



UNIVERSITY OF GOTHENBURG

BACC II progress

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BALTEX-BACC-HELCOM assessment



The purpose

of the BACC assessment is to provide the scientific community and the public with an assessment of ongoing and future climate change in the Baltic Sea region. This is done by reviewing published scientific knowledge about climate change in the Baltic Sea region.

An important element is the comparison with the historical past (until about 1800) to provide a framework for the severity and unusualness of the change.

Also changes in environmental systems, due to climate change, are assessed – such as hydrological regimes and ecosystems.

Past and current climate change

- Air temperature increased by 0.7 C over the past.
- Most pronounced warming in spring.
- Related observed changes in winter runoff, ice duration and snow.
- More precipitation in the 2nd half of the 20th century with major regional variations.
- No systematic change in windiness found.
- No clear long-term trends in Baltic Sea salinity.

Ongoing changes in regional ecosystems

- Associated changes in terrestrial ecosystems include
 - earlier spring phenological phase,
 - northward species shift, and
 - increased growth and vigour of vegetation.

- Robust assessments of changes in marine ecosystems related to climate change are hardly possible at this time. Further research is needed to discriminate between climate change and other anthropogenic drivers such as over-fishing, eutrophication, air pollution and land use changes.

Limitations

- Link to raising greenhouse gas concentrations is plausible, but no robust regional attribution has been established. (On the global scale this link has been established)
- Many conclusions relate to different time periods studied, changes occur at different time scales: Variability versus trend problem.
- Only few observational records span the entire recent 150 to 200 years.
- Changing observational techniques influence data homogeneity.
- “Detection and attribution” studies at the regional scale are urgently needed to determine the influence of anthropogenic factors in changing the regional climate.

Projection of possible future regional climate change

- Increasing temperatures very likely during the entire 21st century, but size of the trend depends considerably on model.
- Projected mean precipitation increases, largest increase in winter throughout the basin and decrease in summer in the southern basin.
- No clear projection for wind speed and storms.

In short ...

- Presently a general warming is going on in the Baltic Sea region.
- BACC considers it plausible that this warming is at least partly related to anthropogenic factors, and that it will accelerate in the coming decades. Regional attribution studies missing.
- So far, and in the next few decades, the signal is limited to temperature and directly related variables, such as ice conditions.
- Later, changes in the water cycle will become obvious.
- This regional warming will have a variety of effects on terrestrial and marine ecosystems – some predictable such others so far hardly predictable.



BACC

BALTEX ASSESSMENT OF CLIMATE CHANGE for the Baltic Sea Basin

January 2008: Published

More than 30 contributing institutions

**More than 80 contributing authors from
13 countries**

More than 500 pages

More than 2000 references

Updated assessment 2012

Ch1: Introduction and summary

Ch2: Past and current climate change

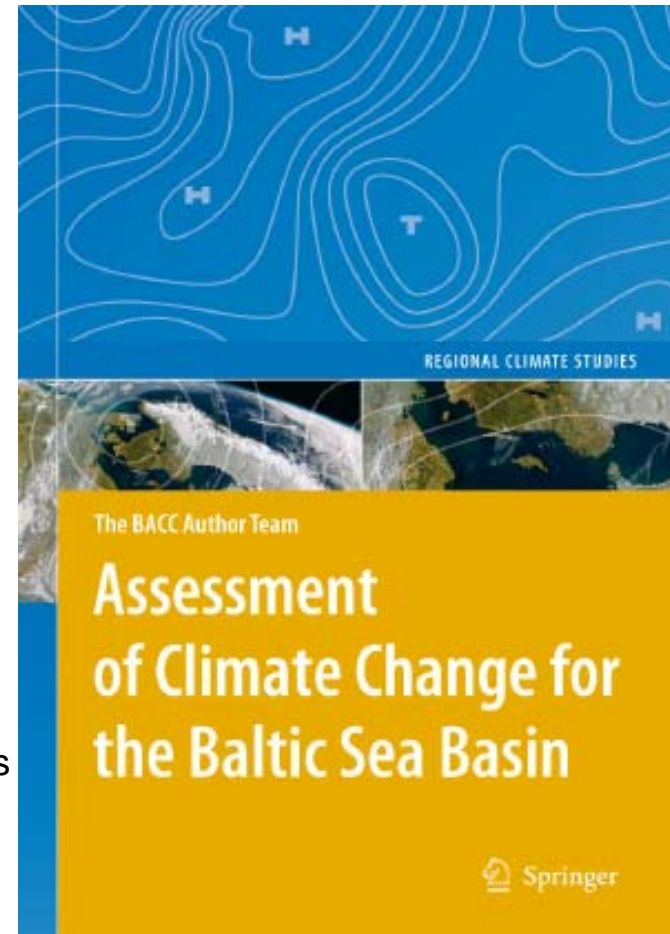
Ch3: Projections of future climate change

