

The Shipborne European Common Automatic Weather Station (EUCAWS)



ICAWS, 24-26 October 2017, Offenbach

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Index



Objective



Calendar



Functionalities

Architecture, acquisition, transmission, configuration, local output



Project steps

Validation, internal development, training, purchasing issues

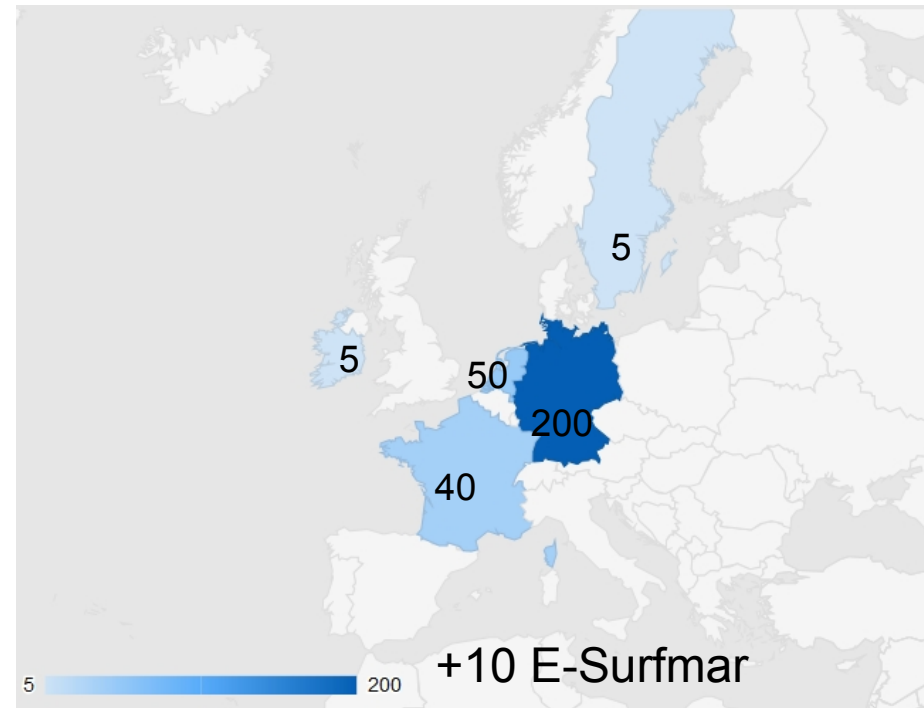


Objectives

A common AWS for European countries:

