

FerryBox Tools

6th FerryBox Workshop
8-9 September 2014 Tallinn

Oceanographic Unit SMHI Gothenburg

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TransPaper

- Background
 - TransPaper RoRo Vessel
 - Ports: Gothenburg-Kemi-Oulu-Lübeck-Gothenburg (weekly)
 - Data from November 2009 to present
 - Data collected in real time and delayed mode
 - Tab separated ASCII text files
 - FerryBox and CO₂ measurements
 - Water samples for laboratory analyses



All positions 2013

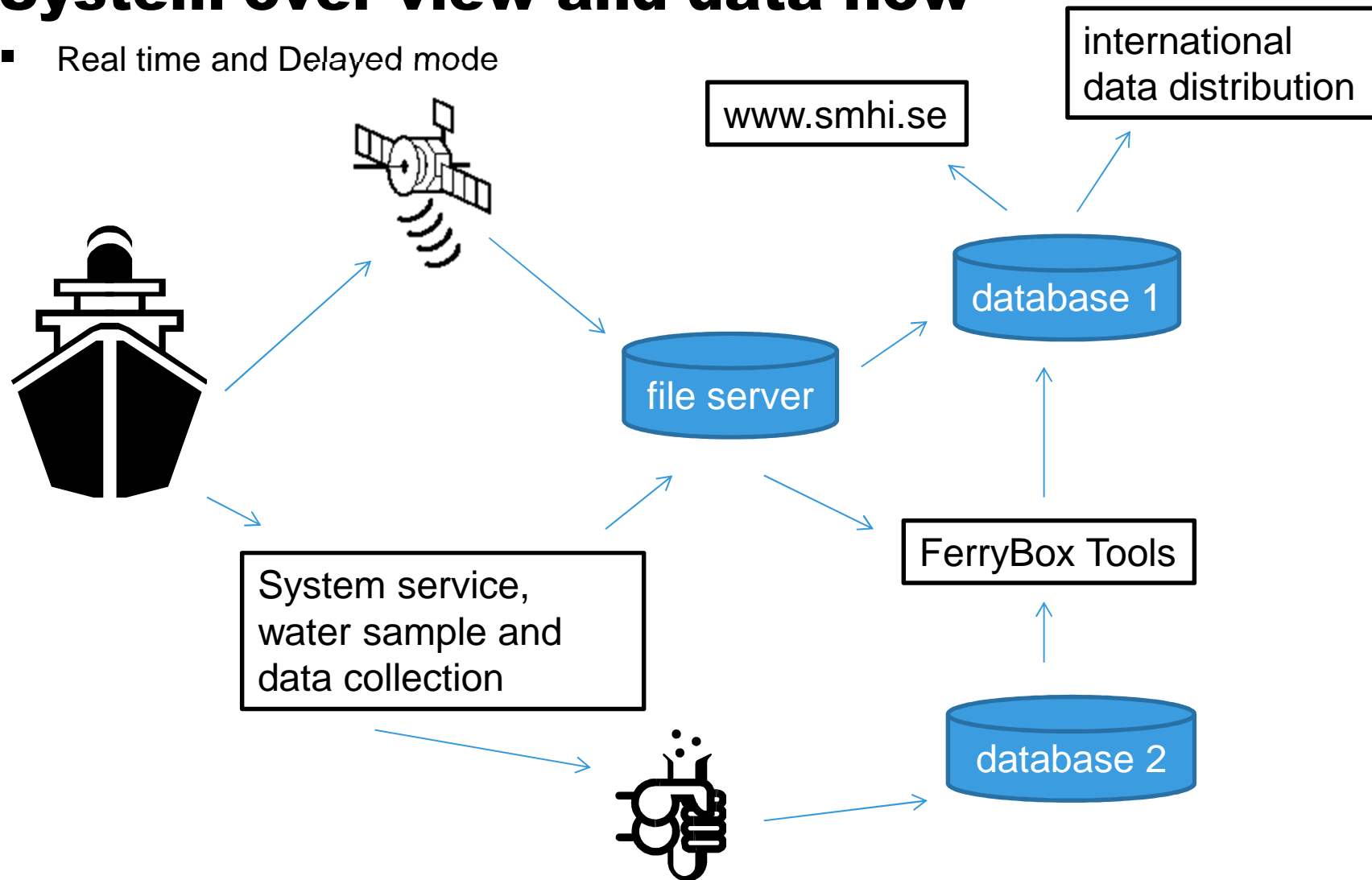


Why FerryBox Tools?

