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Utility of Regional Climate Models for the Baltic Sea Region

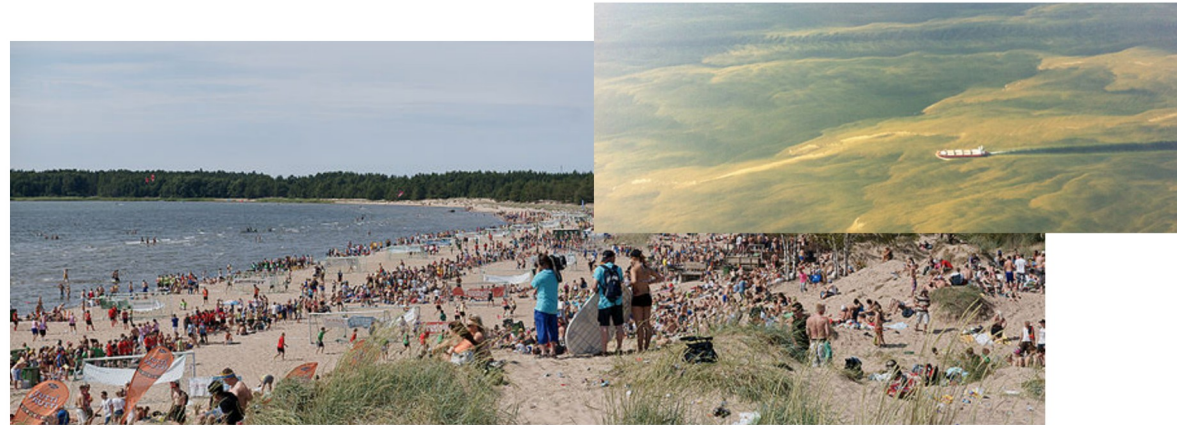
Jari Haapala

Research Professor, Head of Marine Research
Finnish Meteorological Institute



OUR CLIMATE IS CHANGING WHAT HAPPENS FOR THE BALTIC SEA REGION ?

WARMER SUMMERS ?
MORE ALGAE BLOOMS ?

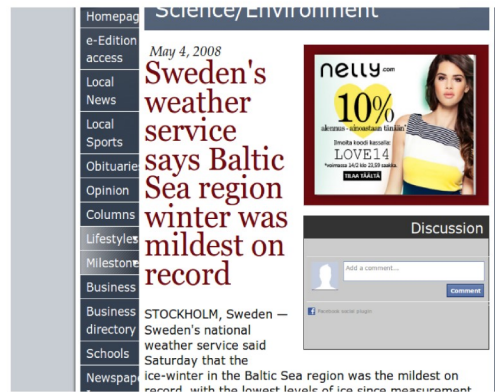
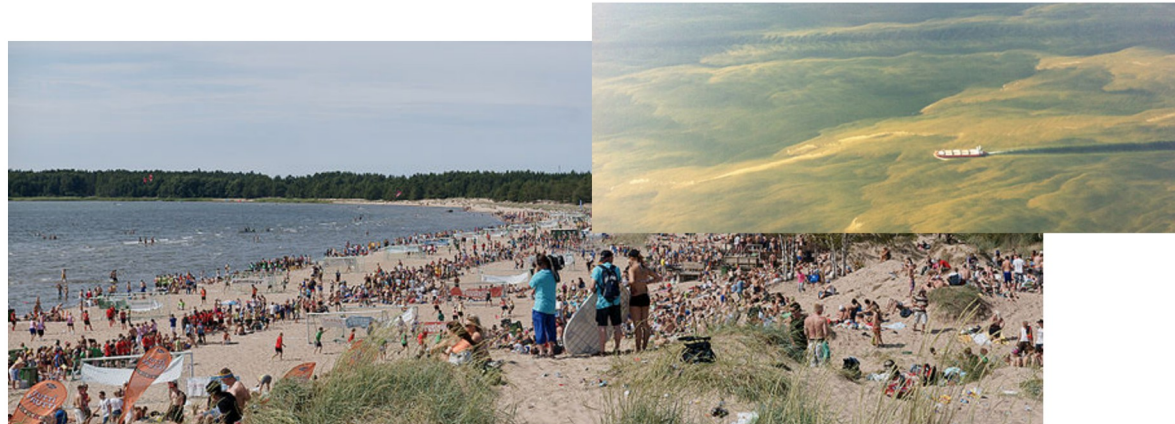