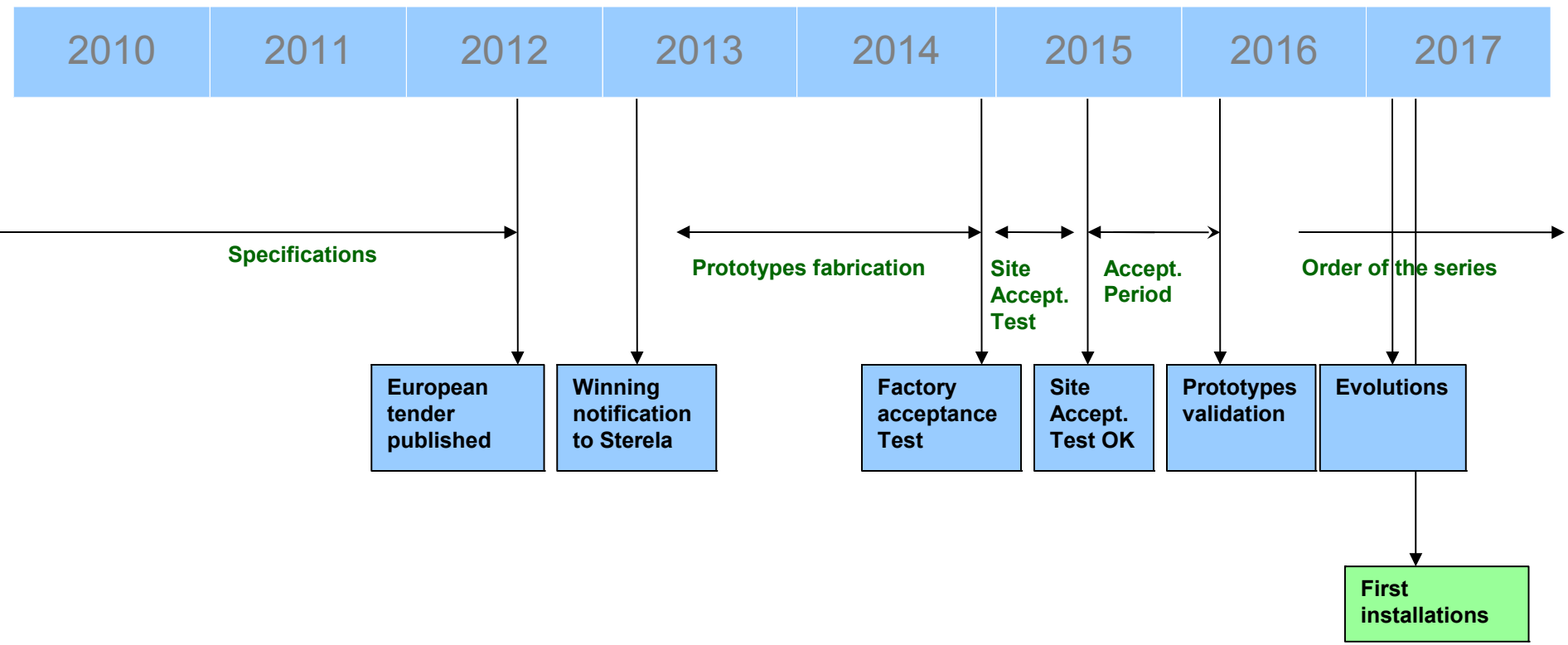
- Automation of European Fleet
- Standardisation of systems – easier maintenance
- Higher quantities, lower prices
- Adaptable to many sensor types

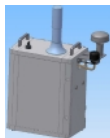
Objectives announced



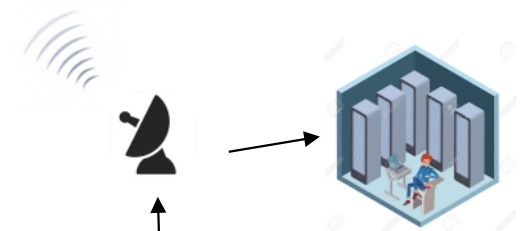
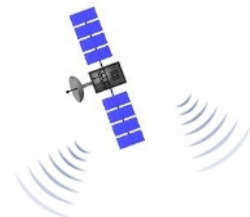


