MARPORT

2026

USER MANUAL

SCALA2



PUBLISHED 18TH SEPTEMBER 2026

Contents

Legal 3
History 3
Copyright 7
Disclaimer 7

Introduction and Presentation 8
Introduction 8
Overview of the System 9
Overview of Scala2 11
Mac Basics 12

Installation 14
Opening Scala2 14
Changing the Language Settings of Scala2 16
Changing Scala2 Appearance 16

Display Configuration 18
Control Panels 18
Customization Panels 22
Receiver Data 25
Using the Virtual Charger Room 25
Creating Data Pages 28
- Creating a New Page 29
- Adding Data to a Page 31
- Removing Data from a Page 36
- Hiding a Page 37
- Exporting a Page 37
- Deleting a Page 38

Managing Windows 39
- Opening a Page in a New Window 39
- Moving Pages Between Windows 41
- Closing and Re-opening Windows 42

Customizing the Display of Data 43
- Echograms 43
- Zooming on Timestamp and Distance Scale 62
- Sensor Numerical Data 63
- 3D Views 76
- Displaying the Chart View 99
- Managing the Tracks and Marks on the Chart View 103
- Displaying a Position Marker 112

Setting an Alarm on Incoming Data 113
Changing the Default Units 116
Recording and Replaying Data 117
- Recording of Incoming Data 117
- Replaying Data on ScalaReplay2 118
- Adding Events 121
- Extracting Data from SDS Files 122
- Replaying Data Recorded on a Memory Card 122

Maintenance and Troubleshooting 124
Installing Updates 124
Troubleshooting 125
Giving Remote Access to the Computer 131
Uninstalling Scala2 131
Support Contact 132

Appendix 133
Compatible Incoming NMEA Sentences 133
NMEA Outputs from Scala2 145

Index a

Legal

History

V1	02/11/20	First release, documents Scala2 version 02.00.00.
V2	07/16/20	Documents Scala2 version 02.02. New topics • **Using the MultiTrawl View (on page 76)**: Multitrawl view: now compatible with quad trawls • **Adding Events (on page 121)**: Event markers can be added in live time, then found back when replaying data on ScalaReplay2 • **Compatible Incoming NMEA Sentences (on page 133)**: added Kongsberg NMEA message for warp lengths.
V3	05/28/21	• Now documents Scala2 version 02.04. • Added Twin Outrigger trawl gear in . • and : added details about the computer IP address. • Changed **Settings** tabs: **Data Recorder** and **Data History** tabs have been merged into one **Advanced** tab, accessible in **Expert Mode** only. • and : included guidelines to complete the positioning setting page with the receiver firmware 08.01.01. • New feature: **Using the MultiDepth View (on page 82)**. • **Replaying Data on ScalaReplay2 (on page 118)**: changed access to source directory. • Removed procedure about automatic download of A2S files: the feature is no longer available. Replaced by procedure **Replaying Data Recorded on a Memory Card (on page 122)**. • Added contact details for the sales offices in South Africa and Norway in **Support Contact (on page 132)**.
V4	11/15/21	• Now documents Scala2 version 02.06. • New feature: **Using the Virtual Charger Room (on page 25)**. • **Changing Scala2 Appearance (on page 16)**: added feature to change the theme of the interface. • **Using the MultiDepth View (on page 82)**: ◦ Added zoom feature on the echogram and option to change the door 3D model. ◦ Added **True Mode** display on the echogram.

		◦ Added option to change the viewing angle. ◦ Added a coordinate grid with time and depth on the echogram. • **Using the MultiTrawl View (on page 76)**: added new viewing angles.
V5	07/01/22	• Now documents Scala2 version 02.10.x. • **Changing the Language Settings of Scala2 (on page 16)**: the language can now be chosen from a drop-down menu. • **Displaying an Echogram (on page 44)**: ◦ Added **True time echogram** feature, enabling time synchronization with other views with timescales. ◦ Added feature to change the source sensor of an echogram. • **Changing the Display of Page Elements (on page 67)**: added option to change type of display directly from data item. • **Setting an Alarm on Incoming Data (on page 113)**: new notification display and updated settings.
V6	03/06/23	• Now documents Scala2 version 02.12.x. • Virtual Charger Room: added explanations about the display of sensors not part of the system charging via the Dock, and about the new notification feature in **Using the Virtual Charger Room (on page 25)**. • Updated guidelines for the display of the echogram settings (e.g. True Mode, Bottom Expansion, Palettes...), now accessible via a specific menu. Added description in **Echogram Display Settings (on page 46)**. • Updated guidelines for the display of sounding direction of the sounder sensors: **Displaying an Echogram (on page 44)**. • Added feature to desynchronize the time stamp of echograms and history plots: **Zooming on Timestamp and Distance Scale (on page 62)**. • Added new **Trident View**: **Displaying the Trident View (on page 89)**. • Added configuration details for penta trawls in **Changing the Number of Trawls (on page 86)**. • Added guidelines for the highlight feature when replaying data: **Replaying Data on ScalaReplay2 (on page 118)**.

		• Added Marport's proprietary NMEA output formats for quad and penta trawls: **NMEA Outputs from Scala2 (on page 145)**. • Added details about WIDA2 NMEA sentence of Kongsberg warp lengths in **Compatible Incoming NMEA Sentences (on page 133)**.
V7	02/01/24	• Now documents Scala2 version 02.14.x. • Added details about Scala2 license file and dongle compatibility in **Opening Scala2 (on page 14)**. • Echogram display options: added new thick bottom line display in **Echogram Display Settings (on page 46)**. • Added explanations about the types of echograms in **About the Echogram Display (on page 48)**. • Added trend gauge for spread data in **Display Types (on page 64)**. • Added explanations about the display of vessel details when replaying data: **Replaying Data on ScalaReplay2 (on page 118)**. • Added guidelines to import a new Scala2 license file in **Installing Updates (on page 124)**. • Added troubleshooting case regarding the license file in **Troubleshooting (on page 125)**.
V8	03/04/25	• Added details on the bathymetry feature available on the chart view in **Displaying the Chart View (on page 99)** and . • Added details on the true current speed (TCS) dial in **Display Types (on page 64)**. • Updated path to see the display options of echogram data in all echogram-related guidelines (color palettes, scales,…): **Echogram Display Settings (on page 46)**.
V9	04/02/26	• Now documents Scala2 version 2.18.x. • Updated drawing of a system example in **Overview of the System (on page 9)**. • Added guidance to use and manage the tracks and marks on the chart view in **Managing the Tracks and Marks on the Chart View (on page 103)**. • Updated menu options in **Using the MultiTrawl View (on page 76)**, **Using the MultiDepth View (on page 82)**, **Displaying the Chart View (on page 99)**, .

		• Updated 3D gear model options in **Displaying Trawl Door 3D View (on page 92)**. • Added guidance to import and export Scala2 settings in . • Removed "3D Overview" view.
V10	07/03/26	• Now documents Scala2 version 2.20.02. • Added 3D view of the Flow Speed Navigator in **Displaying Speed Sensor 3D View (on page 96)**. • Added Mx flow data echogram in **Displaying a Flowgram (on page 58)**. • Updated Trident 3D view features in **Displaying the Trident View (on page 89)**.
V11	09/18/26	• Now documents Scala2 version 2.20.08. • Changed naming of "Echogram for Mx flow data" to "flowgram" in **Displaying a Flowgram (on page 58)**.

Copyright

© 2026 Marport. All Rights reserved.

No part of this document may be reproduced, stored in a retrieval system or transmitted in any form by any means; electronic, mechanical, photocopying or otherwise, without the express written permission from Marport. “Marport”, the Marport logo and Software Defined Sonar are registered trademarks of Marport. All other brands, products and company names mentioned are the trademark and property of its respective owners only. Marport is a division of Airmar Technology Corporation.

Disclaimer

Marport endeavors to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

The present user guide is applicable for the following versions of Scala2: v. 02.20.x

Compatible macOS versions:

- macOS Big Sur
- macOS Ventura
- macOS Sonoma
- macOS Sequoia

Introduction and Presentation

Read this section to get a basic knowledge of Scala2.

Introduction



Scala2 is Marport's advanced trawl monitoring system that collects, processes, stores and displays data sent from multiple sensors, sounders and other connected devices. It gives you full control over the fishing operations.

In order to suit the working conditions, gear and sensor data type available, this monitoring system offers unparalleled flexibility and is easily configurable. With this application, you'll be able to:

- Display several simultaneous echogram presentations on a single page.
- Use drag and drop possibilities to customize your page layout.
- Access all the customization options from a dedicated panel.
- Choose from existing gauges, histograms or 3D views or create your own layout with any number of sensors displayable on screen.
- Compare data from equivalent sensors using multiple history plots.
- Display a multitrawl view of single, twin, triple, quad and penta trawls with doors and clump alignment, warp length and echogram display from door sensors.
- Display a **Virtual Charger Room** of the sensors connected to the Dock smart charger.
- Display up to 6 spectrum analyzers and plots of hydrophone coverage to fully monitor the hydrophones' performance.
- Easily play back historical data.
- Add event markers in live time, then find them back when replaying data on ScalaReplay2.

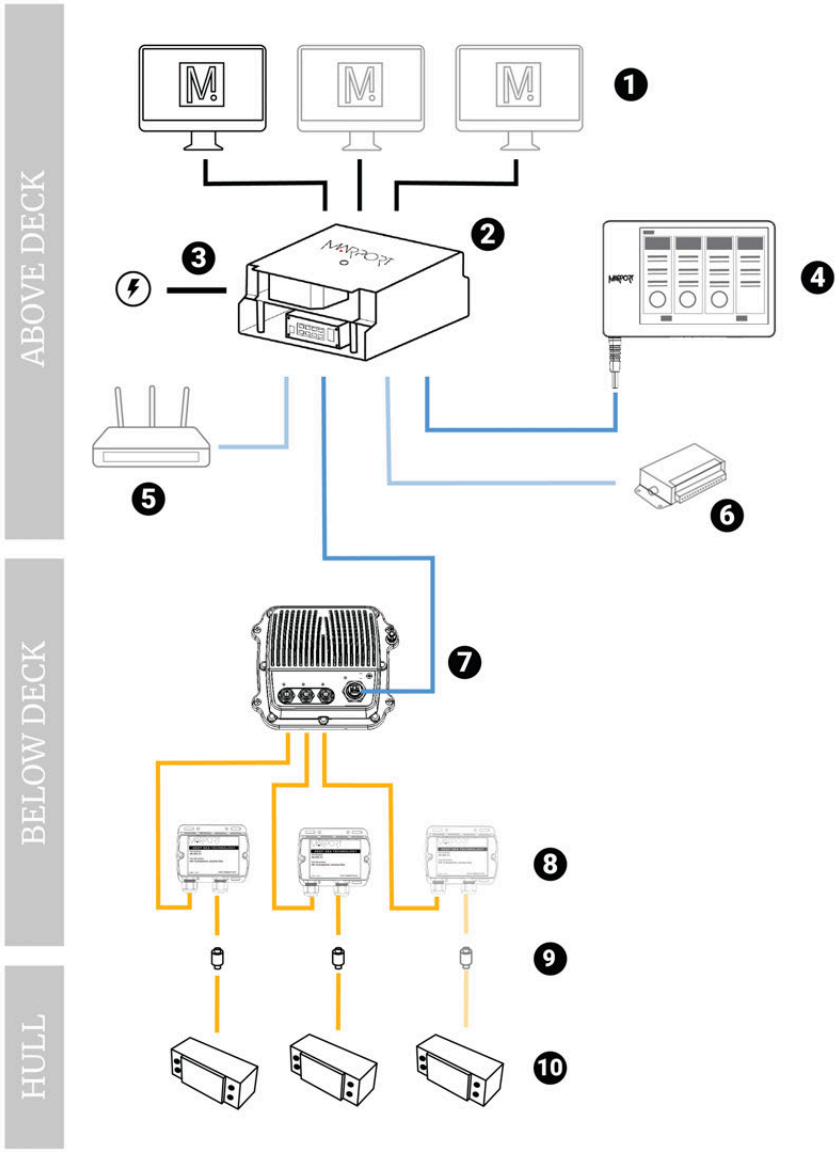
Scala2 is optimized to interface with other marine equipment:

- It incorporates a chart view showing the trawl position and bathymetry using third-party external devices. The chart view also displays the trawl tracks recorded by Scala2, that show types of data recorded during towing, such as catches of fish. Marks on the chart can be created to identify dangers, wrecks or fish-related information. Tracks and marks can both be organized in folders.
- It has a range of standard data inputs and outputs to easily display third-party system data in Scala2 and share our data with other systems.

Overview of the System

This drawing is an example of a M3 Hub system.

Note: This drawing shows our latest generation of system, but Scala2 can also be installed on our previous systems.



