



Minutes of the
18th Meeting
of the Baltic Earth Science Steering Group (BESSG)

13 December 2022

Online

Edited by
Marcus Reckermann

Participants at the 18th 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 chair
Dailidienė	Inga	Marine Research Institute, Klaipeda University, Lithuania	BESSG member
Elken	Jüri	TalTech, Tallinn, Estonia	BESAB member
Gröger	Matthias	Leibniz-Institute for Baltic Sea Research	BESSG member
Hyytiäinen	Kari	University of Helsinki, Helsinki Institute of Sustainability Science	BESSG member
Kulinski	Karol	Institute of Oceanology IO-PAN, Sopot, Poland	BESSG vice chair
Lehmann	Andreas	GEOMAR Helmholtz-Zentrum für Ozeanforschung	BESSG member
Lips	Urmas	TalTech, Tallinn, Estonia	BESSG member
Meier	Markus	Leibniz Institute for Baltic Sea Research Warnemünde, Germany	BESSG chair
Myrberg	Kai	Finnish Environment Institute SYKE	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 Hereon, Germany	IBES, BESSG member
Rehder	Gregor	Leibniz Institute for Baltic Sea Research Warnemünde, Germany	BESSG member
Weisse	Ralf	Institute of Coastal Science, Helmholtz-Zentrum Hereon, Germany	BESSG member
Sagan	Slawomir	Institute of Oceanology IO-PAN, Sopot, Poland	BESAB member
von Storch	Hans	Institute of Coastal Research, Helmholtz-Zentrum Geesthacht, Germany	BESAB member

Summary of Decisions and Action Items

- Item/Decision 1: The SSG chair, co-chair and secretariat to initiate an open call for new members in the SAB in order to attract new members. This call may be preceded by actively approaching selected scientists which may be asked to join the SAB. An open call may then be an option to attract more members. Still, the number of SAB members should be kept reasonable. Deadline: June 2023.
- Item/Decision 2: To amend the Terms of Reference of the BESAB so that advice is given by SAB to SSG only upon request by SSG. <https://baltic.earth/besab>
Completed.
- Item/Decision 3: Markus Meier, Karol Kulinski and Marcus Reckermann to initiate an open call for attracting a new young scientist member to joining BESSG. A call procedure and definition of eligibility should be prepared. Deadline: February 2023.
- Item/Decision 4: Working Groups suggested to be terminated or modified; two new WGs proposed; acceptance pending (see item 1.7 below). Deadline: March 2023.
- Item/Decision 5: The two new proposed WGs on Teleconnections and Marginal Seas have been accepted, pending approval of WG descriptions by BESSG. Deadline: March 2023
- Item/Decision 6: A clear plan and responsibilities with milestones concerning the preparation and writing of the Science Plan 2024 should be prepared by chairs/co-chair and secretariat in the first weeks of 2023. Deadline: January 2023

Introduction

The 17th Baltic Earth Science Steering Group Meeting took place on site prior to the 4th Baltic Earth Conference in Jastarnia, Poland. Main items on the agenda were the outcomes of the BEAR activities and the prospects for Baltic Earth after 2022, with activities and events in 2023 and 2024.

TOP 1: Organizational Issues

1.1 Approval of the agenda

The agenda was approved. A short round table introduction was done.

1.2 Approval of the previous 17th Baltic Earth SSG meeting minutes

The previous meeting minutes were approved.

1.3 Review of previous action items

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

Item/Decision 1: Slawomir Sagan and Hans von Storch to collaborate concerning a questionnaire regarding the perception of Baltic Earth stakeholders (scientists, students, others) towards Baltic Sea issues, to be presented at Baltic Earth events, workshops, conferences, educational events). Outcome could be a publication on this topic, following and extending the paper by Hans von Storch (Oceanologia).

Pending.

Item/Decision 2: Juris Aigars, Andris Andrusaitis and Marcus Reckermann/IBES to prepare options to hold the 5th Baltic Earth Conference in Latvia.

Pending. A preparatory meeting in Riga is planned in the first half of 2023

Item/Decision 3: Markus Meier, Karol Kulinski and Marcus Reckermann to initiate the process to update the process of discussing, analyzing and writing a plan for the next Baltic Earth Phase, starting in 2024, by updating the Baltic Earth Science Plan 2017. An implementation team is to be formed. **Initiated with this BESSG meeting, implementation pending (see below in these minutes).**

Item/Decision 4: Membership changes approved: Georgia Destouni and Kari Hyytiäinen accepted as new members of BE SSG; Andris Andrusaitis accepted as new chair of BE SAB.

Done.

1.4 Membership issues

New BESSG member Kari Hyytiäinen and the new BESAB chairman Andris Andrusaitis were welcomed in their positions. The issue to include young scientists in the BESSG was taken up below in Item 1.6.