OUR CLIMATE IS CHANGING

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WARMER WINTERS ?
LESS SNOW AND ICE ?



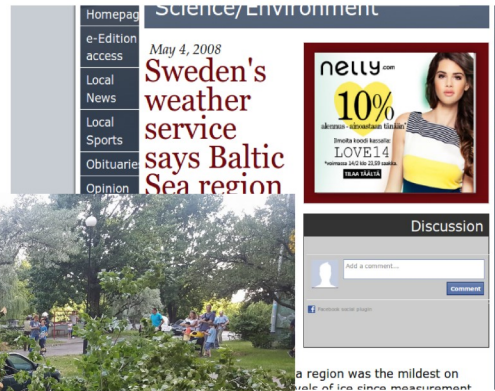
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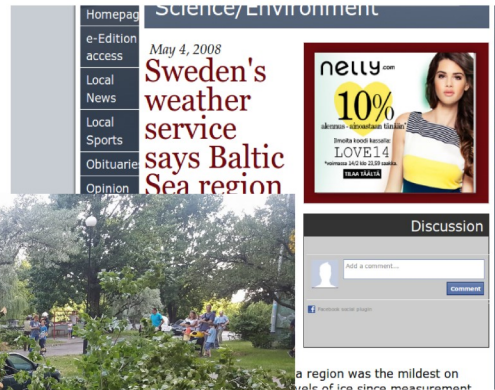
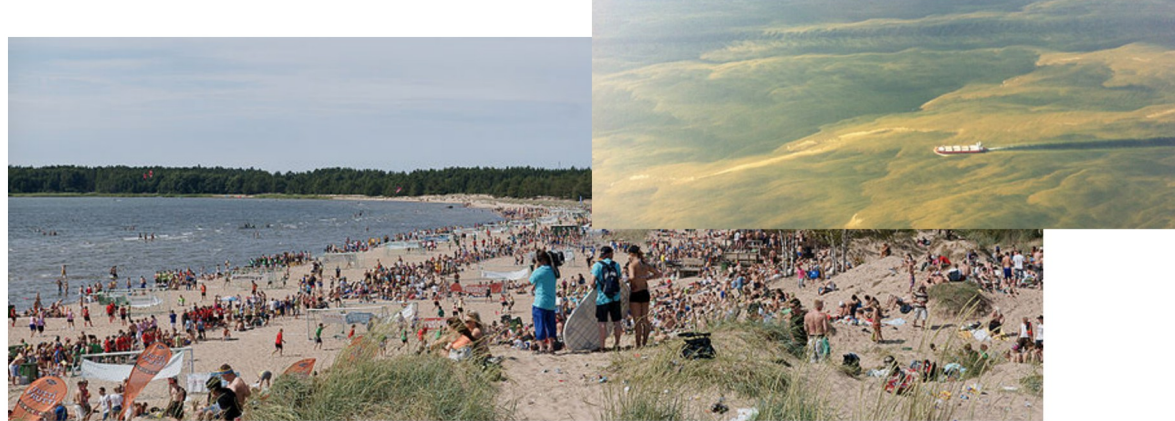
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Baltic Earth - Earth system science for the Baltic Sea region