1. Monitors (up to three)

2. Mx Hub

3. Power supply

4. Dock

5. Internet access (optional)

6. External devices (e.g. NMEA Multiplexer)

7. Mx receiver

8. Junction boxes (2) + One optional junction box

9. Thru-hull penetration (TH-1-01)

10. Hydrophones (NC-1-XX)

Manufacturer standard cable

CAT5e Ethernet cable (receiver private network)

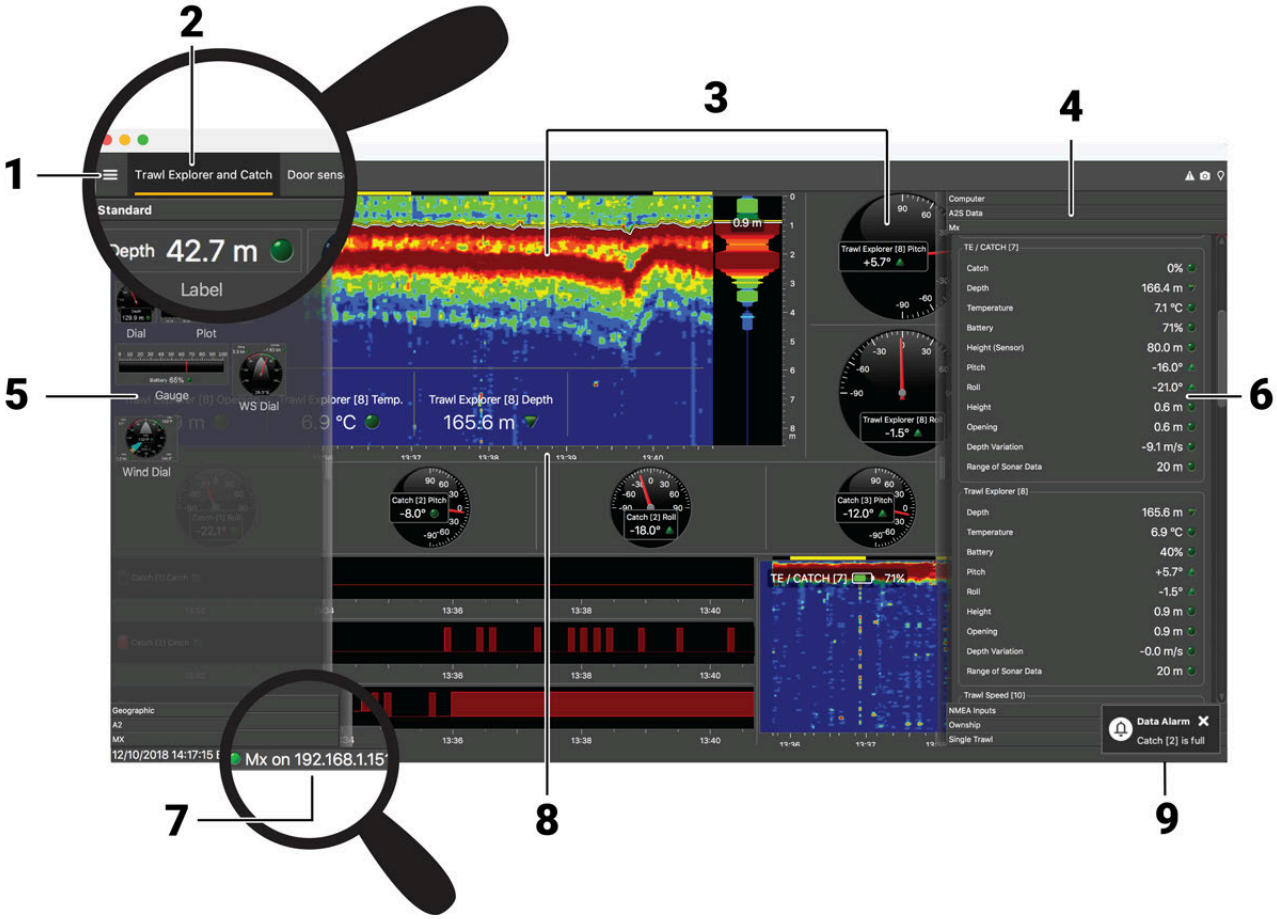
Ethernet cable

Marport junction box extension cable & hydrophone cable



(Blurred) Optional elements

Overview of Scala2



1	Menu	**6**	Incoming Data
2	Toolbar for Page Display	**7**	Receiver Activity
3	Data Display	**8**	Echogram Time Stamp
4	Control Panels	**9**	Alarms
5	Customizing panel (Customize mode only)		

Mac Basics

Switching On the Computer





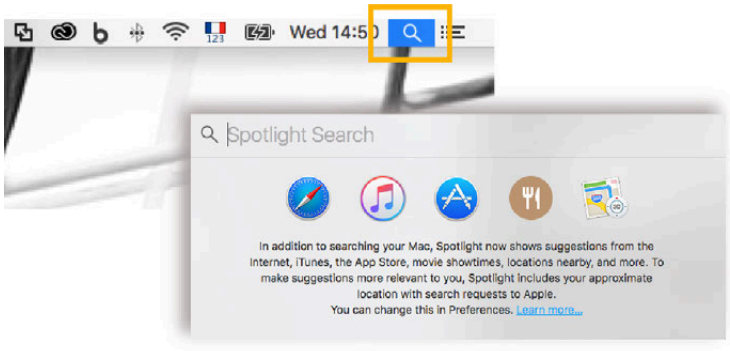
Opening Applications and Files

You can use the bar of icons at the bottom of your screen, called the Dock, to access applications and files. Click icons to open items.



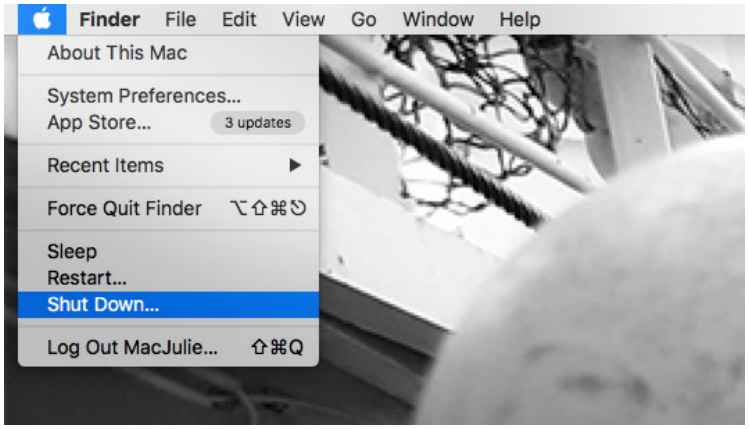
1. Launchpad: access all your applications
2. Web
3. Scala2
4. Mosa2
5. TeamViewer
6. Trash: to delete items, drag them to the trash
7. Finder: access your files

If you need to search for an item, click the magnifying glass on the top right corner of the screen and type the name of the item.



Switching Off the Computer

From the top left corner of the screen, click **Apple Menu** **> Shut Down**. Also use this menu to restart or put the computer in sleep mode.



Installation

Read this section to know how to install and open Scala2.

Opening Scala2

Scala2 should open when you switch on the computer. If not, you can open Scala2 from the Dock at the bottom of the screen.

Before you begin

- If using Scala2 licence file: it must have been downloaded and stored in **Documents/Marport**.
- If using Scala2 software dongle (versions **under** 02.12.07): it must be plugged to the computer.
- The receiver is connected to the private Ethernet network.

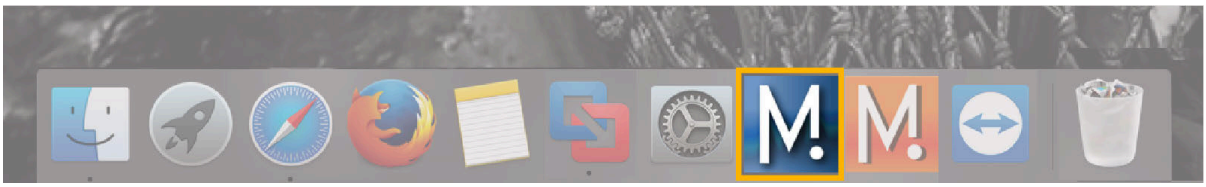
Important: From Scala2 version 02.12.07, software dongles cannot be used anymore. Use license files instead.

About this task

Note: To display the list of the options that are activated with your license, click **Menu** ☰ **> About**, then click **Options**.

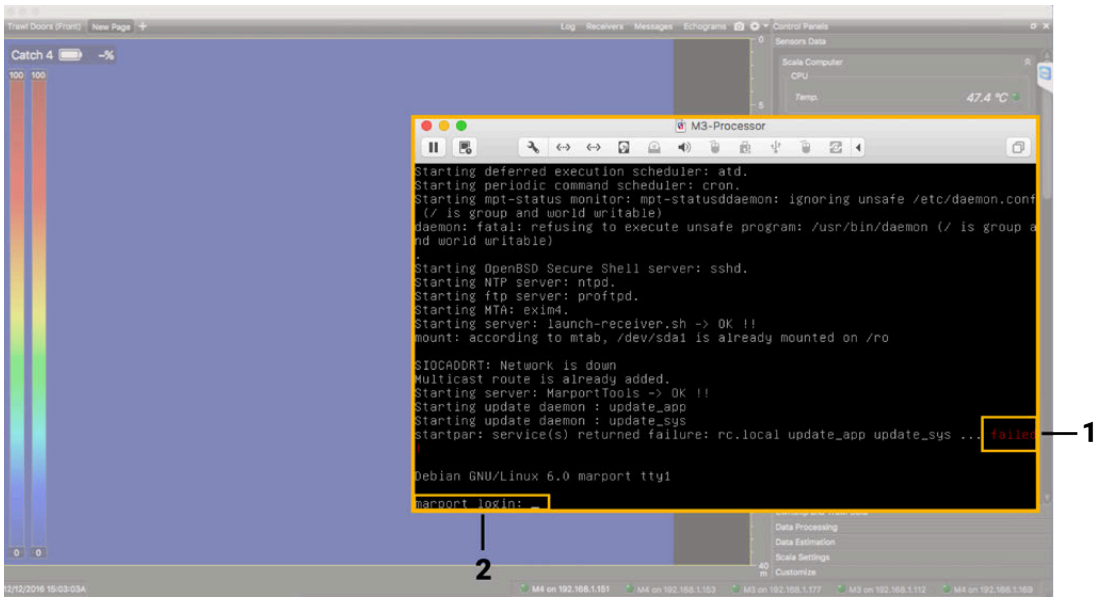
Procedure

1. From the Dock at the bottom of the screen, click Scala2 icon.



Important: On M3, M5, M4 and M6 systems on macOS Monterey and earlier, the following window is a software that analyzes sensors data. This program is necessary for the correct operation of the receiver. **DO NOT CLOSE this window**. If the window appears, click minimize ⊖ to hide it. This icon should always appear at the bottom of your desktop screen:

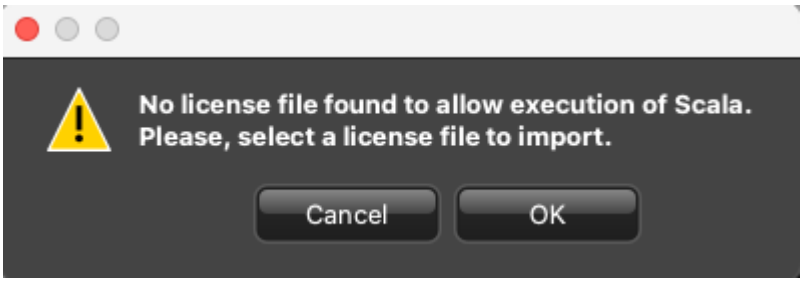
If you close the window, restart the computer.



Note: Failed (1) and **Login** (2) indications are **normal** and always appear. You do not need to enter anything.

Important: Do not click inside the window or you will loose the mouse. If you lost the mouse, connect a keyboard and press **ctrl + cmd** (Apple) / **ctrl + window** key (Windows).

2. **Trouble**: If on opening you have the following message, it means that Scala2 licence file is not on the computer or not stored in **Documents/Marport**. Click **OK** to open the dialog box and select the file, if it is on the computer. The licence file will automatically be added to **Documents/Marport**. If you do not have the file, contact your local Marport office.



Results

The application opens.

Changing the Language Settings of Scala2

A dialog box asks you to select the language the first time you open Scala2. It can be changed afterward in Scala2 settings.

Procedure

1. Click **Menu** ☰ **> Expert Mode** and enter the password `copernic`.
2. From the top left corner of the screen, click **Menu** ☰ **> Settings**, then go to **Advanced** tab.
3. In **User Interface > Language**, select the language from the drop-down menu.
4. Restart Scala2.

Results

Scala2 language is changed.

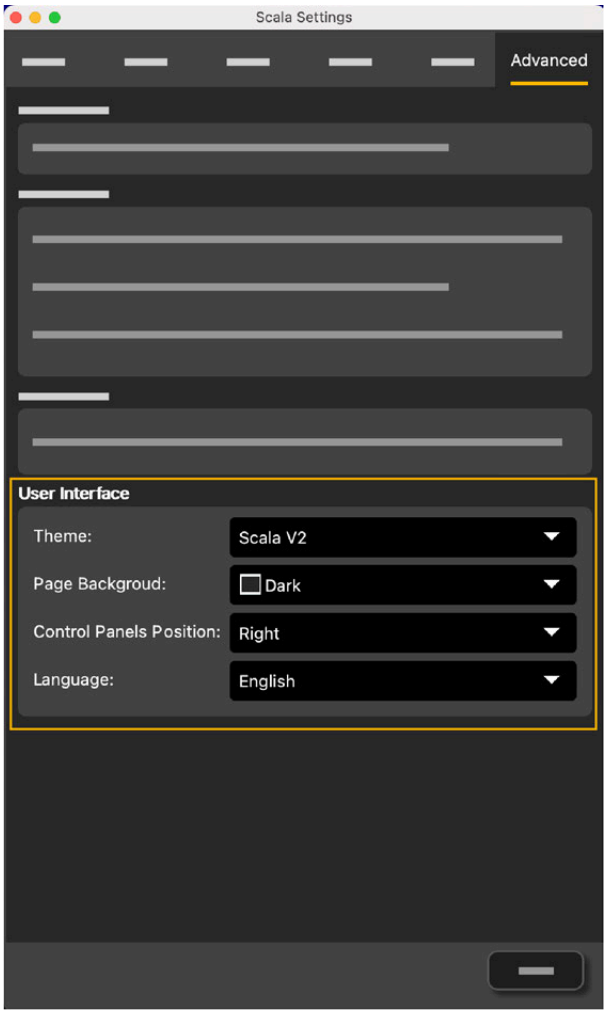
Changing Scala2 Appearance

You can change the theme, background color and control panel positions.