- There are problems in all data
- Automated measurements should be compared to data from reference samples
 - The data resides in different databases
- Quality Control need to be carried out at different times:
 - Near real time
 - Weekly or biweekly
 - Yearly

System over view and data flow

- Real time and Delayed mode



FerryBox Tools

- Objectives
 - Easy to use tool for visualizing data
 - Easy to set time period and change scale
 - Quality control
 - Ability to use for non Python users
 - Open Source

QC

- QC0: automatic control, upper and lower limits for each variable. Limits read from an external text file, which is read at start up. Performed on raw data.
- QC1: ability to change quality flag manually. Set: variable, start date and end date in the FerryBox Tools GUI. Setting written to a text file.

Convenient to keep QC0 and QC1 outside of the Python code. Easy to use for people not using Python.

Software

- Python 2.7
- Numpy
- Tkinter 8.5
- Matplotlib
- Basemap
- Pyodbc



FerryBox Tools v1.6.3

Information
Choose time interval or select files and press the Load Data button


StartDate: Year-Month-Day-Hour-Minute
Date: 2014 9 2
Time (UTC): 14 57

StopDate: Year-Month-Day-Hour-Minute
Date: 2014 9 2
Time (UTC): 14 57

Select directory
Select directory Select files MIT CO2 FTP
Directory: \\winsfs\data\prod\Bo-produktion\Arbetsdokument\Oceanografi\Transpaper_drift\17_Backupdata\Ferrybox_Pc_Backupdata\mit-filer

Process data
Load Data Derive CO2 related variables Merge MIT & CO2
Filer MIT Create CO2-textfile Filter data

Scatter map Time series Sample vs Sensor
Raw Filtered Both (time series)
YZ min YZ max
Get variables Save plot
WISKI & MyOcean Export ascii data



Filter Data
FilterStartDate: Year-Month-Day-Hour-Minute
Date: 2014 9 2
Time (UTC): 14 57
FilterStopDate: Year-Month-Day-Hour-Minute
Date: 2014 9 2
Time (UTC): 14 57
Person editing:
Submit

FerryBox Tools v1.6.3 (svarar inte)

Information
Loading data...

StartDate: Year-Month-Day-Hour-Minute
 Date: 2012 ▾ 8 ▾ 5 ▾
 Time (UTC): 0 ▾ 0 ▾

StopDate: Year-Month-Day-Hour-Minute
 Date: 2012 ▾ 10 ▾ 5 ▾
 Time (UTC): 23 ▾ 59 ▾

Select directory Select files MIT CO2 FTP


Directory: \\winsfs\data\prod\Bo-produktion\Arbetsdokum ent\Oceanografi\Transpaper_drift\17_Backupdata\Ferrybox_Pc_Backupdata\mit-filez

Process data

Scatter map Raw Filtered Both (time series)

YZ min YZ max

WISKI & MyOcean



Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute
 Date: 2014 ▾ 9 ▾ 2 ▾
 Time (UTC): 14 ▾ 57 ▾

FilterStopDate: Year-Month-Day-Hour-Minute
 Date: 2014 ▾ 9 ▾ 2 ▾
 Time (UTC): 14 ▾ 57 ▾

Person editing:

FerryBox Tools v1.6.3

Information
Finished!

StartDate: Year-Month-Day-Hour-Minute

Date: 2012

Time (UTC): 0

StopDate: Year-Month-Day-Hour-Minute

Date: 2012

Time (UTC): 23

Select directory

MIT
 CO2
 FTP

Directory: \\winsfs\data\prod\Bo-produktion\Arbetsdokum ent\Oceanografi\Transpaper_drift\17_Backupdata\Ferrybox_Pc_Backupdata\mit-files

Process data

Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute

Date: 2014

Time (UTC): 14

FilterStopDate: Year-Month-Day-Hour-Minute

Date: 2014

Time (UTC): 14

Phycocyanin fluo.

Sovar24

Sovar25

Air temperature C

Sooxy

Speed in knots

Water sample

Longitude

SopHins

PAR, µEm2/s

Scatter map

Time series

Sample vs Sensor

Raw

YZ min

YZ max

Both (time series)

Save plot

Export ascii data

WISKI & MyOcean

FerryBox Tools v1.6.3

Information Finished!