Baltic Earth

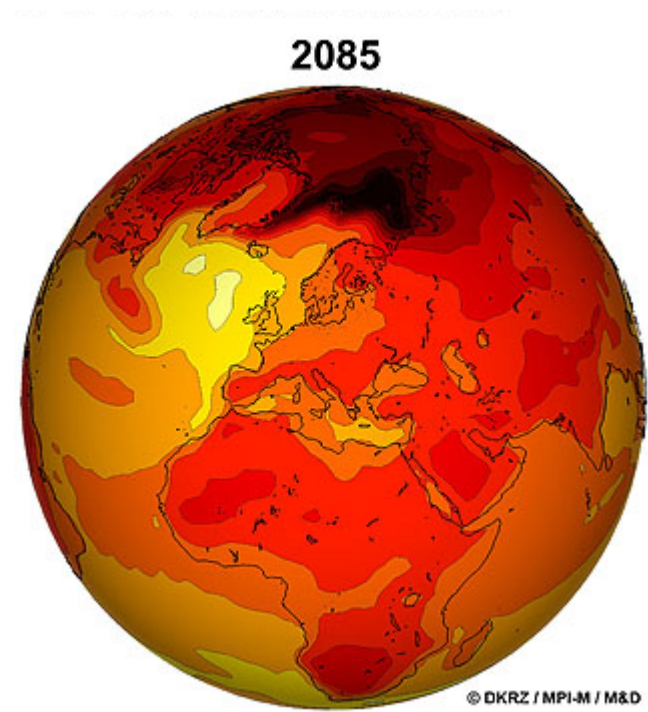
Earth System Science for the Baltic Sea Region

Vision of the programme

To achieve an improved Earth System understanding of the Baltic Sea region

- **Interdisciplinary** and **international** collaboration (conferences, workshops, joint projects etc.)
- **Holistic view** on the Earth system of the Baltic Sea region, encompassing processes in the **atmosphere**, on **land** and in the **sea** and also in the **anthroposphere**
- “**Service to society**” in the respect that **thematic assessments** provide an overview over knowledge gaps which need to be filled (e.g. by funded projects)
- **Education** (summer schools)
- Inherits the BALTEX network of scientists and infrastructures
- Succeeds BALTEX since the 7th Study Conference on BALTEX, Borgholm, Öland, Sweden, 10-14 June 2013

ONE ESTIMATE ON GLOBAL WARMING



DRIVER OF THE BALTIC SEA RESEARCH UNDERSTAND VARIABILITY AND CHANGE OF ECOSYSTEM

What is the link between the global scale change and local characteristics ?

1. Global to North-Atlantic / Eurasian scale

- controlled by the global climate system
- very strong feedback between scales

2. Baltic Sea scale

- climate variability very much controlled by the atmospheric circulation
- some feedback to large scale

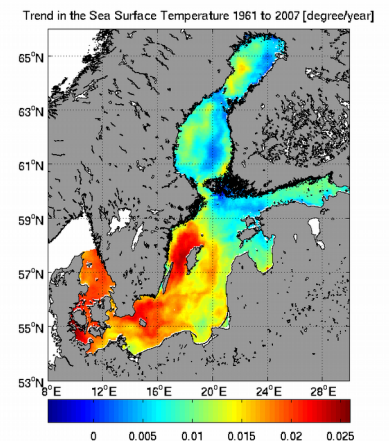
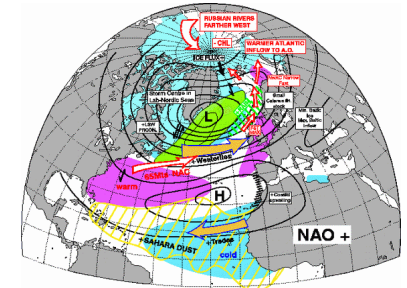
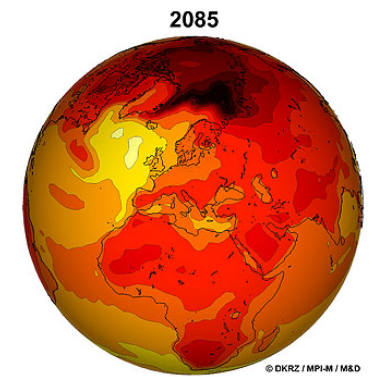
3. Basin scale

- atmospheric forcing is modified by the local characteristics : shape of the basin, interaction between the sub basins, river runoff etc.