Procedure

1. Click **Menu** ☰ **> Expert Mode** and enter the password `copernic`.
2. Click **Menu** ☰ **> Settings > Advanced**.

3. In **User Interface**, select the options from the drop-down menus.



Display Configuration

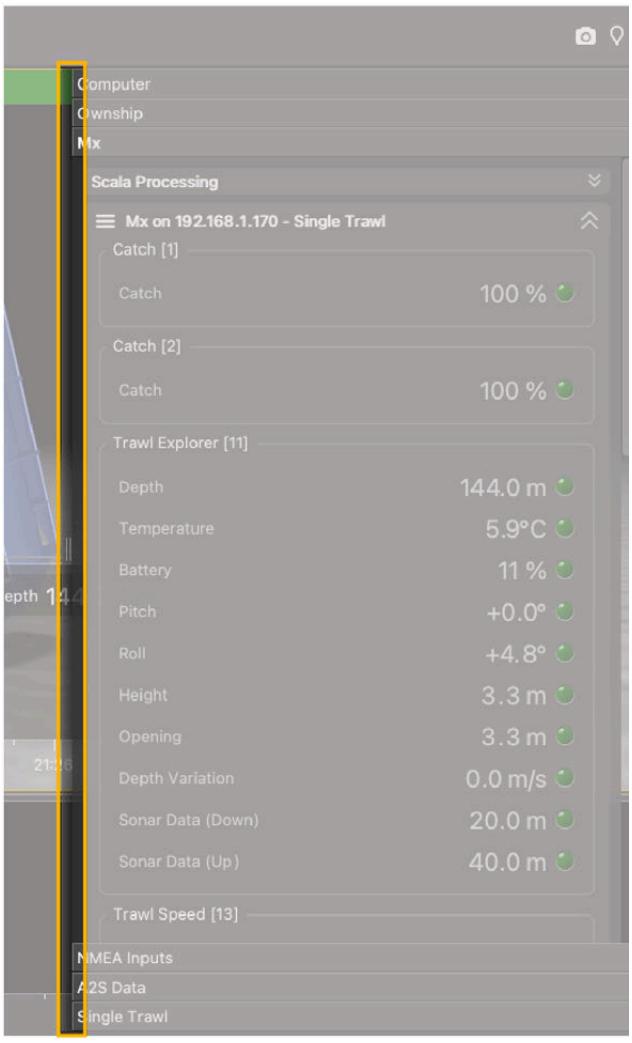
Read this section to know how data are displayed on Scala2 and how to change their display.

Control Panels

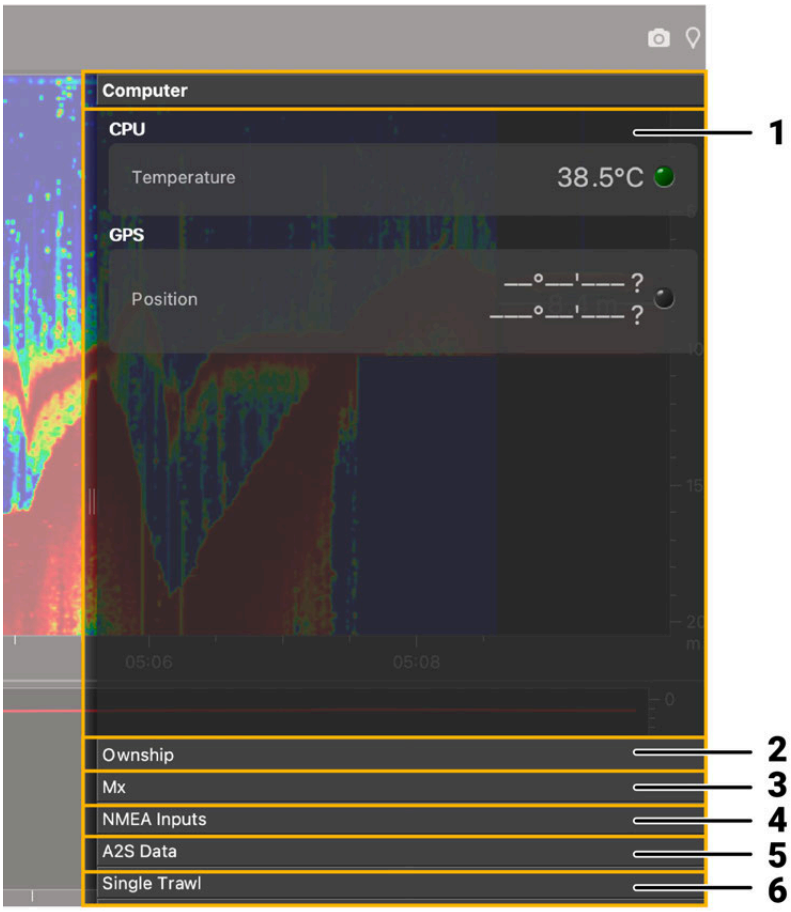
By default, the control panels are displayed on the right side of the screen. Click the drawer to open or close them.

Note: To change to position of the control panels, connect in **Expert Mode**, then click **Menu ☰ > Settings > Advanced**.

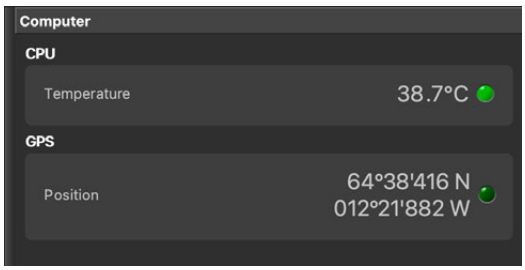




Control panels are the following:

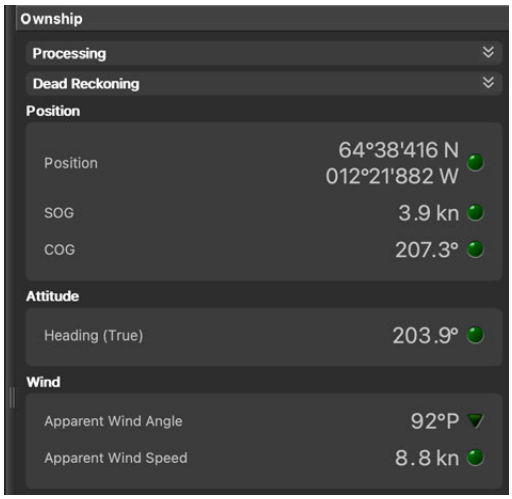


1. Computer



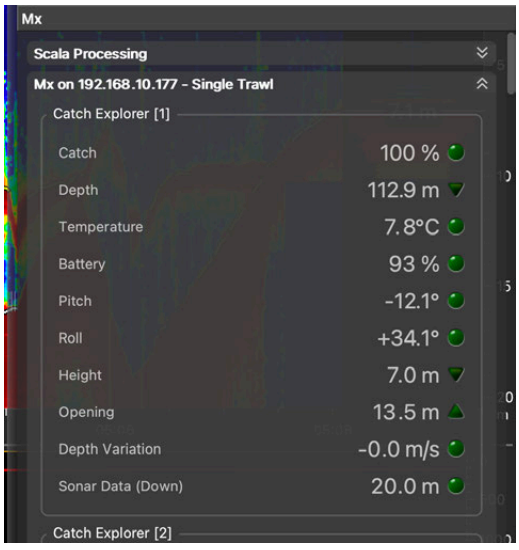
It displays the temperature of the central processing unit of the computer and the GPS position of the computer, if you allowed Scala2 to use your location.

2. Ownship



It displays information relative to the ownship, such as its position, its heading, the wind speed. This data depends on devices connected to the system.

3. Mx



It displays the IP address of the receiver(s) and data received from the sensors. Data can be raw or filtered.

By default, the location of the sensor on the trawl gear is written between brackets next to the name of the sensor.

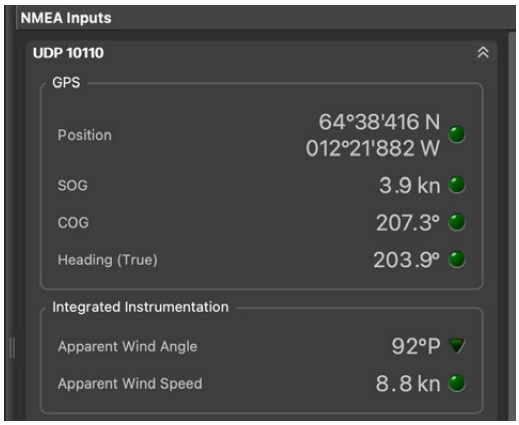
The shape of the lights changes according to data received:

- : data is stable
- : data value is increasing
- : data value is decreasing

To display raw data, connect in **Expert Mode**. Click the menu next to the receiver IP address, then **Show Raw Data**. Raw data are displayed under the filtered data. You can drag them to a page the same way as for filtered data.

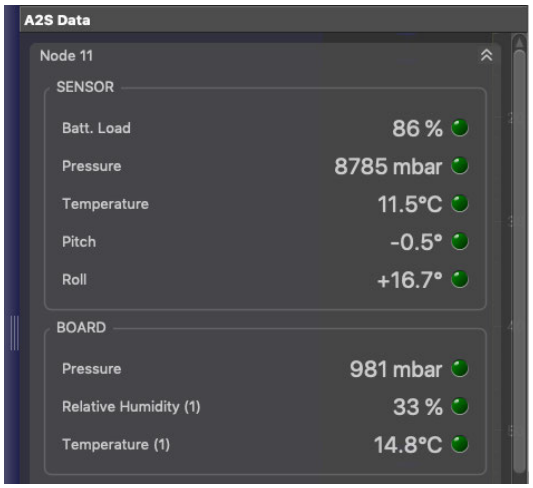


4. NMEA Inputs



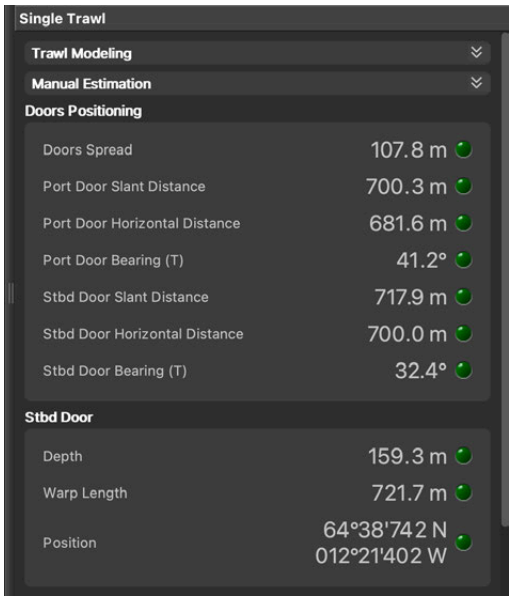
This is where you add NMEA inputs received from external devices. It displays the incoming NMEA data.

5. A2S Data



ScalaReplay2 only: the panel displays the replay of data recorded on the SD card of A2S sensors.

6. Trawl Data: Single Trawl / Twin Trawl / Triple Trawl / Quad Trawl / Penta Trawl



From here, you can monitor your trawl. When sensors are operating, you can see their data displayed according to their location on the trawl (headline, body, doors).

- **Trawl Modeling**: options relative to a positioning system. You can reset the trawl position from here. It also gives options relative to the slant distances:
  - **Use slant distances from sensors rather than warp lengths**: by default, Scala2 uses warp lengths to know the distance of the trawl doors from the boat. If you have both a winch control system and sensors sending slant distances, Scala2 will use warp lengths only. Select if you need to use slant distances only.
  - **Estimate horizontal distance from depths**: estimates the distance between the doors and vessel if the system receives neither warp length data nor slant distances from sensors.
- **Manual Estimation**: warp lengths can be entered manually if no warp lengths are received from a winch control system.

Note: Minimum data required to display **Doors Positioning** are GPS positioning, depth, door spread distance, port and starboard door bearings. However, we strongly recommend to receive warp lengths from a winch control system. Without it, the accuracy of the positioning will be reduced.

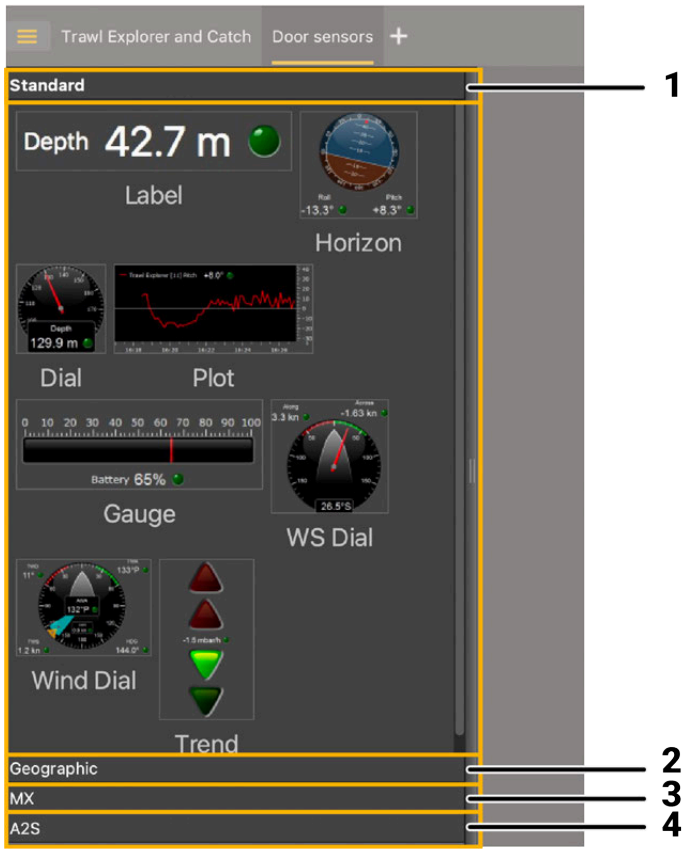
In the panels, a light next to the data indicates the status of data that are being received:

- Blinking green: data is received.
- Orange: communication with the receiver has been lost for a few seconds. A connection problem has just occurred.
- Red: there is no more communication with the receiver.

Customization Panels

The customization panels contain customization options for the data.

By default, the customization panels are on the left side of the screen. Click the drawer to open or close them. Drag elements from this panel to the pages to add data.