StartDate: Year-Month-Day-Hour-Minute

Date: 2012 8 5

Time (UTC): 0 0

StopDate: Year-Month-Day-Hour-Minute

Date: 2012 10 5

Time (UTC): 23 59

Select directory

Select files MIT CO2 FTP

Directory: \\wins\data\prod\Bo-produktion\Arbetsdokument\Oceanografi\Transpaper_drift\17_Backupdata\Ferrybox_Pc_Backupdata\mit-filez

Process data

Load Data

Filter MIT

Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute

Date: 2014 9 2

Time (UTC): 14 57

FilterStopDate: Year-Month-Day-Hour-Minute

Date: 2014 9 2

Time (UTC): 14 57

Person editing:

FerryBox Tools v1.6.3

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StopDate: Year-Month-Day-Hour-Minute

Date: 2012 10 5

Time (UTC): 23 59

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Process data

Load Data

Filter MIT

Filter Date

FilterStartDate: Year-Month-Day-Hour-Minute

Date: 2014 9 2

Time (UTC): 14 57

Scatter map Raw Filtered Both (time series)


YZ min YZ max

Get variables

WISKI & MyOcean

Sample vs Sensor

Time series Both (time series)



Filter Date

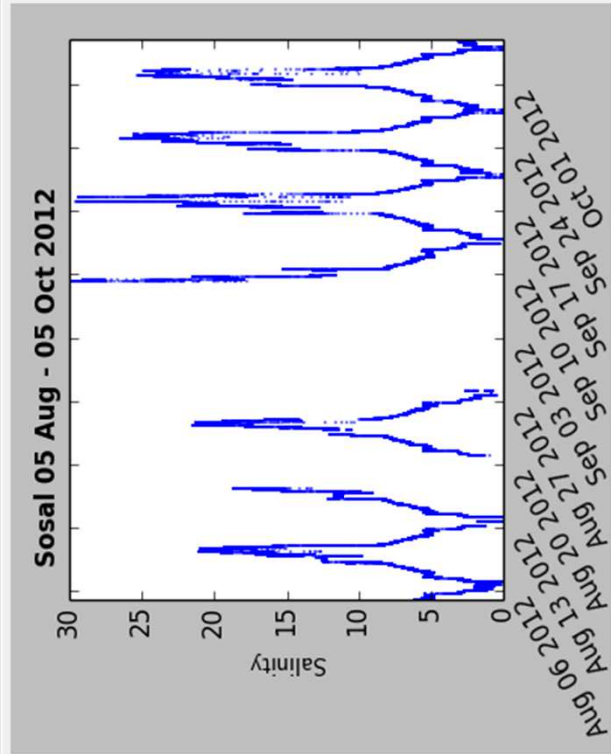
FilterStartDate: Year-Month-Day-Hour-Minute

Date: 2014 9 2

Time (UTC): 14 57

Person editing:

Salinity



Sosal 05 Aug - 05 Oct 2012

Aug 06 2012 Aug 13 2012 Aug 20 2012 Aug 27 2012 Sep 03 2012 Sep 10 2012 Sep 17 2012 Sep 24 2012 Oct 01 2012

Scatter map Raw Filtered Both (time series)

YZ min YZ max

Get variables

WISKI & MyOcean

FerryBox Tools v1.6.3
Information Finished!

Start Date: Year-Month-Day-Hour-Minute

Date: 2012 8 5

Time (UTC): 0 0

Stop Date: Year-Month-Day-Hour-Minute

Date: 2012 10 5

Time (UTC): 23 59

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Load Data

Filter MIT

Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute

Date: 2014 9 2

Time (UTC): 14 57

FilterStopDate: Year-Month-Day-Hour-Minute

Date: 2014 9 2

Time (UTC): 14 57

Person editing:

Scatter map Raw Filtered Both (time series)

YZ min YZ max

WISKI & MyOcean

Sample vs Sensor Time series Both (time series)

pH at 15 C
PTI
Latitude
Oxygen %
Flow l/min
Salinity
Turbidity
Bottle salt
Sovar19
Sovar18

FerryBox Tools v1.6.3

Sosal 14 Aug - 20 Aug 2012

Sample vs Sensor
Time series

Information
Finished!