Ch4: Climate-related change in terrestrial and
freshwater ecosystems

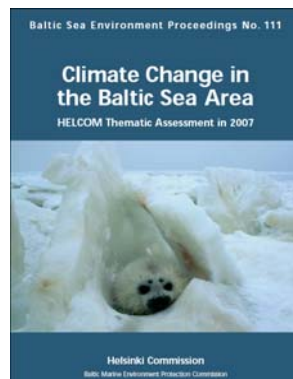
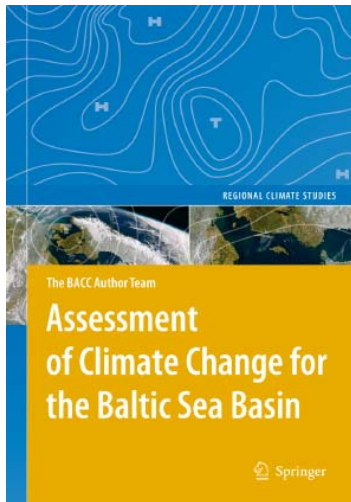
Ch5: Climate-related change in marine ecosystems

Ch6: Annexes

www.baltex-research.eu/BACC



BACC Book published in January 2008



Purpose

of BACC is to provide the scientific community and the public with an **assessment of ongoing and future climate change** in the Baltic Sea Basin. This is done by reviewing and assessing **published scientific knowledge** on climate change in the Basin.

First systematic scientific effort for assessing climate change and its impact in the Baltic Sea Basin and its sub-regions.

More than **80 authors from 13 countries** have contributed on a voluntary basis.

> 2000 references, ~ 10 % non-English literature.

No additional or external funding was needed.

No interest or influences from political organizations or NGOs; **strictly scientific**.

BACC II 2008-2013

Draft structure and contents of the future BACC II report

1. Overall assessment and summary
2. Past (mainly 200 years) and current climate change, detection and attribution
 - 2.a Atmosphere
 - 2.b Baltic Sea
 - 2.c Sea ice**
 - 2.d Sea level**
 - 2.e Hydrology
 - 2.f Cities**
- 3. Climate variability of the past 1000 years**
- 4. Skill of models for describing regional climate**
5. Projections of future climate change
- 6. Effects of changing regional drivers – industrial aerosols and land-use**
7. Climate-related terrestrial ecosystem change
8. Climate-related marine ecosystem change
- 9. Socio-economic impacts**
- 10. Empirical evidence for consensus and dissent among regional climate researchers**

Note: Changes to the published BACC I report printed in **bold**. Sections 2c and 2d were sub-sections to the BACC I Baltic Sea section in chapter 2, but are “upgraded” in BACC II to stay now as a separate section each parallel to the section on the Baltic Sea.

Draft time line for BACC II

March 2009: Nomination of BACC II Science Steering Committee (SSC)

Mid 2009: Nomination of BACC II lead authors

Early 2010: Update of BACC 2008 material for HELCOM

June 2010: Starting BACC II Symposium at 6th BALTEX Study Conference

Mid 2011: First version of BACC II chapters established
(Considering also BONUS projects results to the extent possible)

Mid 2011: Review/stakeholder conference (of the “BACC/Göteborg 2006” type)

Autumn 2011: External peer-review completed

End of 2011: BACC II material revised according to review

March 2012: BACC II report published

End of 2012: BACC II book manuscript print-ready

March 2013: BACC II book published

Thanks!