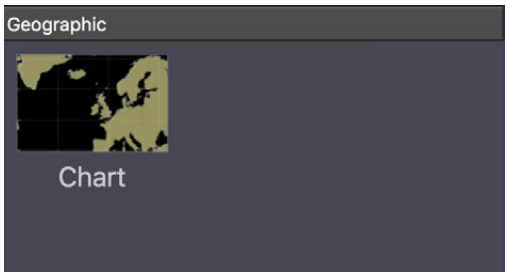


1. Standard



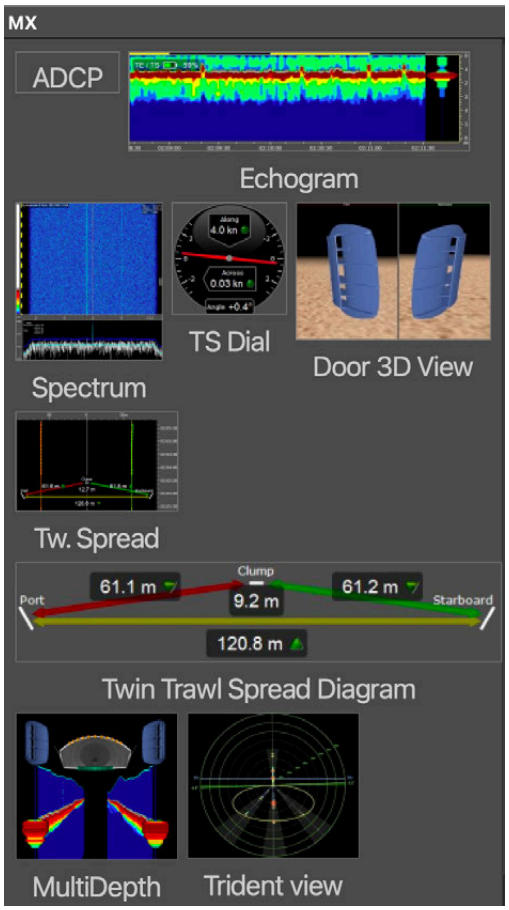
It contains general customization options for the data. See **Sensor Numerical Data (on page 63)**.

2. Geographic



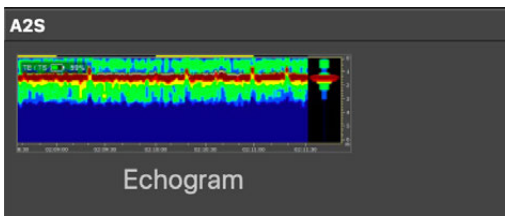
It contains the chart view. See **Displaying the Chart View (on page 99)**.

3. MX



You can find here the echogram and advanced 3D views of the equipments.

4. A2S

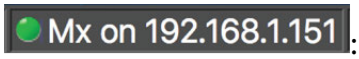


It contains the echogram display of A2S sensor's data.

Receiver Data

Receiver activity and its IP address is displayed in the bottom left corner of the screen.

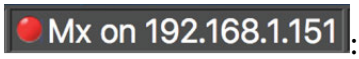
A dot next to the receiver name indicates its activity:

- 

: the receiver is active.
- 

: the receiver is in Spectrum mode.
- 

: the receiver is in audio recording mode.
- 

: the communication with the receiver has just been lost. There is a connection problem.
- 

: the communication with the receiver has been lost for at least 20 seconds.

Note: Receiver IP address may change according to equipment.

Using the Virtual Charger Room

You can display the fleet of sensors in Scala2 **Virtual Charger Room**, when sensors are connected to the Dock or trawling.

Tip: Refer to the Dock manual for more details about this product.

Note: Only the latest generation of Marport sensors can benefit from all the Dock features. A1 sensor tiles will only inform if the sensor is trawling or on deck (turned off).

Note: The Virtual Charger Room is compatible with single, twin, triple, quad and penta trawls.

Main page

To open the Virtual Charger Room, click **Menu** ☰ **> Virtual Charger Room** on the top left corner of the screen.

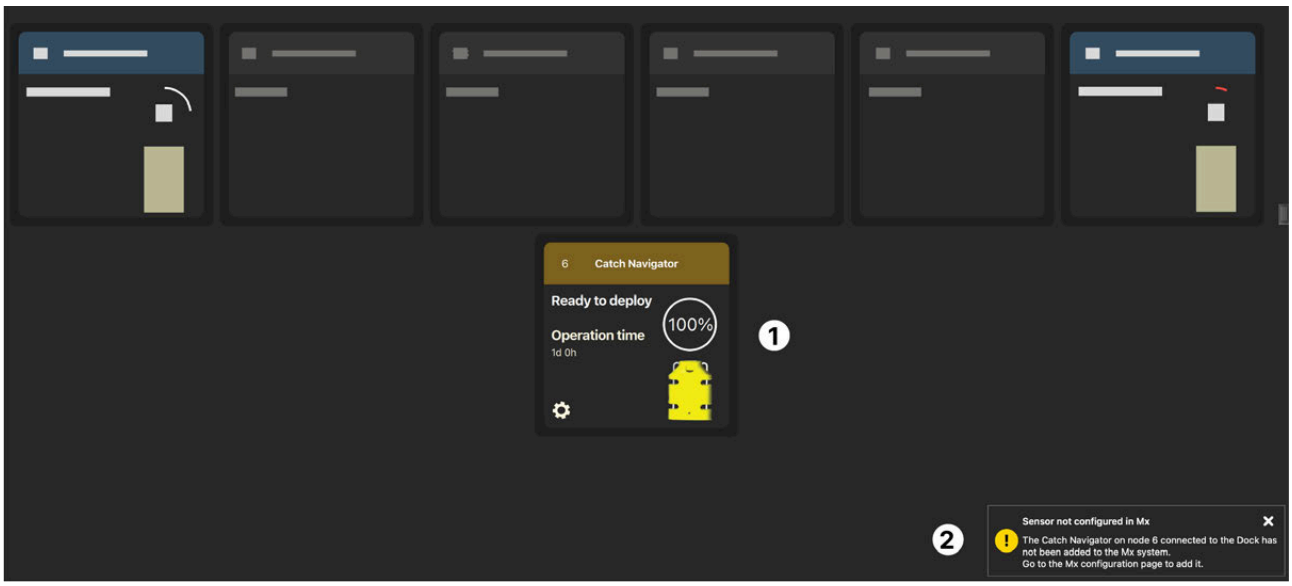
Each sensor that is part of the fleet appears on a tile. The tiles are placed according to the sensor location on the trawl, depending on the configuration that was made in the system configuration page.

To fit the view according to the width of the tiles click , or click  to fit according the height.



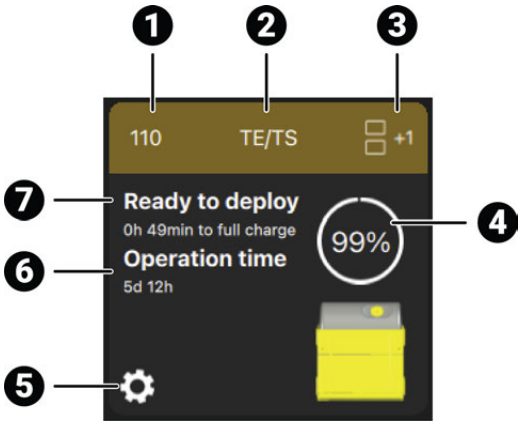
When a sensor that has not been added to the system is connected to the Dock, it is displayed underneath the other sensors (**1**). Only the charging status appears. A notification (**2**) also warns the user that the sensor is not part of the system configuration. When disconnected, the sensor is not displayed anymore.

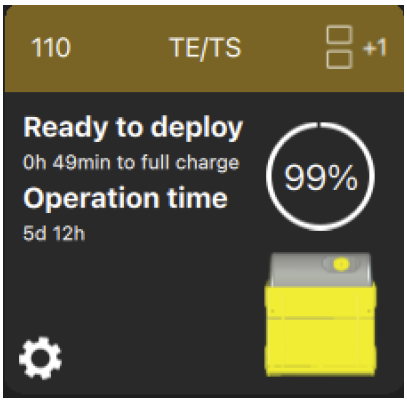
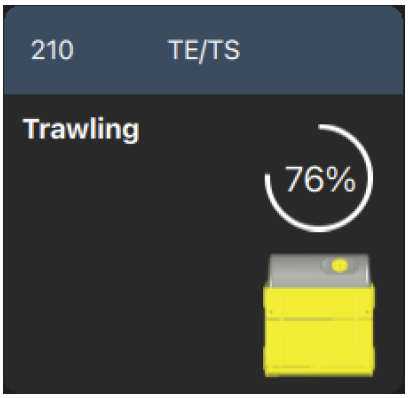
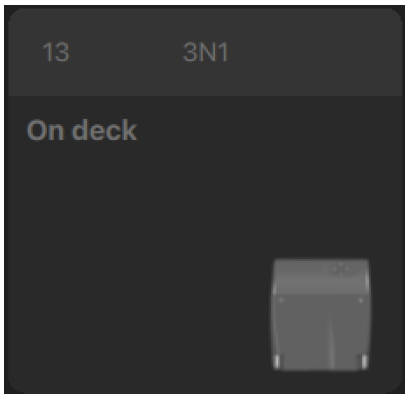
Note: A1 sensors will not be displayed.



Sensor status

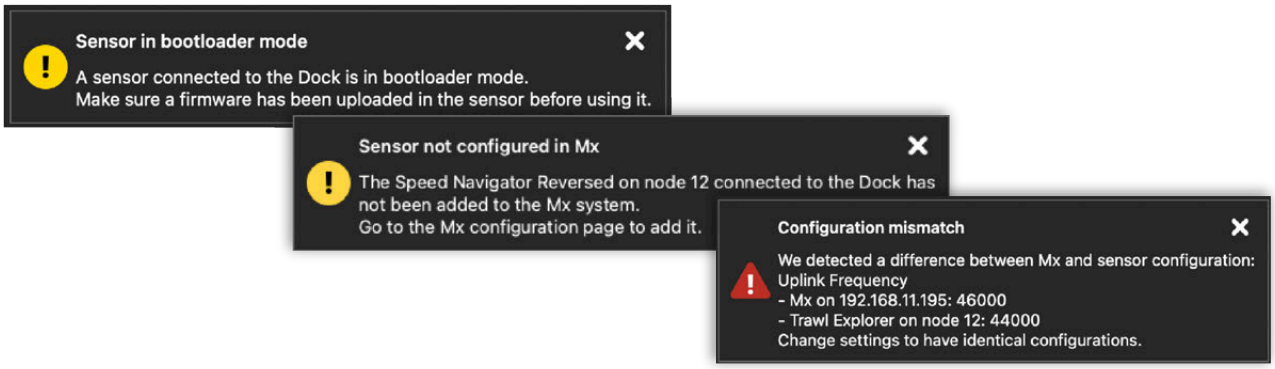
Each sensor tile is composed the following way:

	**1.** Node identifying the location of the sensor on the trawl.
	2. Name of the application
	3. If any, number of spare sensors. Click to show the other spare sensors.
	4. Charging level
	5. Access to the settings.
	6. Remaining lifetime at the current state of charge.
	7. Sensor status

		
The sensor is connected to the Dock and charging. It displays **Ready to deploy** when fully charged. Click  >  to display the "Pick me up" animation on the charger plug when the sensor must be deployed.	The sensor is operating on the trawl.	The sensor is out of water and is not connected to the Dock.

Notifications

When a sensor is connected to the Dock, the Virtual Charger Room is able to detect discrepancies between the system configuration and the sensor configuration. Notifications appear at the bottom of the page if the connected sensor is not part of the system configuration or if the sensor settings do not match the settings set in the system (based on the node).



The following settings are checked:

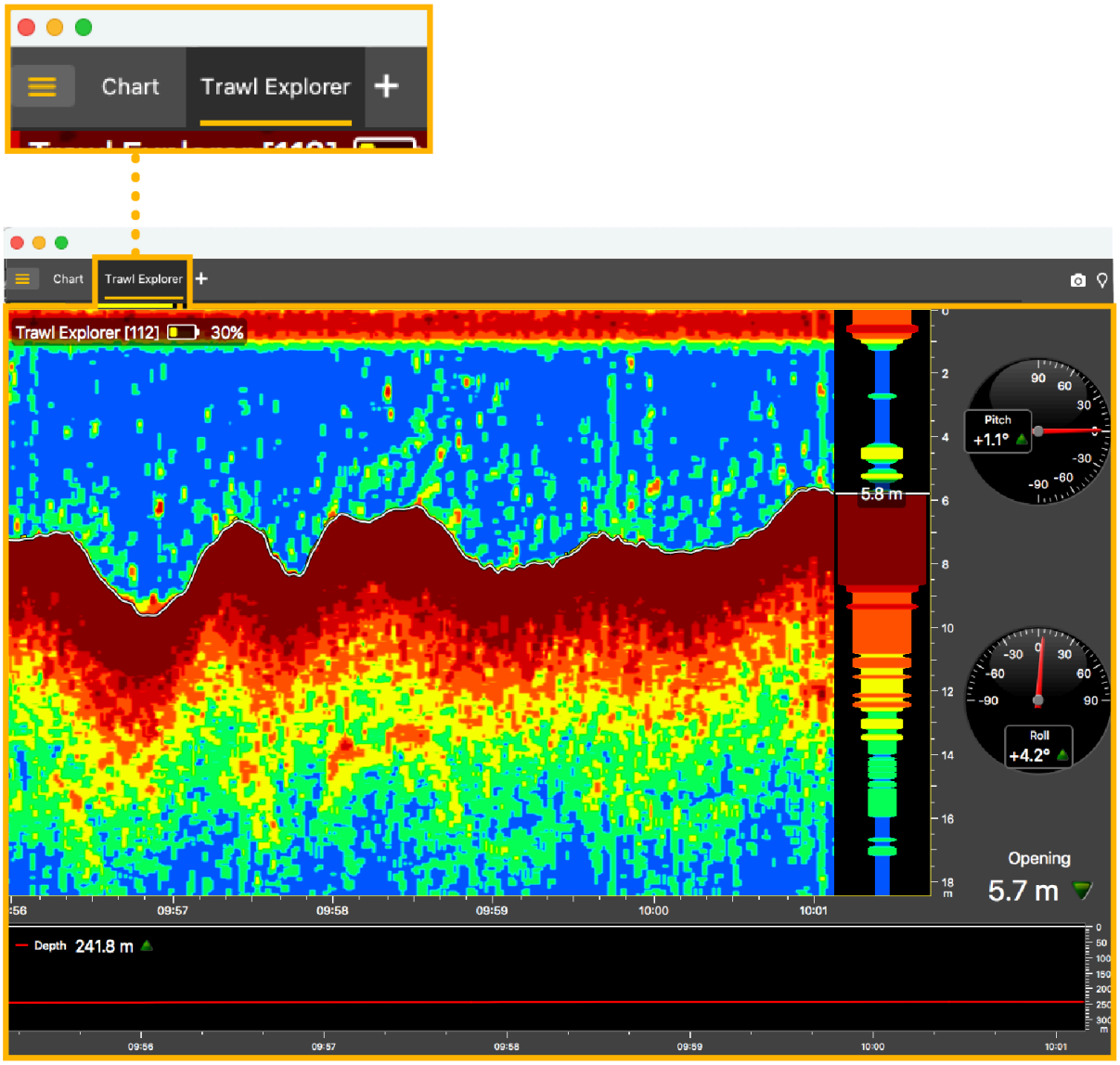
- Uplink frequency
- Sounding mode (when available)
- Sounding range (when available)
- PRP sensors: telegram names and frequencies

Creating Data Pages

On Scala2, data received from sensors can be displayed on pages. Pages are organized in tabs in the top toolbar.

