BACC II

3. Recent (mainly 200 years) and current climate change

3.b. Baltic Sea

3.b.i Marine physics / formerly: Hydrographic characteristics

outline by Jüri Elken

alternative titles

3.b.i. Stratification and circulation

3.b.i. Circulation and stratification

Introduction

- Recent aspects
  - *Figure 0 – Baltic Sea map (topography and locations)*

1. Trends and variations in water temperature

- Reconstructed long time series of annually mean temperature
  - *Figure 1 – time series*
  - *relate to cold-warm and dry-wet periods*
- Regional variations in sea surface temperature
  - *Figure 2 – map of recent trends based on remote sensing*
  - *discuss timing and amplitude of seasonal patterns*
  - *note that March SST forces the temperature of intermediate layer*

2. Changes in stratification and water exchange

- Long-term stratification changes in deep basins
  - *Figure 3 - saline water inflows and stagnations, Gotland Deep*
  - *discuss other basins, i.e. SSS, halocline and summer cold layer, stratification strength*
- Saltwater inflow events
  - *discuss inflow types, recent warm inflows, largest 1951 event*
  - *Figure 4 – entrance area time series (good figure missing at the moment)*
  - *Figure 5 – deep temperature changes since 1997 in Gotland Basin, describe nature of warm inflows*
- Halocline depths
  - *Figure 6 – mean and seasonal change of halocline depth*
  - *discuss mixing and regional events of halocline decay and collapse*

3. Circulation and transport patterns

- Mean currents or transports, if possible mean maps over specific decadal periods
  - *Figure 7 – maps of currents or transports (good figure missing)*
  - *discuss changes in current speed (increasing?)*
- Freshwater spreading patterns
  - *Figure 8 – juvenile freshwater patterns*
  - *discuss area with S < 5 PSU*
- Saltwater spreading patterns
  - *discuss if pathways have been changed*

4. Sensitivity to changes in forcing

- Temperature dependence on air temperature /
- Salinity response to freshwater discharge
  - *Figure 9 – response curves*
- Circulation and mixing response to winds
  - *discuss the effect of changing speeds and directions*