Calendar





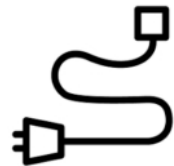
Functionalities



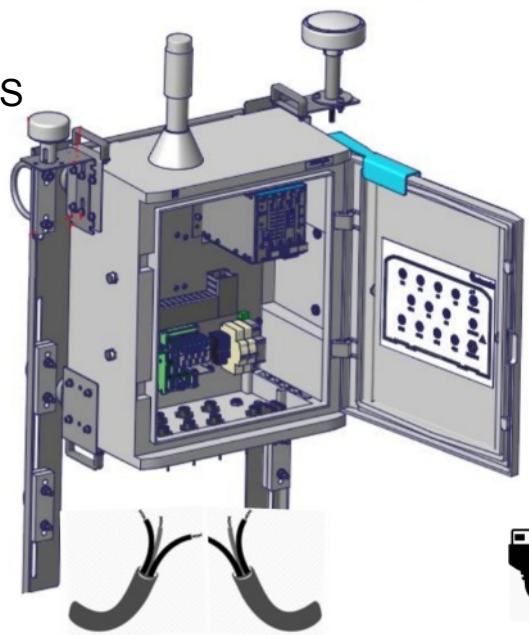
Processing center

Iridium

GPS



Power Supply 24V



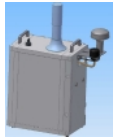
Sensors



SU : Service Unit



LMF : Landbased Monitoring Facility

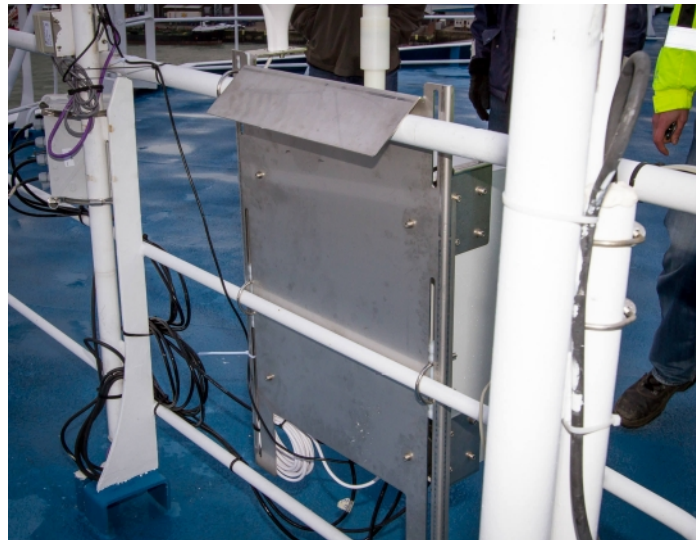


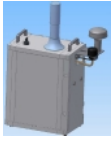
Functionalities

EUCAWS Architecture: Outside



- Size : 54 x 45 x 25 cm
- Weight : 16 kg
- Installation kit
- Handle
- On/Off switch
- Air pressure inlet
- Antennas



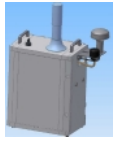


Functionalities

EUCAWS Architecture: Inside



- Several electronic boards
- Power supply unit
- Sensor connectors
- Barometer inside
- Protections

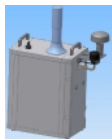


Functionalities

Data Acquisition

- EUCAWS is able to acquire:
 - Pressure
 - Temperature
 - Humidity
 - Wind
 - SST
 - Heading (compass)
 - Navigational data (GPS)
- Connection with TurboWin + to add visual observations
- EUCAWS is designed to be highly adaptable to all sensors available at various NMS, future sensors, multisensors...