StartDate: Year-Month-Day-Hour-Minute
 Date: 2012 8 14
 Time (UTC): 0 0

StopDate: Year-Month-Day-Hour-Minute
 Date: 2012 8 20
 Time (UTC): 0 0

Select directory

Select files MIT CO2 FTP

Directory:
 \\winsfs\data\prod\Bo-produktion\Arbetsdokum
 ent\Oceanografi\Transpaper_drift\17_Backupd
 ata\Ferrybox_Pc_Backupdata\mit-filer

Process data

Load Data

Filter MIT

Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute
 Date: 2014 9 4
 Time (UTC): 13 41

FilterStopDate: Year-Month-Day-Hour-Minute
 Date: 2014 9 4
 Time (UTC): 13 41

Person editing:

Scatter map Raw Filtered Both (time series)

YZ min YZ max

WISKI & MyOcean

7% FerryBox Tools v1.6.3

Information
Finished!

StartDate: Year-Month-Day-Hour-Minute
 Date: 2012 8 14
 Time (UTC): 0 0

StopDate: Year-Month-Day-Hour-Minute
 Date: 2012 8 20
 Time (UTC): 0 0

Select directory
 MIT CO2 FTP

Directory:
 \\winsfs\data\prod\Bo-produktion\Arbetsdokum
 ent\Oceanografi\Transpaper_drift\17_Backupd
 ata\Ferrybox_Pc_Backupdata\mit-filer

Process data

Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute
 Date: 2014 9 4
 Time (UTC): 13 41

FilterStopDate: Year-Month-Day-Hour-Minute
 Date: 2014 9 4
 Time (UTC): 13 41

Person editing:

SMHI

Sosal 14 Aug - 20 Aug 2012



Sample vs Sensor
 Raw Filtered Both (time series)

YZ min YZ max

WISKI & MyOcean

pH at 15 C
PTI
Latitude
Oxygen %
Flow l/min
Salinity
Turbidity
Bottle salt
Sovar19
Sovar18

Scatter map Time series

Raw Filtered Both (time series)

FerryBox Tools v1.6.3

Information
A file "TP_data_Bottle_VS_Sensor.txt" was created in the TextFiles folder

StartDate: Year-Month-Day-Hour-Minute

Date: 2012

Time (UTC): 0

StopDate: Year-Month-Day-Hour-Minute

Date: 2012

Time (UTC): 23

Select directory

Select files

Directory: \\wins\data\prod\Bo-produktion\Arbetsdokum ent\Oceanografi\Transpaper_drift\17_Backup data\Ferrybox_Pc_Backupdata\mit-filez

Process data

Load Data

Filer MIT

Person editing:

FilterStartDate: Year-Month-Day-Hour-Minute

Date: 2014

Time (UTC): 14

FilterStopDate: Year-Month-Day-Hour-Minute

Date: 2014

Time (UTC): 14

Scatter map

Raw Filtered Both (time series)

YZ min YZ max

WISKI & MyOcean

PTI
Latitude
Oxygen %
Flow l/min
Salinity
Turbidity
Bottle salt
Sovar19
Sovar18
Sovar17

FerryBox Tools v1.6.3

Information
A file "TP_data_Bottle_VS_Sensor.txt" was created in the TextFiles folder

StartDate: Year-Month-Day-Hour-Minute

Date: 2012 | 1 | 1 | 0 | 0

Time (UTC): 0 | 0

StopDate: Year-Month-Day-Hour-Minute

Date: 2012 | 12 | 31 | 23 | 59

Time (UTC): 23 | 59

Select directory

Select files MIT CO2 FTP

Directory: \\winsfs\data\prod\Bo-produktion\Arbetsdokum ent\Oceanografi\Transpaper_drift\17_Backup data\Ferrybox_Pc_Backupdata\mit-filez

Process data

Load Data

Filer MIT

Filter Data

FilterStartDate: Year-Month-Day-Hour-Minute
Date: 2014 | 9 | 2 | 14 | 57
Time (UTC): 14 | 57

FilterStopDate: Year-Month-Day-Hour-Minute
Date: 2014 | 9 | 2 | 14 | 57
Time (UTC): 14 | 57

Person editing:

Scatter map Raw Filtered Both (time series)