1.5 Advisory Board issues

The role of the Senior (or Scientific) Advisory Board was discussed. It was decided to issue an open call for new BESAB members to attract new members, also from outside of the Baltic Earth region. Also separate meetings of the BESAB were encouraged, this will be organized. Furthermore, it was discussed whether the BESAB should give “unasked” advice, i.e. advice without any requests by BESSG. Concern was uttered that this may in the future lead to a spurious direction by SAB which SSG may be pressed to follow. This was openly discussed and it

was then recommended that a sentence should be added to the BESSG Terms of References that advice should only be given by request from BESSG. The ToR were modified accordingly.

<https://baltic.earth/besab>

1.6 Young Baltic Earth Scientists issues

It was discussed which consequences should be taken from the feedback from the Young Scientists group at the 3rd Baltic Earth Conference in Jastarnia (see previous minutes from 17th Meeting of the BESSG, <https://baltic.earth/bessg>).

Next to the concrete suggestions to improve the conference organization, it was discussed to involve young scientists more in the organization and implementation level of Baltic Earth. It was hence decided to invite a young scientist to join the BESSG. To this end, it was suggested to issue an “open call” for young scientists for a candidate to join the BESSG. To this end, the BESSG chair and co-chair together with the secretariat should elaborate procedure and definition of eligibility.

1.7 Review of existing and potential new Working Groups

Existing Baltic Earth Working groups were revisited and it was discussed whether or not a continuation or termination would be advised. Currently, each of the current Baltic Earth Grand Challenges have a WG, chaired by GC leaders. One “deliverable” or output by these GC-WGs (i) had been the publication of a dedicated review paper on the respective GC topic. This was accomplished with the publication of the BEAR reports. The other WGs represent more overarching and logistical topics (ii). Current Baltic Earth Working Groups (<https://baltic.earth/bewg>), and the recommendations/roles of chairs are:

- Baltic Earth Working Group on Salinity dynamics in the Baltic Sea (i) [representing GC1]
 - It was recommended by Andreas Lehmann (chairman of WG) to terminate the WG and GC, or to merge it with GC5. Discussion is ongoing and a decision is pending
- Baltic Earth Working Group on Land-Sea biogeochemical linkages in the Baltic Sea region (i) [representing GC2]
 - WG chairs Gregor Rehder and Karol Kulinski propose not to terminate the GC and WG, but rather to revise it and elaborate a new scope and possibly name. Elin Almroth-Rosell (SMHI) is interested to join the working group.
- Baltic Earth Working Group on Natural hazards and extreme events in the Baltic Sea region (i) [representing GC3]
 - None of the GC and WG chairs was present, but BESSG suggested not to terminate the group but rather elaborate and revise it, possibly under consideration of tipping points and low probability – high impact events as well as so-called NATECH events (Natural Hazard Triggering Technological Disasters) and the role of human infrastructure on the level of impact.
- Baltic Earth Working Group on Sea Level Dynamics in the Baltic Sea (i) [representing GC4]
 - It was suggested by GC and WG chair Ralf Weisse to keep the GC/WG but revise its scope to possibly include better coastline changes and erosion with sea level rise as driver, and include management issues. Additional names for future chairing of this GC/WG was issued (Kevin Pernel).
- Baltic Earth Working Group on Regional variability of water and energy exchange (i) [representing GC5]
 - It was suggested to terminate the GC/WG or to revise with responsible active chairs. A possible new sees could be the newly proposed WG on Teleconnections (see Annex 1), and/or the GC/WG on Salinity dynamics.

- Baltic Earth Working Group on Multiple drivers for regional Earth system changes (i) [representing GC6]
 - This GC/WG overlaps with all other GC/WGs, so it may as well be a dedicated aspect of all other topics. Still, a continuation is also possible. New, more concrete activities should be laid into the hands of new chairs (possible name: Kari Hyytiäinen)
- Baltic Earth Working Group on Coupled Regional Earth System Modelling (ii)
 - It is recommended to terminate this WG.
- Baltic Earth Working Group on Outreach and Communication (ii)
 - It is recommended to terminate this WG.
- Baltic Earth Working Group on Education (ii)
 - Piia Post announced that she resigns from the WG. Markus Meier explained the idea of the PhD Winter School, which is currently (2023) organized by IOW, but in the coming years should be taken over by other institutions. Markus Meier volunteered to lead this WG.
- Baltic Earth Working Group on the "Baltic Sea Model Intercomparison Project" (ii)
 - A paper on this topic was published in *Geoscientific Model Development* <https://gmd.copernicus.org/articles/15/8613/2022/>, whose implications call for a continuation of this WG.