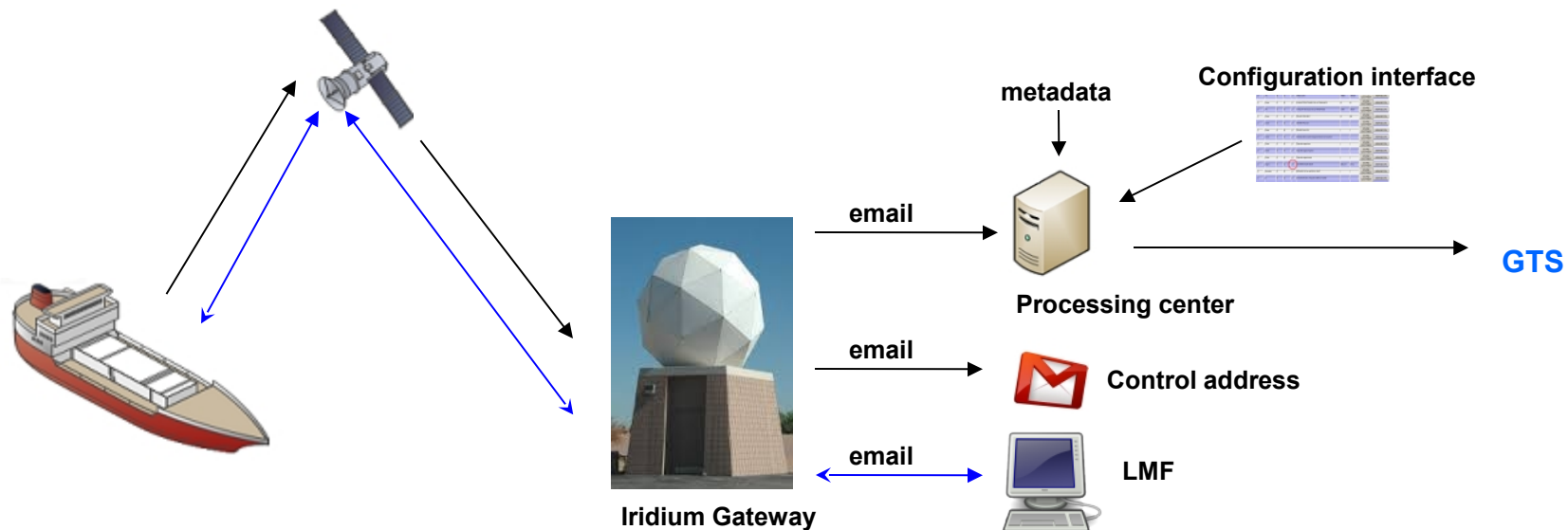


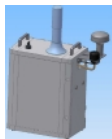
Functionalities

Satellite communication

■ Iridium Transmission

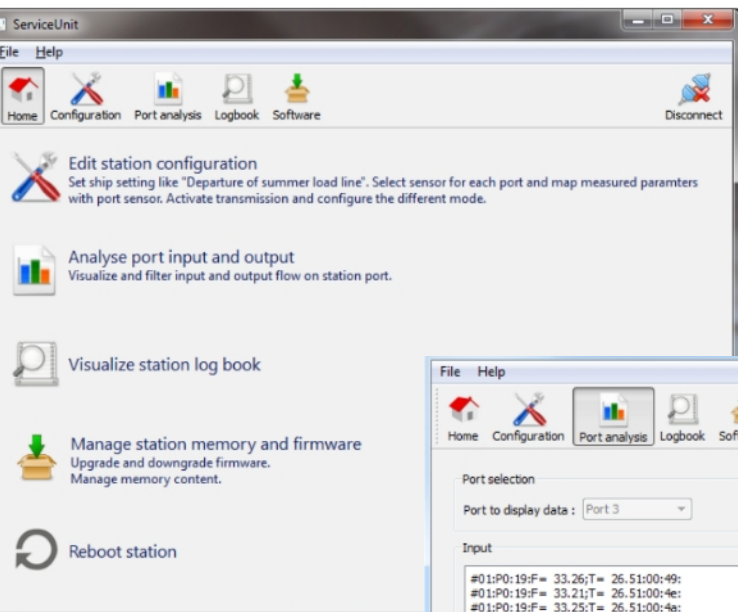
- Port mode, Area mode, Trigger mode
- Transmission frequency selectable
- E-SURFMAR data format #100
- Size of weather messages 30..54 bytes
- A processing center to decode messages and encode BUFR





Functionalities

Maintenance tool : Service Unit



ServiceUnit

File Help

Home Configuration Port analysis Logbook Software Disconnect

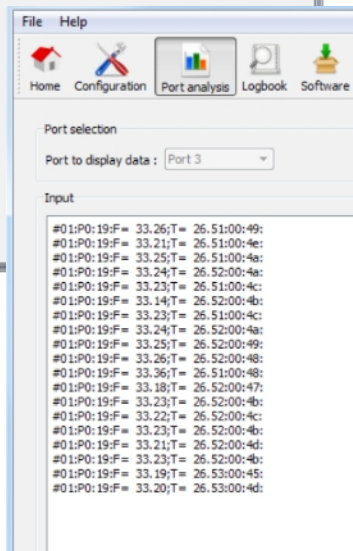
Edit station configuration
Set ship setting like "Departure of summer load line". Select sensor for each port and map measured parameters with port sensor. Activate transmission and configure the different mode.

Analyse port input and output
Visualize and filter input and output flow on station port.

Visualize station log book

Manage station memory and firmware
Upgrade and downgrade firmware.
Manage memory content.

