

Proposed outline of Chapter 6a) of the BACC II report:

6) Attributing causes of regional climate change

a) Global warming / Large-scale forcings

i) Introduction

- What is detection and attribution
- Difficulties to overcome at the regional scale: Generally decreasing signal-to-noise ratio, model errors, locally important forcing mechanisms, etc.
- Assessment strategy for chapter 6 (a):
 1. Formal detection and attribution studies with regional focus and/or regional detail where available
 2. Consistency assessment: 'Is the observed change consistent with simulated changes due to GHG forcing?' - Mostly relying on existing literature, optionally synthesizing key findings from chapters 3 and 4

ii) Temperature

- Detection and attribution of temperature changes in Northern Europe to anthropogenic (and natural) causes
- To what extent do studies using global constraints agree/disagree with regional analyses?
- Further evidence for causes of regional warming (consistency assessments, etc.)

iii) Circulation and the hydrological cycle

- Theoretical understanding of anthropogenic changes in the hydrological cycle. What do we expect due to increasing absolute humidity, etc.?
- Detection and attribution of precipitation (and streamflow) changes in Northern Europe.
- Circulation changes related to global warming and their effects on the Baltic catchment.

iv) Attribution of changes in the Baltic Sea

- Formal detection and attribution work?
- Are the observed changes consistent with simulated changes?

v) Attribution of climate change impacts

- Existing methods to assess causality on impact-relevant quantities
- Challenges when dealing with 'indirect' effects and a multitude of confounding factors