Merchant vessels facilitates enlargement of ferrybox observation systems in the Northern Europe

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FerryBox on Tavastland
Tavastland parameters

In water, 3 m depth
- Flow rate
- Temperatur, intake
- Salinity
- Oxygen
- Chlorophyll fluorescence
- Phycocyanin fluorescence
- CDOM fluorescence
- $pCO_2$

In air
- Temperature
- Pressure
- Irradiation, PAR
- $CO_2$

Water samples
- Salinity
- Chlorophyll $a$
- CDOM
- Alkalinity
- Nutrients
- Phytoplankton
$p\text{CO}_2$ on Tavastland

**Instrument:**
- General Oceanics 8050
- Licor 7000

Installed on M/S Tavastland 2010

CO$_2$-Reference gases on a deck above: 0, 250, 350, 450, 550 ppm
Resultat Tavastland, October 12-16 2017

Salinity (PSU) TransPaper 2017-10-12 20:55:22 to 2017-10-16 03:52:07

Temperature (°C) TransPaper 2017-10-12 20:55:22 to 2017-10-16 03:52:07
Resultat Tavastland, July – September 2017

Clorophyll Fluorescence a.u.

Phycocyanin Fluorescence a.u.
Stena Line have delivered data to SMHI since 1973 from the ferry line between Gothenburg and Fredrikshamn.

They did manual readings from their own SST measurements at 3 specified positions, and sent the results by letter or fax and later email.

During the autumn of 2016 we decided to modernise this and try to create a automatic dataflow.
Stena Line has developed a Fuel Management System that collects data and measurements from different places on the vessels.

One collected parameter is Sea Surface Temperature. A pt-100 sensor is placed at the intake of the cooling water to the engine.

Stena Line delivers data from 28 vessels around Europe

Parameters delivered: SST, wind speed, wind direction, current speed and current direction

Stena Line set up a script that delivers 10 minute average values every hour.

Good dialogue with Stena Line but difficult to correct measurements when data is corrupted

Automatic QC very important to avoid wrong data in model assimilation
Stena Line routes
Stena Line – data flow

E-mail to ocdata@smhi.se

Extracts date and time from data delivery and creates a new file for the database

Data to production of SST charts, ice modelling and warning services

Automatic QC0

Database SMHI

Visualisation at www.smhi.se
Automatic QC0 Phyton script

Defining geographical area

Collects the QC boundarys for the geographical area

8 different automatic QC tests. Example: Minimum value, maximum value, standard deviation, spike test, flat line test, rate of change

Database
Data flow for Near Real Time data

FB-data

QC0 Autom.

QC0: Automatic Quality Control (QC) in line with Copernicus INSTAC.
Using python scripts

QC1 & QC2

QC1: Manually QC
QC2: Manually QC including validation with water samples, e.g. using a toolbox with GUI (python).

FB-water samples

National Institutes

NRT

Common European Ferrybox Database Tool for visualization and analysis

CMEMS
Copernicus service Near Real Time/Delayed mode

SeaDataNet
Delayed mode

Users

Path for data delivered via the Common European Ferrybox Database to the ROOS's

Master data

Info.
Stena Line SST data, April 17-20,
Stena Vision: Karlskrona - Gdynia
Thank you!
Questions?