Click one tab to display the corresponding page.

You can create specific pages according to your needs, for example one page for door spread sensor data, one for Trawl Explorer data.

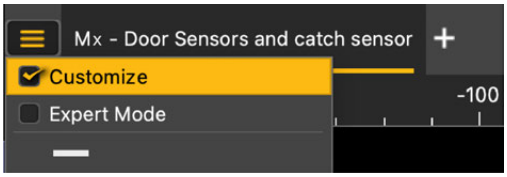


Creating a New Page

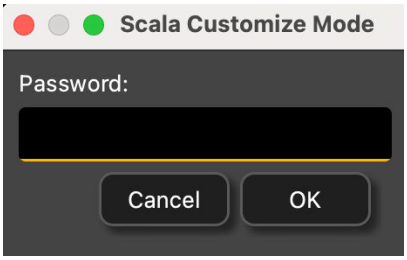
You can create a new page from scratch or from a template.

Procedure

1. From the top left corner of the screen, click **Menu** ☰ **> Customize**.

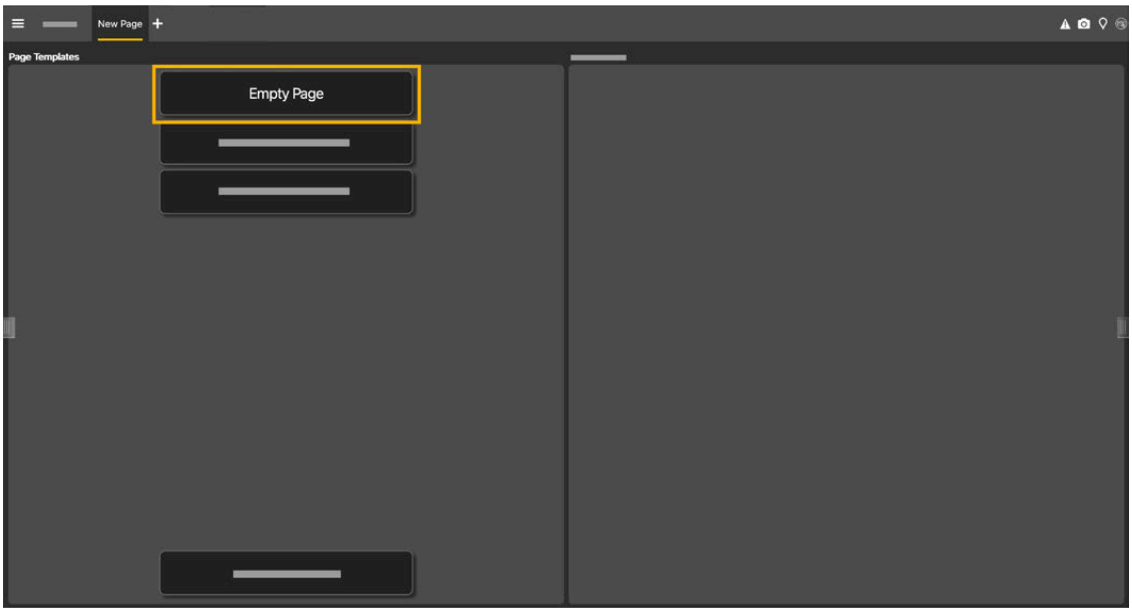


2. Enter the password `eureka`.

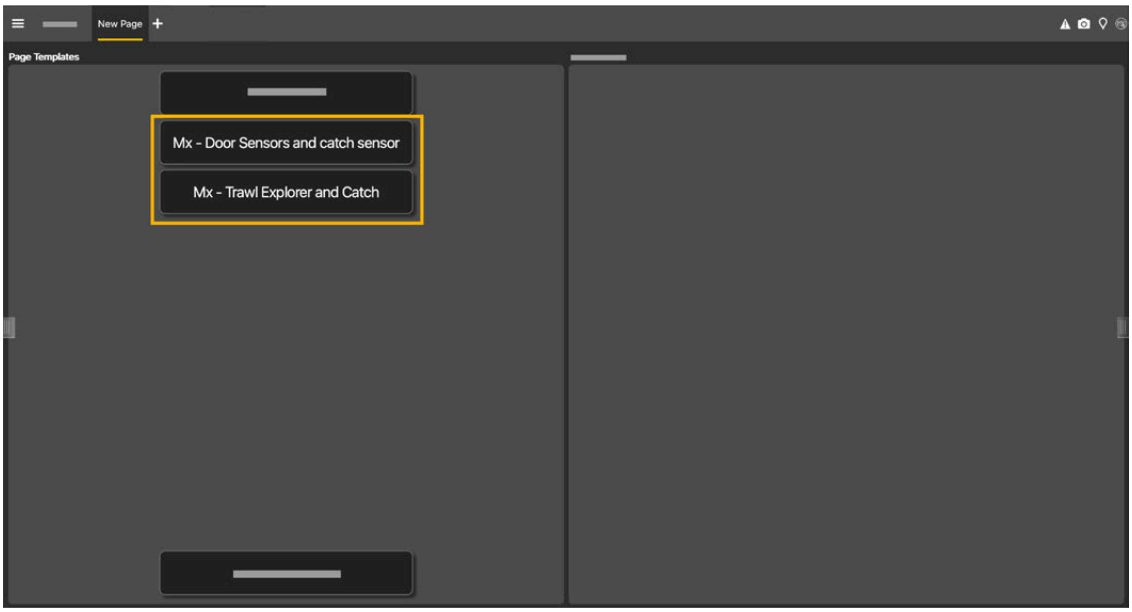


3. From the top toolbar, click the add icon +.
   Page Templates and **Hidden Pages** panels are displayed.

4. Select a type of page.
   - To open a blank page, select **Empty Page**.

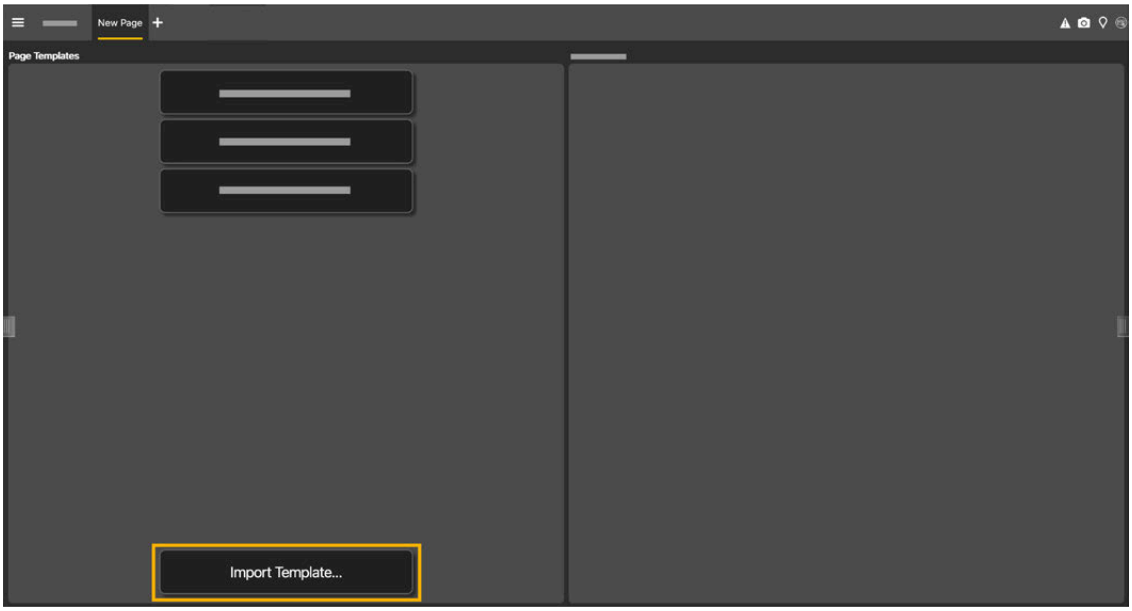


   - To open a page with data already displayed, select a page from the **Page Templates**.



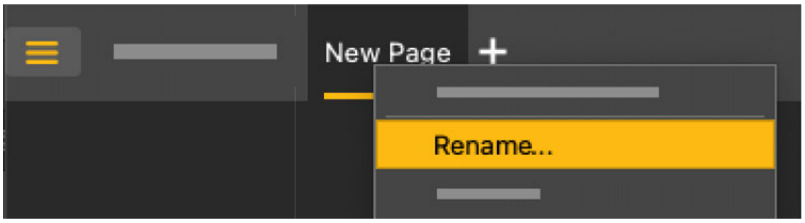
Tip: You can use these pages as a basis and add other data.

- To display a page that was previously saved as an XML file (see **Exporting a Page (on page 37)**), click **Import Template**.



The new page appears in a new tab.

5. Right-click the new page tab and select **Rename**.



6. Type a name and press Enter.
   The new page name appears.

7. To change the order of the page tabs in the toolbar, click the page name and drag it before or after the other page tabs.

What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ > **Customize** again.

Adding Data to a Page

You can choose data that will appear on the screen.

Before you begin

You must be in **Customize** mode to do this task.

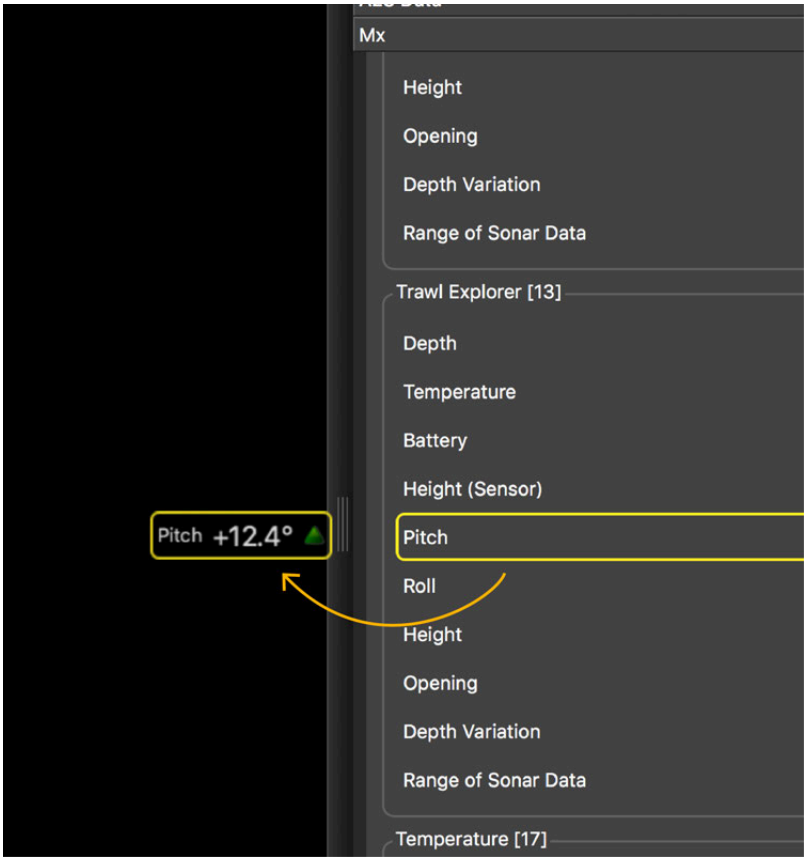
Procedure

1. Open the drawer on the right side of the screen to display the control panels. The other drawer contains the customization tools.

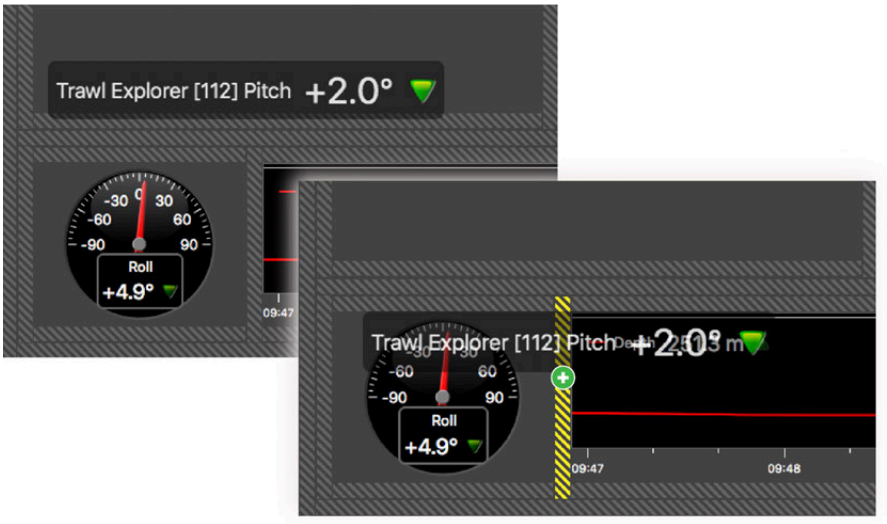


> **Note:** To change to position of the control panels, connect in **Expert Mode**, then click **Menu** ☰ **> Settings > Advanced**.