YZ min YZ max

WISKI & MyOcean

Time series Sample vs Sensor

PTI Latitude Oxygen % Flow l/min Salinity Turbidity **Bottle salt** Sovar19 Sovar18 Sovar17

FerryBox Tools v1.6.3
X

Information
A file "TP_data_Bottle_VS_Sensor.txt" was created in the TextFiles folder

Start Date: Year-Month-Day-Hour-Minute

Date: 2012 1 1

Time (UTC): 0 0

Stop Date: Year-Month-Day-Hour-Minute

Date: 2012 12 31

Time (UTC): 23 59

Select directory

Select files MIT CO2 FTP

Directory: \\wins\data\prod\Bo-produktion\Arbetsdokum ent\Oceanografi\Transpaper_drift\17_Backupd ata\Ferrybox_Pc_Backupdata\mit-filez

Process data

Load Data

Filer MIT

Filter Data

Sosal

FilterStartDate: Year-Month-Day-Hour-Minute
Date: 2012 4 2
Time (UTC): 14 0

FilterStopDate: Year-Month-Day-Hour-Minute
Date: 2012 5 7
Time (UTC): 0 0

Person editing: Johan Kronsel

Sample vs Sensor

Time series Raw Filtered Both (time series)

Scatter map YZ min YZ max

Save plot

WISKI & MyOcean

FerryBox Tools v1.6.3

Information
Data filtering: Sosal;2012-04-02 14:00:00;2012-05-07 00:00:00;Johan Kronsell

Start Date: Year-Month-Day-Hour-Minute
 Date: 2012 | 1 | 1 | 0 | 0
 Time (UTC): 0 | 0 | 0 | 0

Stop Date: Year-Month-Day-Hour-Minute
 Date: 2012 | 12 | 31 | 23 | 59
 Time (UTC): 23 | 59 | 0 | 0

Select directory
 MIT CO2 FTP

Directory: \\wins\data\prod\Bo-produktion\Arbetsdokument\Oceanografi\Transpaper_drift\17_Backupdata\Ferrybox_Pc_Backupdata\mit-filer

Process data

Filter Data

Sosal

FilterStartDate: Year-Month-Day-Hour-Minute
 Date: 2012 | 4 | 2 | 14 | 0
 Time (UTC): 14 | 0 | 0 | 0

FilterStopDate: Year-Month-Day-Hour-Minute
 Date: 2012 | 5 | 7 | 0 | 0
 Time (UTC): 0 | 0 | 0 | 0

Person editing: Johan Kronsell

Figure: Sosal 01 Jan - 31 Dec 2012

Legend: Raw (red), Filtered (blue)

Variable Selection: pH at 15 C, PTI, Latitude, Oxygen %, Flow l/min, **Salinity**, Turbidity, Bottle salt, Sovar19, Sovar18

Time Series: Raw Filtered Both (time series)

YZ min: **YZ max:**

FerryBox Tools v1.6.3
Information

Data filtering: Sosal;2012-04-02 14:00:00;2012-05-07 00:00:00;Johan Kronsell

StartDate: Year-Month-Day-Hour-Minute

Date: 2012 | 3 | 20

Time (UTC): 0 | 0

StopDate: Year-Month-Day-Hour-Minute

Date: 2012 | 5 | 14

Time (UTC): 23 | 59

Select directory

Select files MIT CO2 FTP

Directory: \\wins\data\prod\Bo-produktion\Arbetsdokument\Oceanografi\Transpaper_drift\17_Backupdata\Ferrybox_Pc_Backupdata\mit-filer

Process data

Load Data

Filer MIT

Filter Data

Sosal

FilterStartDate: Year-Month-Day-Hour-Minute
Date: 2012 | 4 | 2 | Time (UTC): 14 | 0

FilterStopDate: Year-Month-Day-Hour-Minute
Date: 2012 | 5 | 7 | Time (UTC): 0 | 0

Person editing: Johan Kronsell

Sosal 20 Mar - 14 May 2012
Sample vs Sensor

Scatter map Raw Filtered Both (time series)

YZ min 0 YZ max 24

Get variables

WISKI & MyOcean

Time series

What's next?

- The software will be distributed freely
- Potential users should contact us to give input about functionality
- Persons interested in developing FerryBox Tools further may contribute
- Current version adapted for SMHI systems. Easy to change, if data is in text files or read from database by ODBC.

Questions?