4. Response of the ecosystem

- depends very much on the basin scale characteristics, even smaller sub-basin scale changes could be important.
- downscaling from global to the basin scale has been actively studied during the last 10+ years, but comparable little is know on the impact of CC on local scale.

LINK BETWEEN SCALES



WHAT HAPPENS FOR THE BALTIC SEA REGION ?

ANSWERS BY THE REGIONAL MODELS

Warmer summers ? Definitely yes, large regional differences

More algae bloom ?

Warmer winters ?

Less snow and ice ?

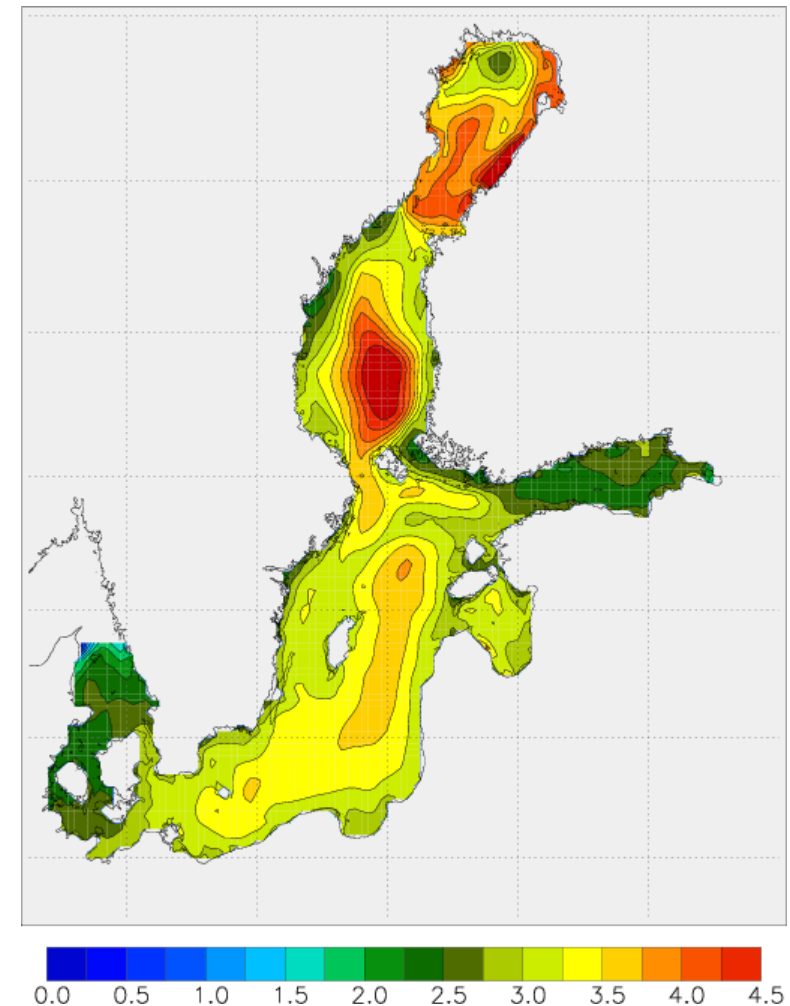
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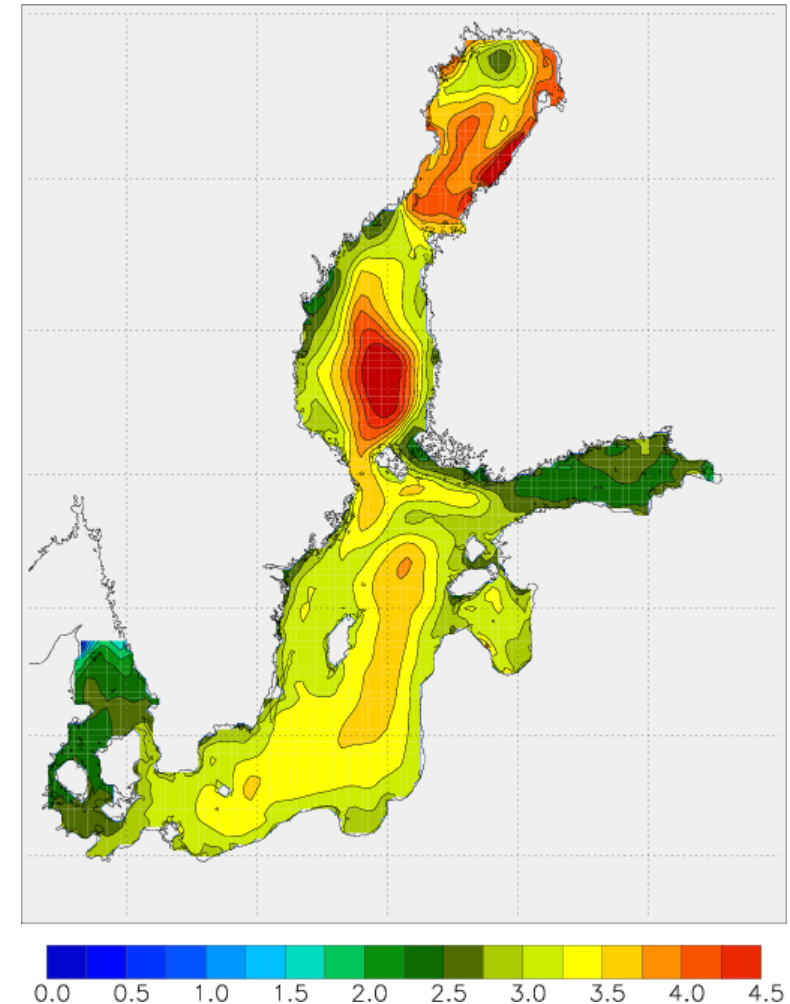
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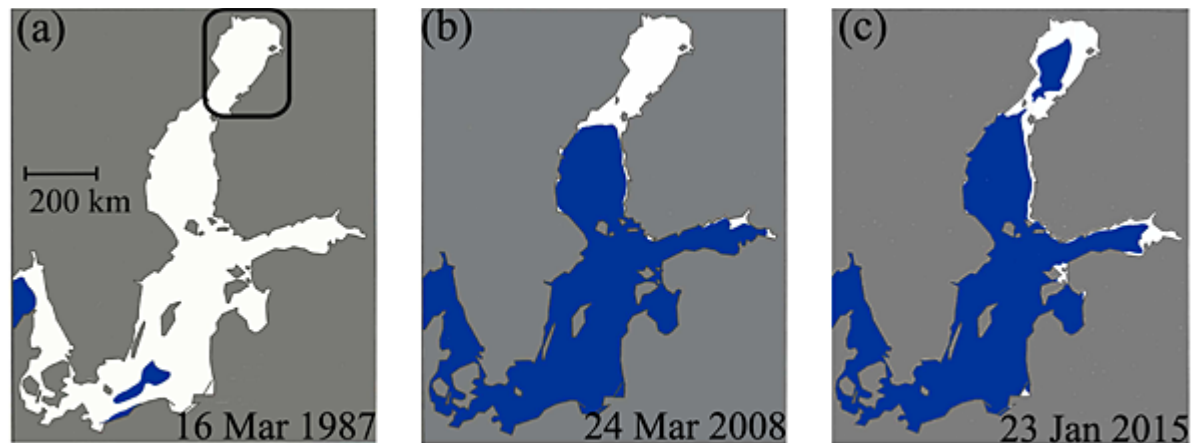
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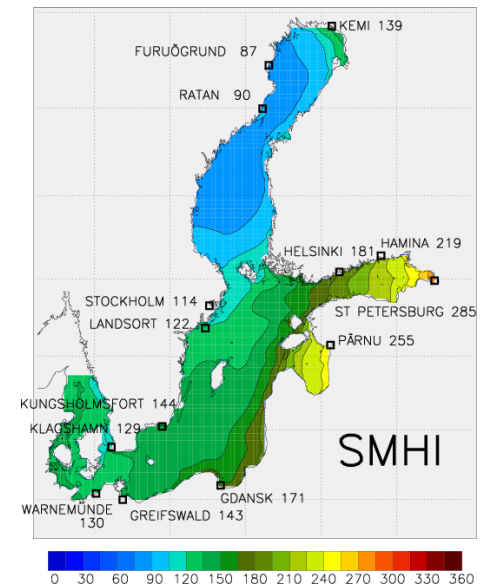
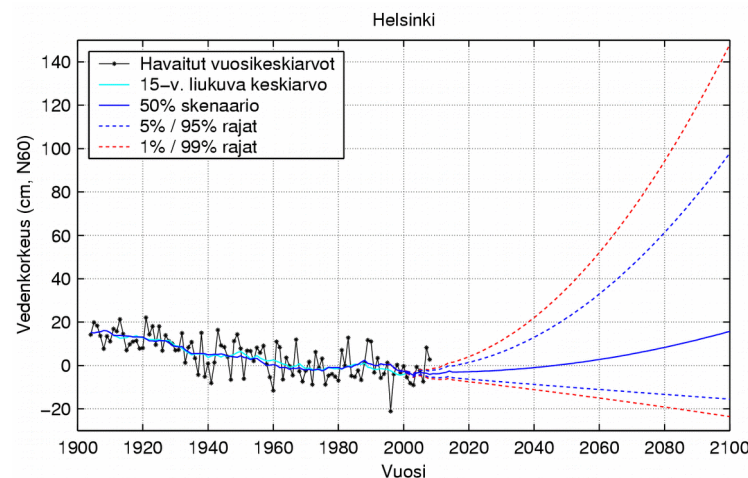
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More waves ? In the Northern Baltic yes, because disappearance of ice