2. Under the **Mx** tab, choose data and click + hold for 3 seconds until a rectangle with data appears.



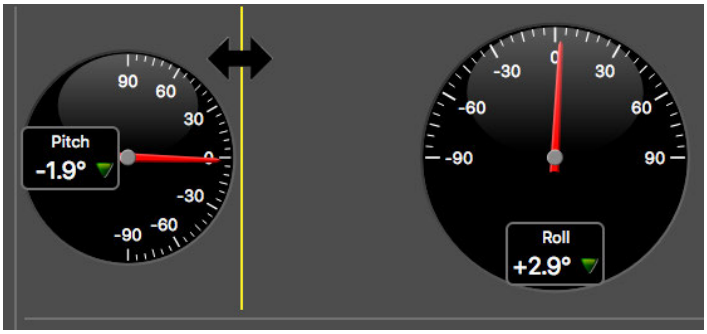
3. Hold + drag the rectangle to the middle of the screen, above grey striped areas. The area becomes yellow when you can place data.



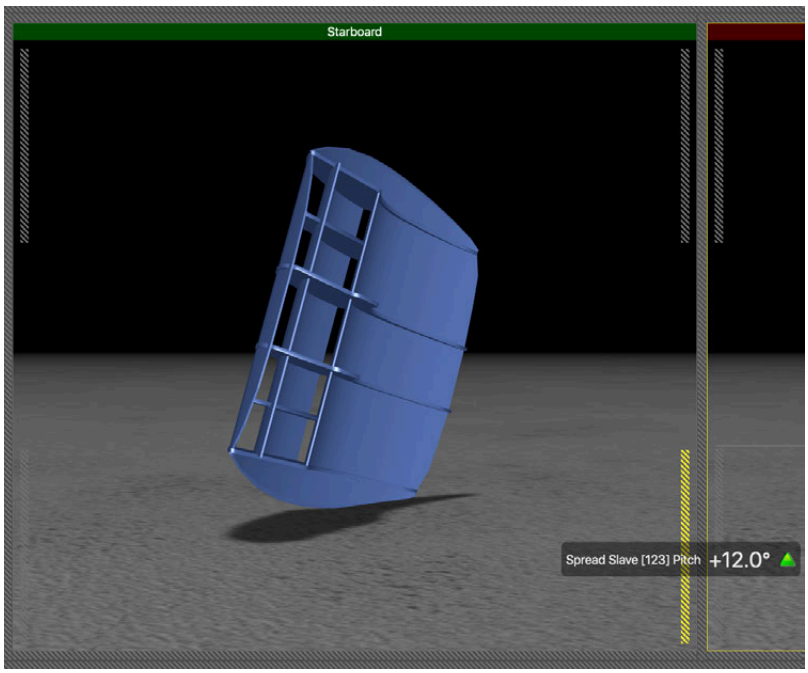
4. Stop holding the mouse button to place data at the chosen area.

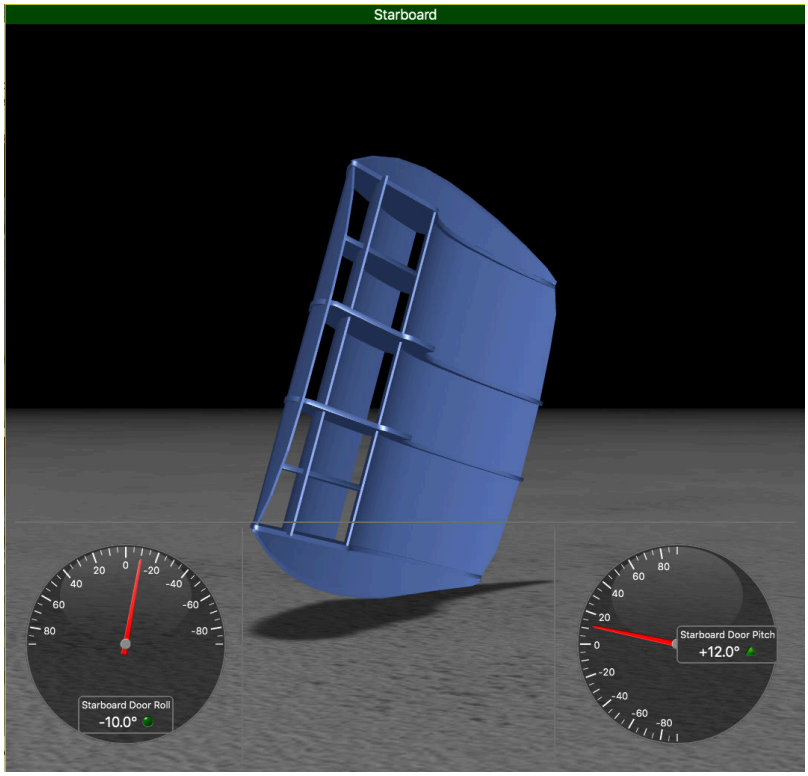
5. In the dialog box that appears, select the desired type of display for the corresponding data. See **Display Types (on page 64)** for more information about the types of display. Data is displayed on the screen.

6. Drag the lines around data to resize it.



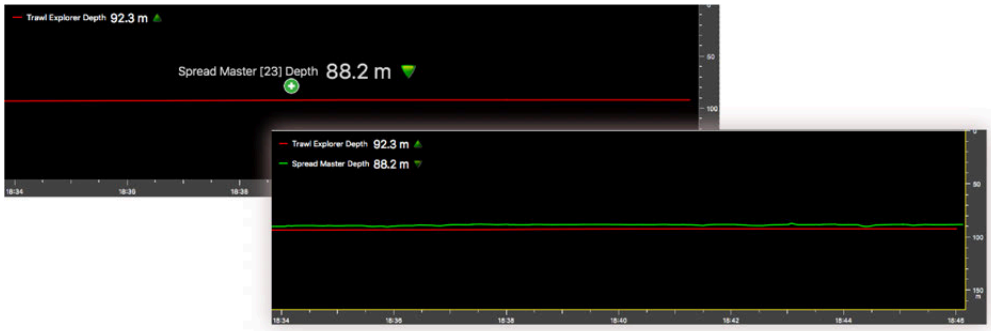
Tip: To place data (e.g. dial, gauge, text) on top of previously placed echogram or 3D views, select data and drag it on the echogram or 3D. Locations where you can drop data are situated on the corners of the views. They appear as yellow stripes when data is dragged above the location.





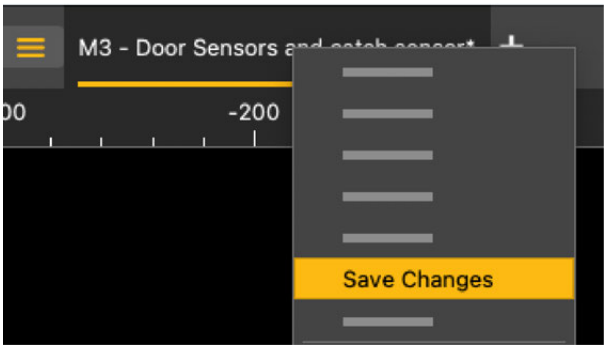
Tip: You can add multiple data in one history plot in order to easily compare different data at the same time:

a. Drag data, for example Depth from a Trawl Explorer, to a yellow area.
b. In the **Choose type of display** dialog box, select **History Plot**.
c. Drag other data, for example Depth from a Spread Master, to the first Depth history plot.
d. The second data appear in the history plot in another color.



7. To change the type of display, for example switching from a text label to a plot, right-click the data item and click **Change Type of View**.

8. Right-click the page tab and click **Save Changes**.



What to do next

- To add other data, repeat the steps.
- Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ **> Customize** again.

Removing Data from a Page

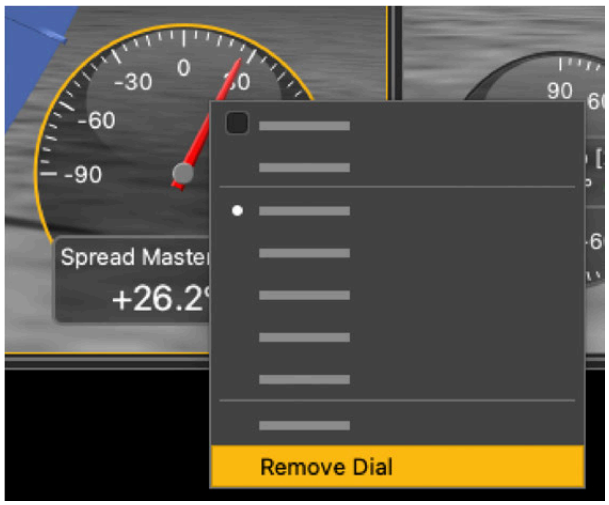
You can remove data such as a dial, an echogram, a plot, that is displayed on a page.

Before you begin

You must be in **Customize** mode to do this task.

Procedure

Right-click data and select **Remove Dial** (or other data type).



What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ **> Customize** again.

Hiding a Page

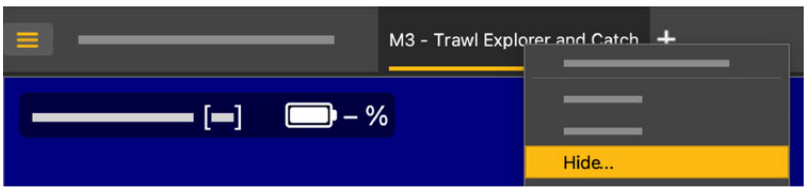
You can hide a page if you do not need to keep it in the tabs on the top bar.

Before you begin

You must be in **Customize** mode to do this task.

Procedure

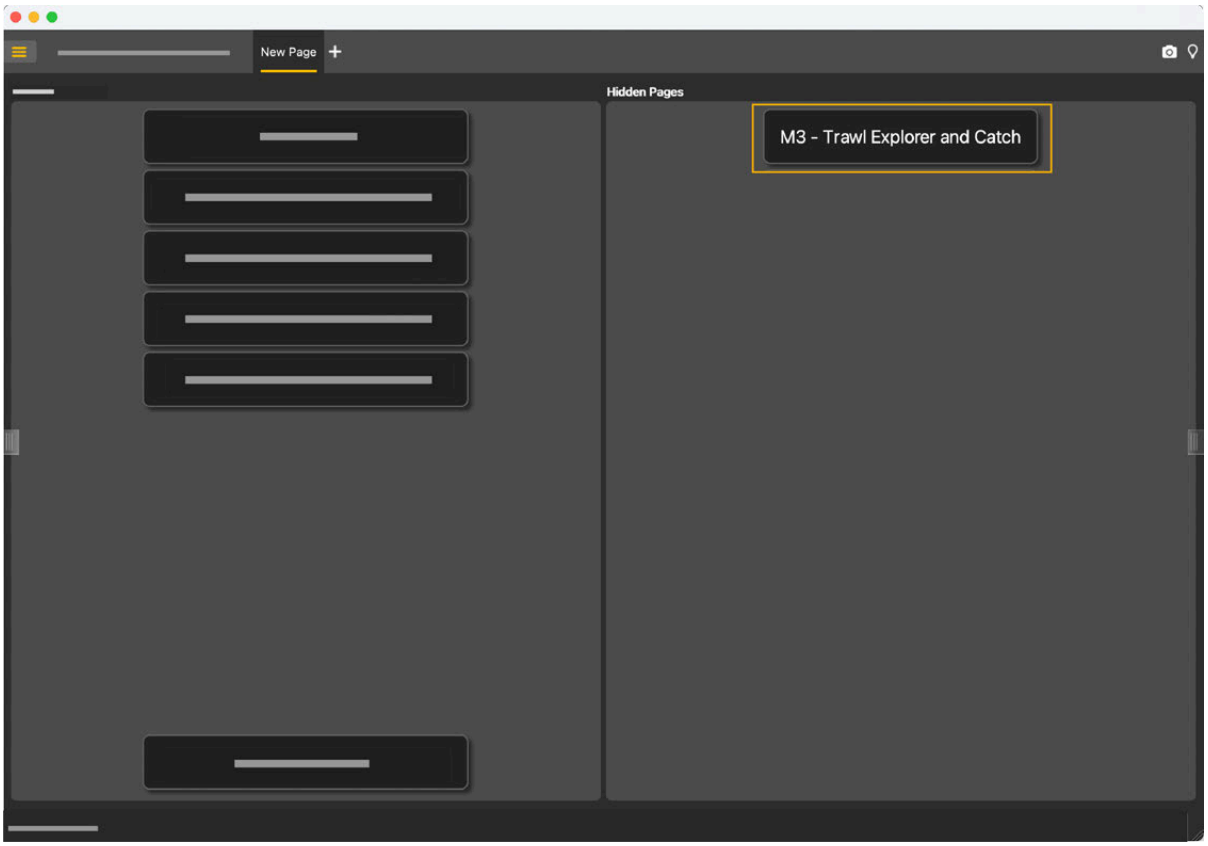
1. Right-click the page tab and click **Hide**.



   The page is removed from the top bar.

2. To open the page again, click the add icon +.

3. Click the name of the page displayed in **Hidden Pages**.



Exporting a Page

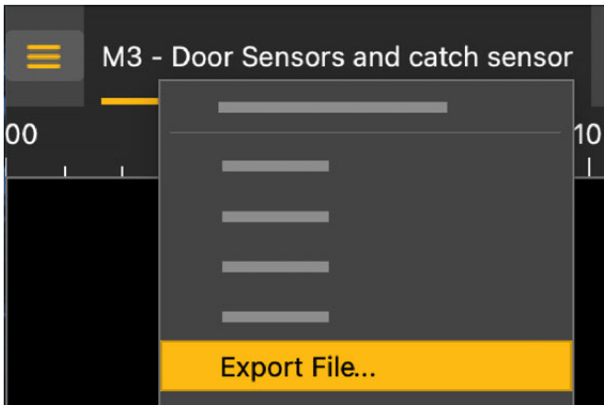
You can export pages you created, for example if you want to reuse them for other configurations.

Before you begin

- You must be in **Customize** mode to do this task.

Procedure

1. Right-click the page tab and select **Export File**.



2. Choose where you want to save the page.

What to do next

- Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ **> Customize** again.
- To reuse this page in other configurations: see **Adding Data to a Page (on page 31)**.

Deleting a Page

You can delete pages.

Before you begin

You must be in **Customize** mode to do this task.