Reboot station



File Help

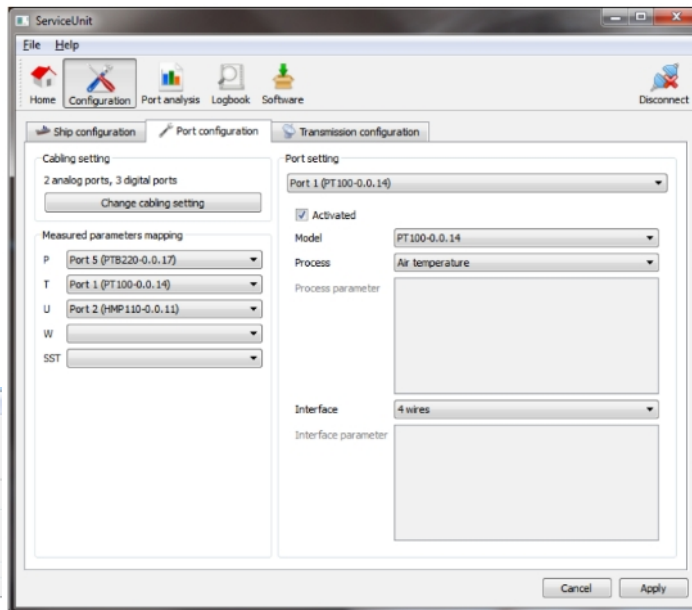
Home Configuration Port analysis Logbook Software

Port selection

Port to display data : Port 3

Input

```
#01:P0:19:F= 33.26:T= 26.51:00:49:
#01:P0:19:F= 33.21:T= 26.51:00:4e:
#01:P0:19:F= 33.25:T= 26.51:00:4a:
#01:P0:19:F= 33.24:T= 26.52:00:4a:
#01:P0:19:F= 33.23:T= 26.51:00:4c:
#01:P0:19:F= 33.14:T= 26.52:00:4b:
#01:P0:19:F= 33.23:T= 26.51:00:4c:
#01:P0:19:F= 33.24:T= 26.52:00:4a:
#01:P0:19:F= 33.25:T= 26.52:00:49:
#01:P0:19:F= 33.26:T= 26.52:00:48:
#01:P0:19:F= 33.36:T= 26.51:00:48:
#01:P0:19:F= 33.18:T= 26.52:00:47:
#01:P0:19:F= 33.23:T= 26.52:00:4b:
#01:P0:19:F= 33.22:T= 26.52:00:4c:
#01:P0:19:F= 33.23:T= 26.52:00:4b:
#01:P0:19:F= 33.21:T= 26.52:00:4d:
#01:P0:19:F= 33.23:T= 26.52:00:4b:
#01:P0:19:F= 33.19:T= 26.53:00:45:
#01:P0:19:F= 33.20:T= 26.53:00:4d:
```



ServiceUnit

File Help

Home Configuration Port analysis Logbook Software Disconnect

Ship configuration Port configuration Transmission configuration

Cabling setting
2 analog ports, 3 digital ports
Change cabling setting

Measured parameters mapping

P Port 5 (PTB220-0.0.17)

T Port 1 (PT100-0.0.14)

U Port 2 (HMP110-0.0.11)

W

SST

Port setting

Port 1 (PT100-0.0.14)

Activated

Model PT100-0.0.14

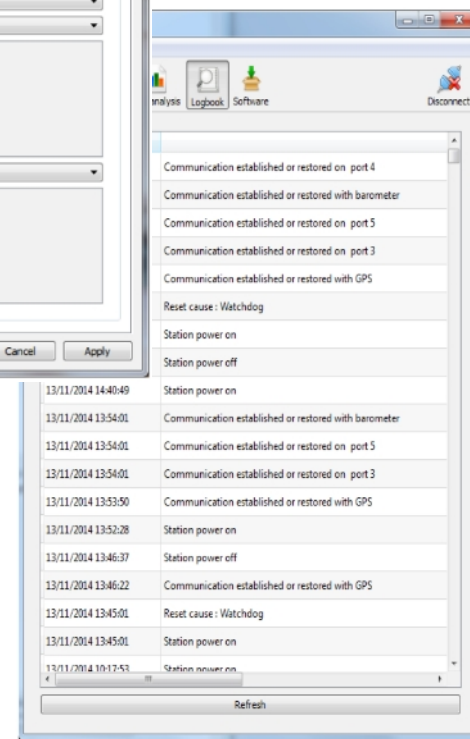
Process Air temperature

Process parameter

Interface 4 wires

Interface parameter

Cancel Apply



analysis Logbook Software Disconnect

Communication established or restored on port 4

Communication established or restored with barometer

Communication established or restored on port 5

Communication established or restored on port 3

Communication established or restored with GPS

Reset cause : Watchdog

Station power on

Station power off

13/11/2014 14:40:49 Station power on

13/11/2014 13:54:01 Communication established or restored with barometer

13/11/2014 13:54:01 Communication established or restored on port 5

13/11/2014 13:54:01 Communication established or restored on port 3

13/11/2014 13:53:50 Communication established or restored with GPS

13/11/2014 13:52:28 Station power on

13/11/2014 13:46:37 Station power off

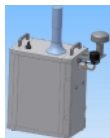
13/11/2014 13:46:22 Communication established or restored with GPS