More on existing and potential new GCs and WGs and further future Baltic activities, see section 3 (below).

TOP 2: Activities in 2022 and 2023

2.1 News from BESSG members and institutions (virtual round table)

Anders Omstedt reported that there are activities ongoing in Gothenburg University to investigate the effects of the NordStream pipeline damages and the escaping gas/methane. This is sponsored by an organisation called "Voice of the Oceans". Similar activities are also ongoing at other institutions in the region. He also indicated a recent paper on the GEWEX activities of the last 30 years (https://www.researchgate.net/publication/365051961_The_First_30_years_of_GEWEX).

Inga Dailidienė reported that in Lithuania, the number of Earth system students is rather low, and the question was posed how Baltic Earth could be a platform to improve the situation. Baltic Earth educational events could be promoted and also take place in Lithuania, and foreign students may be attracted through the Baltic Earth platform.

Jüri Elken mentioned recent investigations to estimate the impacts of Offshore Windfarms in the Baltic Sea on the physical and biological properties of the water column. Investigations of that sort are ongoing in various institutions.

Karol Kulinski reported the various activities related to the two recent BE Conferences 2020 and 2022, which both had Poland as host (although the first was held online). The Special Issue in *Oceanologia* on the 2020 conference is in principle almost ready, as a joint SI with the Marginal Seas Task Group of Szczecin University. A new Special Issue in *Oceanologia* on the 2022 Conference is in preparation. Furthermore, Karol reported that Poland is now a member of JPI Oceans. Also, a new Nuclear Power Plant is planned at the Polish coast, and the associated environmental impacts will be investigated.

Slawomir Sagan added the successful implementation of Argo floats and new buoys and new telemetry, which will improve monitoring. He also drew attention to the UN World Assessment. Any relevant issued for Baltic Earth should be elaborated and investigated what this may mean for the next Baltic Earth phase.

Matthias Gröger drew attention to a recently published paper in *Geoscientific Model Development*, which is a description of the BMIP project, which also is represented in the related Baltic Earth Working Group. <https://gmd.copernicus.org/articles/15/8613/2022/>.

Piia Post reported a new Baltic Earth relevant institution in Estonia. Research of the methane leakage of NordStream 2 is ongoing. A collaboration regarding radar climatology and high resolution precipitation measurements with other countries (resp. BaltRad) is also ongoing.

Ralf Weisse reported on the knowledge hub Sea level of JPI Ocean/JPI Climate. A related conference had been organized in Venice in October 2022.

Urmaz Lips reported on the HELCOM HOLAS 3 process, and Copernicus activities; synergies between Copernicus and other modelling activities; measurement activities, autonomous stations, oxygen etc.; central Baltic Sea Initiative; subsurface activities.

Markus Meier reported on modelling activities at IOW: a new regional, coupled atmosphere-sea-ice-ocean model has been developed and calibrated. National monitoring is a task by BSH; coordination between IOW and SMHI, MoU, other countries invited; Furthermore he reported on the EN-Clime activities with HELCOM; the continuing work on the updated fact sheet, the finalization of the German translation of the 2021 Fact Sheet. DAM (Deutsche Allianz Meeresforschung) activities, e.g. CoastalFutures project focussing on the protection and sustainable use of the North Sea and Baltic Sea and new projections based upon CMIP6.

Kai Myrberg informed on the first announcement of the 14th Baltic Sea Science Congress, which will be held on site in Helsinki, 21-25 August 2023. <https://www.syke.fi/projects/bssc2023>.

2.2 Past events in 2022 (since 4th BE Conference in Jastarnia)

- **4th Baltic Earth Conference, 30 May - 3 June 2022, Jastarnia, Poland**
Aftermath:
 - Conference summary and photo collection on website
 - Negotiated Special Issue : Open Access free of charge with *Oceanologia* (26 expressions of interest; submission deadline: 28 February 2023)
- **8th Baltic Earth Summer School 2022**
22. August 2022 - 29. August 2022 Askö, Sweden
- **HELCOM-Baltic Earth Baltic Stakeholder Conference 2022 – Climate Change in the Baltic Sea**
26. September 2022 - 27. September 2022, online
- **River Mouth Systems and Marginal Seas - Natural drivers and human impacts**
5-7 December 2022, online