Procedure

1. To permanently remove a page, right-click the page tab and click **Delete**.
2. To remove a page from the tabs but be able to find it later, right-click the page tab and click **Hide**.

What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ **> Customize** again.

Managing Windows

When you have multiple monitors, you can open pages in different windows to see different pages at the same time.



Opening a Page in a New Window

You can open a page in a new window and drag this window to another desktop screen.

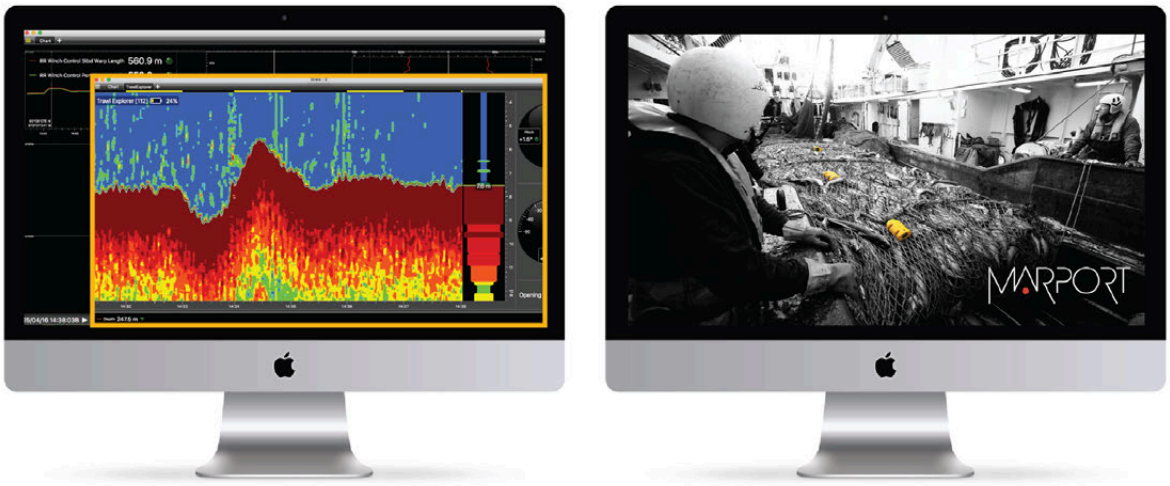
Procedure

1. From the top left corner of the screen, click **Menu** ☰ **> Customize** and enter the password eureka.

2. In the top toolbar, right-click a page name and select **Move to New Window**.



A new window containing the page opens.



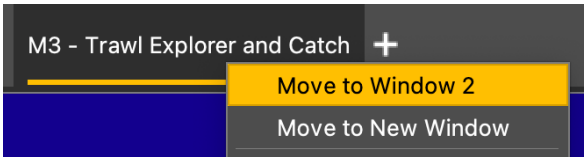
3. Drag the new window to another desktop screen.



The initial window is considered as main window and it has the control panels. The window you created is named **Scala - 2**. Its name is displayed on the top of the window.



When moving pages between windows, the window you created is named **Window 2** in the menu.



4. To create additional windows, right-click a page name and select **Move to New Window**. Each additional window you create has a number.

What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ > **Customize** again.

Moving Pages Between Windows

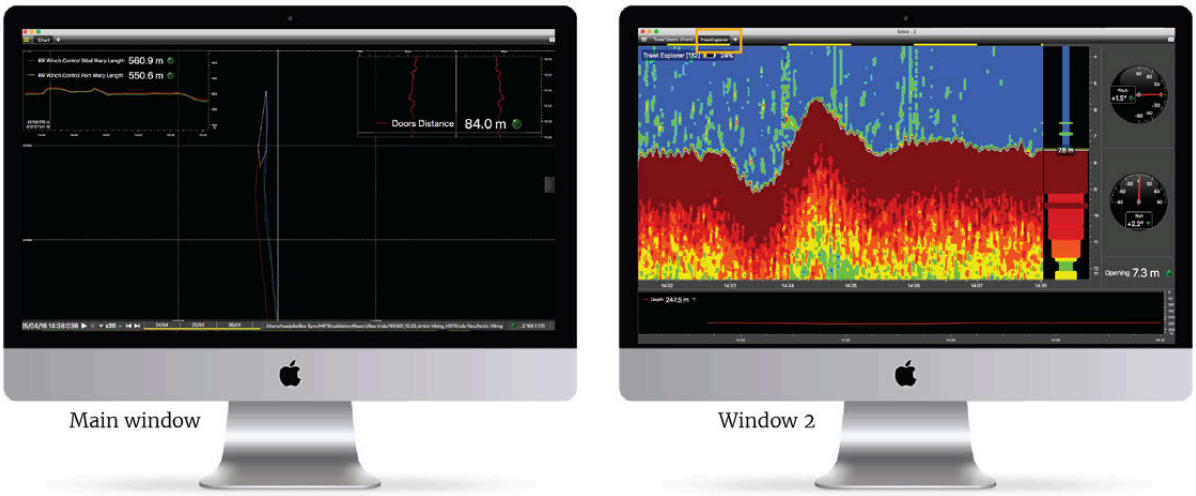
You can distribute pages among different windows.

Procedure

1. From the top toolbar of the main window, right-click a page name and select for example **Move to Window 2**.



The page is moved from the main window to window 2.



2. Check that the page name appears in the top toolbar of window 2.

3. To move back a page to the main window, right-click the page name from window 2 and select **Move to Main Window**.

4. When you have several pages, in the same way, move pages between the main window and window 2, 3, 4...

Closing and Re-opening Windows

You can close all Scala2 windows at once or close only some windows. If you close some windows, you can find them back or choose to delete them.

Procedure

1. To close Scala2 and all the windows:
   - Click close from the main window.
   - Or click close from a secondary window and click **Quit** in the dialog box that appears.

   All windows are closed and will be reopened the next time you open Scala2.

2. To close only one secondary window, click close from the secondary window and click **Close** in the dialog box that appears.

3. To reopen a secondary window that has been closed, click **Menu** ☰ **> Open Window X**.

4. To permanently delete a window, first you need to remove all the pages from this window:
   - You can move pages to another window: right-click page tabs and click **Move to Window X**.
   - Or you can remove pages: right-click page tabs and click **Delete** to permanently delete the pages or **Hide** to keep the page hidden.

   The window disappears when all pages are removed.

Customizing the Display of Data

Note: Customization options are all in the panel on the left side of the screen, available in **Customize** mode.

Note: The display of some data have changed with Scala2:

- **Bearing angles** (systems with trawl positioning option): relative (R) bearing angles are now relative to the stern, unlike the first versions of Scala where angles were relative to the heading of the vessel. Angles toward port side are negative and angles toward starboard side are positive. True (T) bearing angles are not displayed anymore.
- **Twin Trawl Spread Plot**: right-click the plot to switch to a Single Trawl Spread Plot.

Echograms

Echograms are a representation of what is detected by the sensors with the acoustic signals.

The strength of a detected target is expressed in Decibels (dB), that correspond to specific colors on the echogram. Blue usually represents the lowest target strengths and red the highest target

strengths. The distribution of the color on the Decibels scale can be configured with the color palettes.

In Scala2, the **Mx** control panel displays all the sensor data. Within sensor data, echogram data are displayed as **Sonar Data**.

Displaying an Echogram

You can display an echogram view on a page.

Before you begin

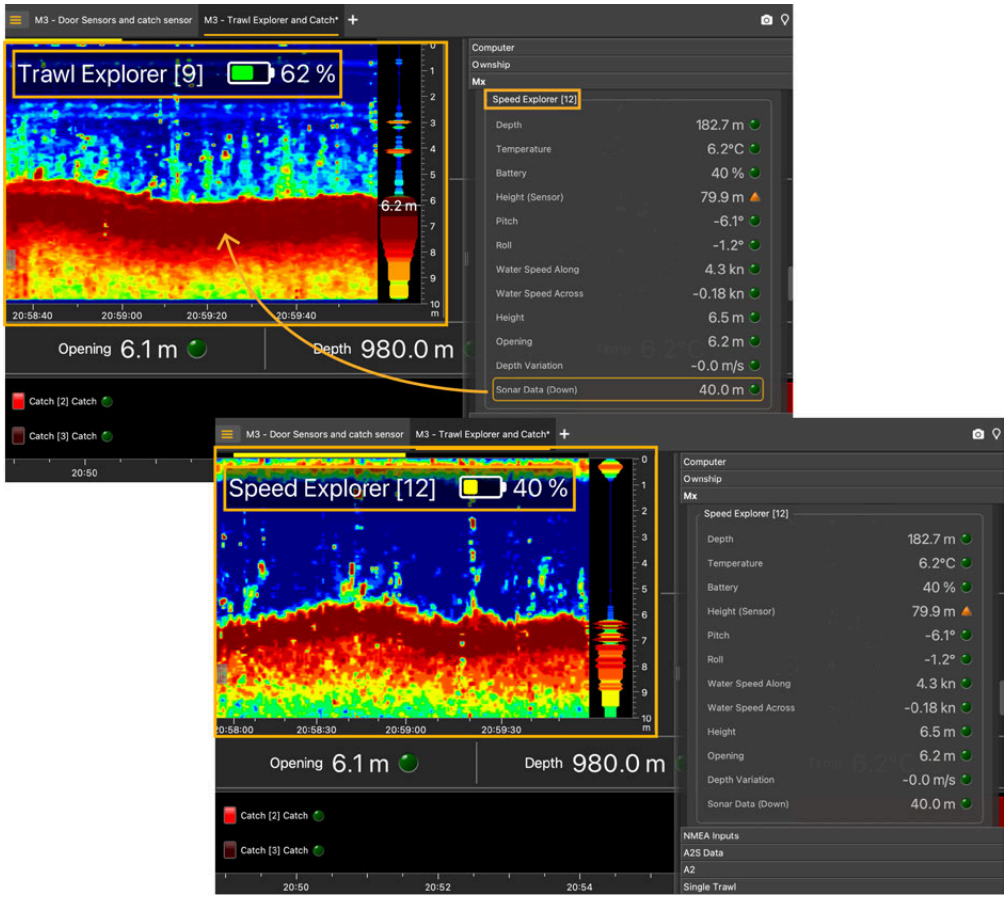
You must be in **Customize** mode to do this task.

Procedure

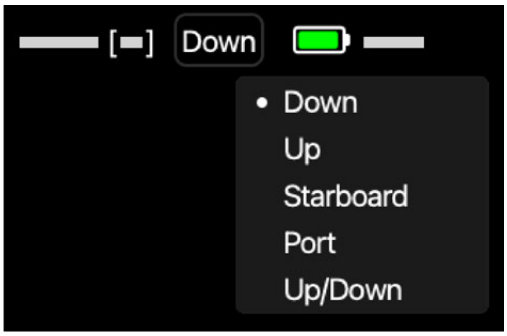
1. Open the drawer on the right side of the screen to display the control panels.
2. In the control panels, click the **Mx** tab. Under the sensor's name, click then drag **Sonar Data** to a page, where a yellow area appears.



Tip: You can change the source of an existing echogram by dragging the sonar data of another sensor above it.

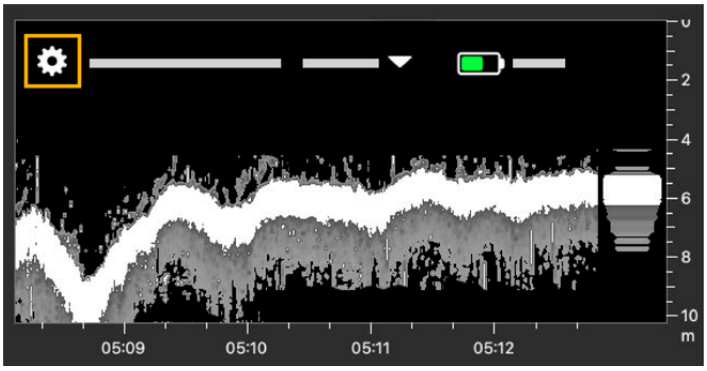


3. If the sensor has been configured with more than one sounding direction, click the direction displayed next to the sensor name and select another one.

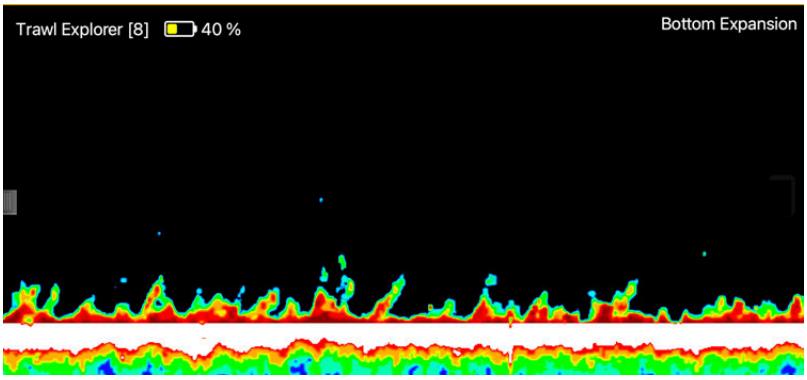


Note: Refer to the sensors' manuals to have more information about the configuration of the sounding mode.

4. On the echogram, click the wheel icon ⚙ next to the name of the sensor to open the display settings. This menu allows to change settings such as the depth scale, color palette, or viewing mode. See **Echogram Display Settings (on page 46)** for more details.



For example, if you are doing bottom trawling: switch to the **Bottom Expansion** viewing mode to display a more precise view of the bottom and better see fish close to the bottom. This view is usually used with echosounders on the hull, but you can use it with NBTE sensors on the trawl if the reception is good and the bottom is correctly detected.



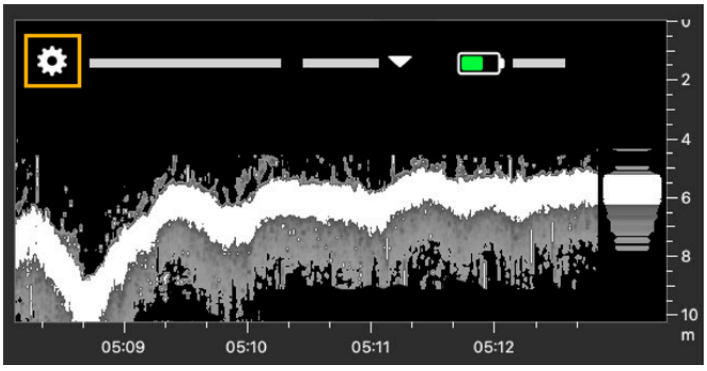
What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ **>** **Customize** again.

