 7: Any other business

7.1 Next BESSG meeting

The next full BESSG and BESAB meeting shall be attached to the 4th Baltic Earth Conference in Jastarnia, Poland, 29 May 2022.

1st draft, MR, 11 June 2021

Revision, MM, 27 June 2021

Approved and published 21 September 2021