13/11/2014 13:45:01 Reset cause : Watchdog

13/11/2014 13:45:01 Station power on

13/11/2014 10:17:53 Station power on

Refresh



Functionalities

LMF: Landbased Monitoring Facility

LandbasedMonitoringFacility

File Help

Welcome on Landbased Monitoring Facility

To access all functionalities you must first establish connection to Iridium GSS.

IMEI	S-AWS
123456789012345	Modem simulé
300234011390940	Vrai Modem

Connect

ringFacility - Modem simulé (IMEI:123456789012345)

PSO Frames Logbook Software Disconnect

Synchronized with station **1 day(s)** ago (the 01/12/2014 16:00 UTC). Synchronize

Port configuration Transmission configuration

Over summer load line 177.6m

Ports mapping

- 120
- 10
- 110

Activate Port 5 - PTB220 Activate

Activate Port Barometer Deactivate


Activate Port SCD Deactivate

Deactivate Port GPS - 19x HVS Activate

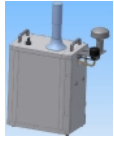
Cancel Apply

ringFacility

IO Frames Logbook Software Disconnect



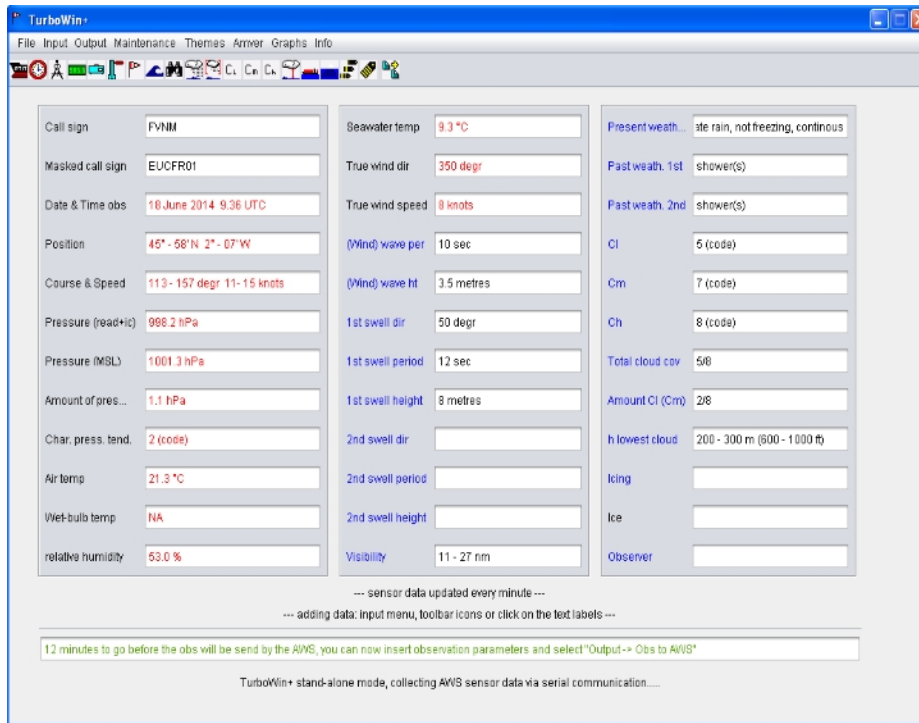
Write Configuration sent the 23/07/2014 13:46 UTC.
Waiting for reading by station.