More floods ? Yes, because of global sea level rise

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Less salt ? Yes, Baltic will become fresher, but how much ?

Less cod ? Difficult to say, but distribution of fishes depends on salinity

NEED MORE INFORMATION ?



Baltic Earth

Earth System Science for the Baltic Sea Region

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[2nd Baltic Earth Conference
The Baltic Sea Region in
Transition
Helsingør, Denmark
11 - 15 June 2018](#)

[BACC II](#)



Helmholtz-Zentrum
Geesthacht
Centre for Materials and Coastal Research



Extending the knowledge of the regional Earth system

Baltic Earth stands for the vision to achieve an improved Earth system understanding of processes in the atmosphere, on land and in the sea as well as in the new programme in the coming years. A major means will be scientific continuity in basic research fields, structure (secretariat, conferences, workshops, etc.).

A science plan is currently in preparation. The intention is to re-identify at conferences and by assessing existing knowledge in the region stakeholders and research funding agencies to promote funding of the new programme.

NEWS



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Second Assessment of Climate Change for the Baltic Sea Basin

Herausgeber: **The BACC II Author Team** (Ed.)

[Provides an up-to-date regional assessment of climate change in the Baltic Sea basin](#)

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Über dieses Buch

This book is an update of the first BACC assessment, published in 2008. It offers new and updated scientific findings in regional climate research for the Baltic Sea basin. These include climate changes since the last glaciation (approx. 12,000 years ago), changes in the recent past (the last 200 years), climate projections up until 2100 using state-of-the-art regional climate models and an assessment of climate-change impacts on terrestrial, freshwater and marine ecosystems. There are dedicated new chapters on sea-level rise, coastal erosion and impacts on urban areas. A new set of chapters deals with possible causes of regional climate change along with the global effects of increased greenhouse gas concentrations.

[» Alles zeigen](#)



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