2.3 Upcoming planned and envisaged Baltic Earth activities in 2023 and 2024

2022-23

- Special Issue in *Oceanologia* on the 4th Baltic Earth Conference Jastarnia contributions: 26 (31) expressions of interest, submission deadline: 28 February 2023; no fees, open access
- Winter term 2022/2023 (October 2022 - January 2023): International master course on "Climate of the Earth System", Rostock University (lectures, exercises, project work, 6 ECTS credits in total, 4 lecture hours per week, hybrid format)"
- 4th International Baltic Earth Winter School for Young Scientists on "Earth System Science for the Baltic Sea Region", IOW, Warnemünde, Germany, 27-31 March 2023
- GEWEX GHP Meeting in Maynooth, Ireland, July 5- 7, 2023
- Baltic Sea Science Congress 2023, Helsinki, 21-25 August 2023
- 9th International Baltic Earth Summer School, Askö, 21-28 August 2023
- Until 5th BE Conference: Elaboration of future scope, new set of Grand Challenges and Science Plan update of Baltic Sea Science Plan 2017 (Baltic Earth Science Plan 2024)
- Scouting and preparations of the 5th BE Conference
- Workshops and Conference (online/on site)

2024

- Winter term 2023/2024 (October 2023 - January 2024): International master course on "Climate of the Earth System", Rostock University
- 5th International Baltic Earth Winter School for Young Scientists on "Earth System Science for the Baltic Sea Region", IOPAN, Sopot, Poland, March 2024
- **5th Baltic Earth Conference, May-June 2024, Latvia**
- 10th International Baltic Earth Summer School, Askö, August 2024
- Hosting the 2024 GEWEX GHP Meeting?
- Launch of new Baltic Earth phase at the 5th Baltic Earth Conference, 2024, Latvia
- Workshops and Conference (online/on site)

TOP 3: BEAR aftermath and the future of Baltic Earth after 2024

Activities, Grand Challenges and Working Groups re-visited

Potential future Grand Challenges and Working Groups were discussed. There are concrete candidates for potentially new WGs:

1. **WG on Teleconnection** between the North Atlantic and Northern Europe and the Baltic Sea region. Initiated by Florian Börgel and Matthias Gröger (see Annex 1)

2. **WG on Marginal Seas.** Initiated by Jan Harff and Marcus Reckermann. This activity is existing as a task group at Szczecin University (DDE Marginal Seas Task Group):

https://nms.usz.edu.pl/wp-content/uploads/DDE-MargSeas-TG_ENG-website3.pdf

Baltic Earth had co-organized three conferences connected to this Marginal Seas Group:

- Marginal Seas - Past and Future, Online Conference, 16. December 2020 - 17. December 2020; <https://baltic.earth/events/087773/index.php.en>
- Marginal Seas Conference, Online, 14. December 2021 - 17. December 2021; <https://baltic.earth/events/103532/index.php.en>
- River Mouth Systems and Marginal Seas - Natural drivers and human impacts, Online Conference, 05. December 2022 - 07. December 2022; <https://baltic.earth/events/107261/index.php.en>

A new grand challenge was proposed that could replace GC5. The foci of the GC are high-resolution observations such as Scanfish, Argo float, glider, remote sensing and undulating mooring data, and high-resolution model data to understand small-scale processes not yet resolved and to understand their role on the large-scale circulation. Furthermore, the GC focus on the internal variability of the Earth system and its predictability. Interested scientists are Urmas Lips, Taavi Liblik, Germo Väli, Markus Meier, Hans von Storch, Karol Kulinski, Lars Arneborg, scientists outside BE.

Furthermore, further possible topics for future GCs and WGs were discussed:

- Pollution (Emma Undeman, Jacek Beldowski, Anna S.)
- Biodiversity (proposed by Jan Harff)

A new Grand Challenge was also proposed which would have a rather “philosophical” background. What is good science and what should be the goal of Baltic Earth network? How can a more holistic approach be applied? What are the challenges...

- for our understanding of the system?
- for Baltic Sea (and coastal) health?
- for community knowledge?
- for a holistic approach?
- Connections to UN Ocean Decade and UN Sustainability goals; Anders, Hans).

Generally it was recommended to reduce the prevalence of German and male GC and WG chairs, as much as possible.

Preparation of the new Science Plan 2024

A procedure shall be initiated to prepare the initialization of new GCs and WGs. E-Mails should be prepared to be sent to potential new GC and WG chairs, asking them to start the process. Concerning the time line and implementation into the new Science Plan, envisaged for June 2024, it was proposed to allocate 6 months for the preparation and 6 months for the writing of the new GC description and plan for the Science Plan 2024. This will also give enough time to discuss and finalize the chapters.

A clear plan and responsibilities with milestones should be prepared by the chair, co-chair and secretariat in the first weeks of 2023.

TOP 4: Any other issues

The next joint BESSG and BESAB meeting shall be online in summer 2023. Time and date will be identified by a doodle poll in early 2023.

1st draft, MR, 22 December 2022

2nd Draft, MR, MM, 17 January 2023

3rd Draft, MR, MM, AL, UL, 26 January 2023

Final version, 7 February 2023