Functionalities

Local Output

Ship Monitoring Display (SMD) for TurboWin +



The screenshot shows the TurboWin software interface with the following data fields:

- Call sign: FVNM
- Masked call sign: EUCFR01
- Date & Time obs: 18 June 2014 9:36 UTC
- Position: 46° - 58' N 2° - 07' W
- Course & Speed: 113 - 157 degr 11-15 knots
- Pressure (read+ic): 998.2 hPa
- Pressure (MSL): 1001.3 hPa
- Amount of pres...: 1.1 hPa
- Char. press. tend.: 2 (code)
- Air temp: 21.3 °C
- Wet-bulb temp: N/A
- relative humidity: 53.0 %
- Seawater temp: 9.3 °C
- True wind dir: 350 degr
- True wind speed: 8 knots
- (Wind) wave per: 10 sec
- (Wind) wave ht: 3.5 metres
- 1st swell dir: 50 degr
- 1st swell period: 12 sec
- 1st swell height: 8 metres
- 2nd swell dir:
- 2nd swell period:
- 2nd swell height:
- Visibility: 11 - 27 nm
- Present weath...: ate rain, not freezing, continuous
- Past weath. 1st: shower(s)
- Past weath. 2nd: shower(s)
- CI: 5 (code)
- Cm: 7 (code)
- Ch: 8 (code)
- Total cloud cov: 5/8
- Amount CI (Cm): 2/8
- h lowest cloud: 200 - 300 m (800 - 1000 ft)
- Icing:
- Ice:
- Observer:

--- sensor data updated every minute ---
 --- adding data: Input menu, toolbar icons or click on the text labels ---

12 minutes to go before the obs will be send by the AWS, you can now insert observation parameters and select "Output-> Obs to AWS"

TurboWin+ stand-alone mode, collecting AWS sensor data via serial communication...

Permanent Sensor Output

```

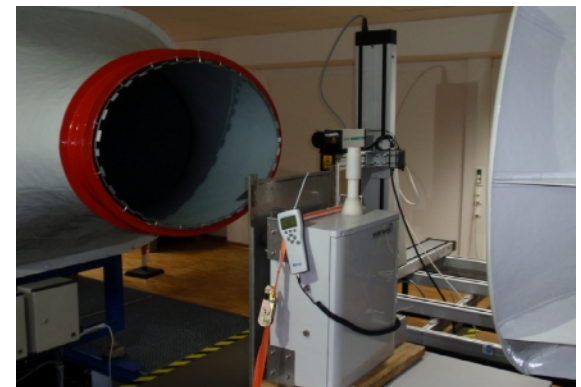
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```



Project steps

Validation

- Factory Acceptance Test : December 2014
- Site acceptance test : February 2015 :
on ferry Armorique, comparison with
other station
- Final Acceptance period
June 2015 - March 2016





Project steps

Training

Eucaws workshop 1: 18 -19 April 2016 : Hamburg



Eucaws workshop 2: 15 May 2017 : Lisboa





Project steps

Purchasing issues

Framework

- Common price list for E-surfmar countries
- 1 subsequent contract per country

Stations ordered

Country	2016	2017
Germany	35	40
France	5	6
Netherlands		2
Sweden		2
E-Surfmar	2	4



Project steps

Installations

15 EUCAWS are installed currently

R/V Alkor
DBND
(replacing MILOS)



Cap Finistère
EUCFR01
(replacing BATOS)



Project steps

Installations



Fort Ste Marie (EUCFR04)



Montreal Express (EUCDE08)



Project steps

Adoption program

- Stations bought by E-Surfmar adopted by a NMS inside E-Surfmar

Task	Responsible
To buy the station	E-Surfmar
Apply for a Eucaws station	NMS (or center)
To provide the sensors	NMS
To adapt Eucaws software to NMS sensors	E-Surfmar
Preparation of the installation on the ship	NMS + E-Surfmar
MoU with the ship	NMS
Find an Iridium provider + pay the communication costs	NMS
Installation	NMS + E-Surfmar
Data processing	E-Surfmar
Configuration of data processing	NMS
Maintenance	NMS
Sensors calibration	NMS
Monitoring	NMS
Metadata management	NMS

- Participants : Spain, Portugal, Croatia, Norway, Sweden, Iceland



Conclusion

Successful project :

- Strong collaboration between E-Surfmar member
- Product adapted to many needs for ship observations
- Good tool to help new countries to start with ship observations

