

## Baltic-C Meta-data-set:

### Model forcing: Acid deposition to the PROBE-Baltic Model

#### 1.) General description of the data set:

Monthly data including deposition of oxidized sulphur and nitrogen, reduced nitrogen, pH in precipitation and atmospheric CO<sub>2</sub> concentration. The data are derived as input to the ocean model PROBE-Baltic.

#### 2.) Created:

September, 2009.

#### 3.) Last update:

Updates available in spring, 2010.

#### 4.) Keywords:

Baltic Sea, acid deposition, sulphur, nitrogen, pH, atmospheric carbon dioxide concentration, PROBE-Baltic.

#### 5.) Area:

Baltic Sea.

#### 6.) Spatial extension:

Baltic Sea including Kattegat, Belt Seas and Øresund.

#### 7.) Spatial resolution:

13 basins in the Baltic Sea.

#### 8.) Time window:

1960–2006.

#### 9.) Temporal resolution:

Monthly.

#### 10.) Data and arrays:

ASCII files of dry and wet deposition of oxidized sulphur and nitrogen, reduced nitrogen and pH in precipitation. The originally gridded fields are averaged for each basin. CO<sub>2</sub> is represented by a station in southern Baltic Seas.

#### 11.) Reference to other data sets:

Data for the period 1990–2006 are modelled (acid deposition) by the EMEP transport model (<http://www.emep.int/OpenSource/index.html>). Precipitation is taken from interpolated measurements within the EMEP co-operative programme (<http://tarantula.nilu.no/projects/ccc/emepdata.html>).

For the period 1960–1989 acid deposition data are constructed from emissions reported by EDGAR-HYDE (<http://www.mnp.nl/edgar/model/>). Precipitation for this period is given by the average monthly fields for the 1990–2006 period. The pH in the precipitation is calculated from concentrations of base cations, chloride, oxidised sulphur and nitrogen and ammonia from the

interpolated EMEP measurements, using a simple model. Chloride and base cations are assumed constant with the average monthly fields from the 1990–2006 period.

Atmospheric CO<sub>2</sub> concentration is approximated by a constructed data set for a station in southern Baltic Sea (Rutgersson et al., 2009).

**12.) Data quality (degree of validation):**

The construction of the data set is presented and evaluated in Carlsson et al. (2010).

**13.) Where to find the data?**

Due to data volume, data available from contact persons.

**14.) Contact persons:**

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**References:**

Carlsson, B. et al., 2010. Depositions of acidifying and neutralising compounds over the Baltic Sea drainage basin between 1960 and 2006. *In manuscript*.

Rutgersson, A., M. Norman, and G. Åström, 2009. Atmospheric CO<sub>2</sub> variation over the Baltic Sea and the impact on air-sea exchange. *Bor. Env. Res.*, **14**, 238–249.