Echogram Display Settings

You can apply different display settings to the echogram.

- On the echogram, click the wheel icon ⚙ next to the name of the sensor to open the display settings.



Display	
A-Scope	Shown on the right side of the echogram by default. The scope displays the latest received sonar data.
Color Palettes	Changes the default colors of the echogram. See **Changing the Echogram Colors (on page 49)** for more details.
VRM	Sets a range marker at a given depth.
Bottom Line	Displays a white line at the beginning of the seabed.
Footrope Line	Displays a yellow line at the bottom of the trawl.
Thick Lines	Increases the thickness of bottom and footrope lines.
Vertical Smoothing / **Horizontal Smoothing** (**Expert Mode**)	Displays smoother transitions between the colors in the echogram.
Vertical Display	Suited for Seine Explorer with side-looking sounding.

Z Scale	
Standard Mode	The echogram is displayed beginning from the sensor position.
True Mode	The echogram is displayed beginning from the water surface. See **Displaying the View from Surface to Seabed (on page 53)** for more details.
Bottom Expansion	Displays a more precise view of the bottom to better see fish close to the bottom.

Z Control	
Manual Z Scale	Manually adjust the depth scale.
Z Scale Follow Bottom	Keep the zoom you set on the depth scale and follow the bottom to always keep it on the image.
Z Scale Auto Range	Keep the depth value that you set on the top of the scale and adjust the zooming to always keep the bottom on the first third of the image.
Z Scale Follow Sensor	Use with Door Sounder or Door Explorer Pro sensors to keep the view of the door on the echogram. Available only when **True Mode** is activated.
Z-Scale Synchronization	Synchronizes the depth scale on echograms placed one next to each other horizontally.

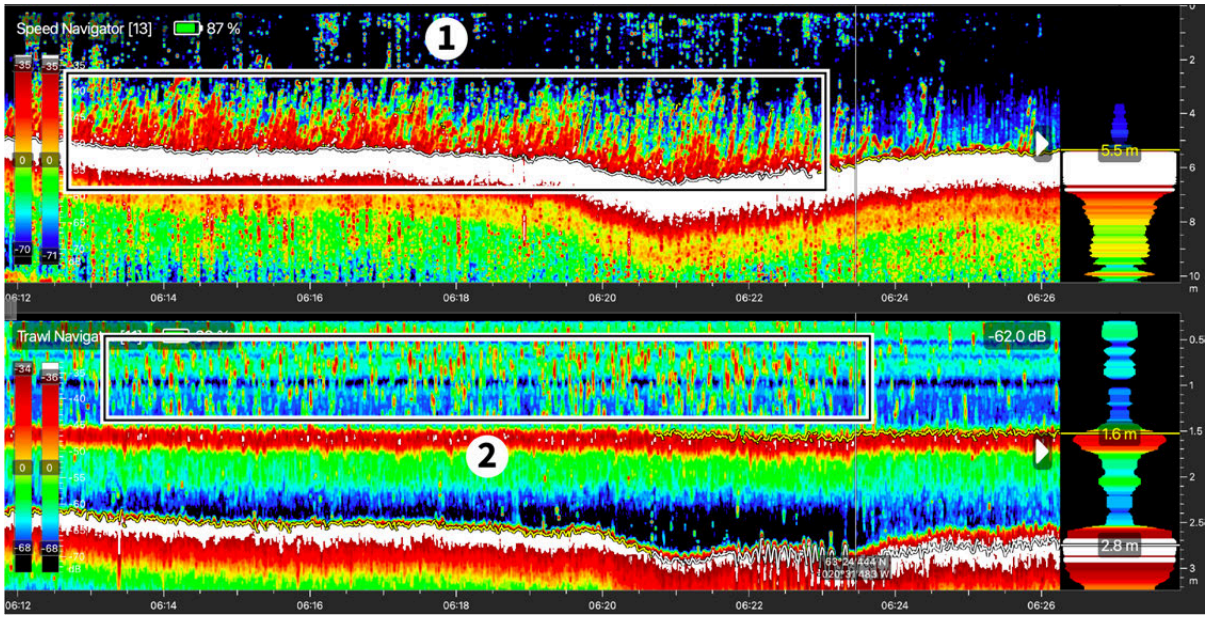
Time Scale

Time Synchronization	Synchronizes the time stamp and zoom on echograms and history plots placed one above each other.
Fixed beam Width	Changes the method of displaying the echogram. Read **About the Echogram Display (on page 48)** for more information.
Beam Width Correction	This feature should always be activated. It homogenizes the beam widths displayed on the echogram.

About the Echogram Display

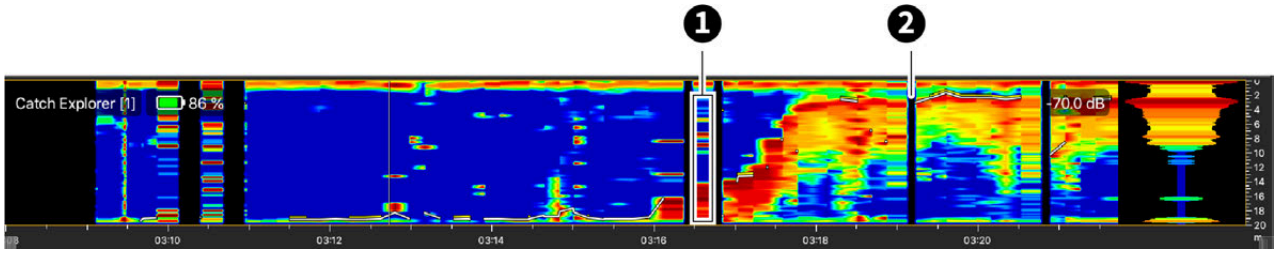
By default, Scala2 displays a real-time echogram. The progression of the echogram is based on time, so it can be time-synchronized with other real-time echograms or plots. This synchronization can for example help you to better follow a target by comparing the echograms. The global position cursor can also complete the information.

On the example below, Scala2 displays an echogram from a Speed Navigator Pro placed on the headrope (top of the screen), and one from a Trawl Navigator Pro placed approximately 30 meters back on the net (bottom of the screen).



Fish are first detected close to the bottom by the Speed Navigator Pro (**1**). Then, approximately 20 seconds later, the Trawl Navigator Pro detects them inside the trawl (**2**). Because both echograms progress at the same speed, the time period between the targets seen on the echogram will always stay the same.

If the acoustic signal from the sensor is not received, the last sonar data is repeated for a few seconds, then stopped. This will show black lines on the echogram. See image below. Read the topic **Troubleshooting (on page 125)** for potential solutions.



1. Repeated sonar data / **2**. Loss of reception

Scala2 also has a **Fixed beam Width** echogram. This type of echogram progresses only whenever sonar data is received. Because sonar data are usually not received at the same time by all the sensors, this echogram cannot be time-synchronized with other echograms and plots and it does not work well when displaying two signals simultaneously (for example up/down). The time progression is usually monitored using the yellow lines on top of the echogram, one yellow line corresponding to 1 minute. If the sonar data are not received correctly, the timescale and yellow lines will shrink.

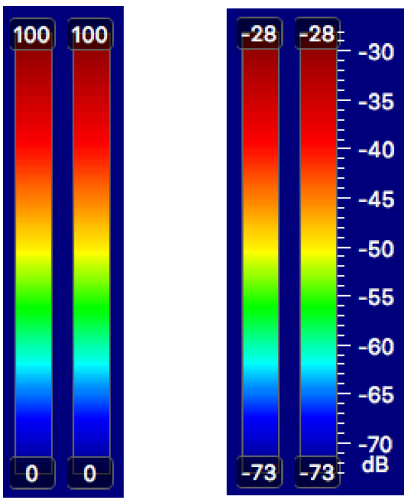
Changing the Echogram Colors

You can change the default colors of the echogram. The ability to configure the color palettes is interesting to highlight specific things, for example to clearly distinguish the sea bottom from fish targets.

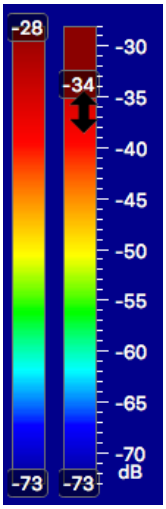
Procedure

1. On the echogram, click the wheel icon ⚙ next to the name of the sensor to open the display settings. Click **Display > Color Palettes**.
   The two color palettes appear on the left side of the echogram. The first palette is for the area underneath the seabed and the second for the water column.

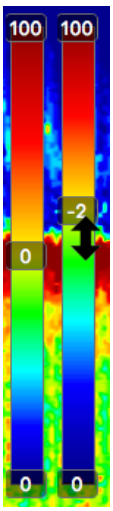
   Depending on the type of sensor installed, you can have two types of color palettes. The second one is for latest generation sensors. It displays the target strength.



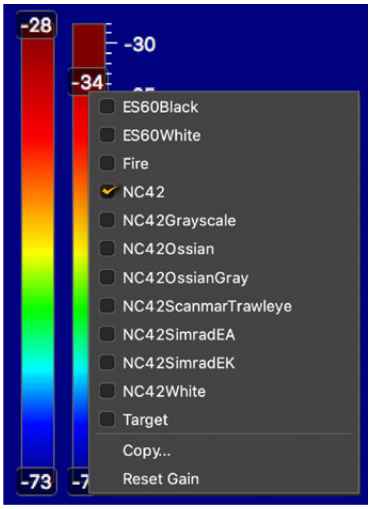
2. For both types of palettes:
    a. Drag the top handle down to increase the red color.
    b. Drag the bottom handle up to eliminate noises and weak echoes.



3. With the first type of palette only, you can also adjust the gain level. It changes the color intensity. You can for example saturate more or less in red to obtain same colors for different sensors. Click **Menu** ☰ **> Expert Mode** and enter the password `copernic`.
A handle is displayed in the middle of the palette. Drag it to adjust the level.



4. To change the color hues, right-click the gauge and select another color palette.

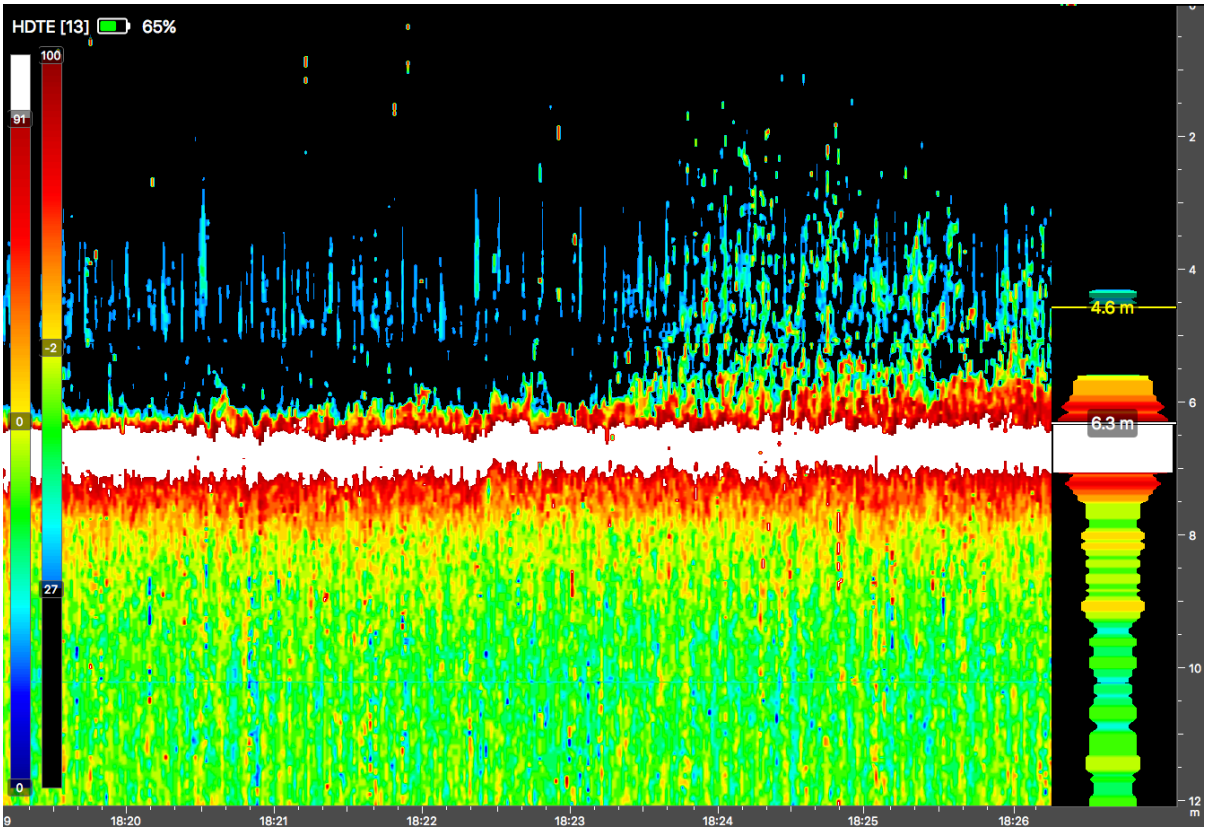


You can choose color palettes from other echosounder brands if you prefer them.

Option	Description
ES60Black	Simrad color palette
ES60White	Simrad color palette
Fire	Fire color palette
NC42	Standard Scala2 color palette
NC42Grayscale	Shades of grey
NC42Ossian	Ossian color palette
OssianGrey	Ossian color palette
NC42ScanmarTrawleye	Scanmar Trawleye color palette
NC42SimradEA	Simrad color palette
NC42SimradEK	Simrad color palette
NC42White	Same as NC42, but saturates in white for target strength above high threshold and black below low threshold.
Target	For V3 echosounders, increases the contrast for small targets.

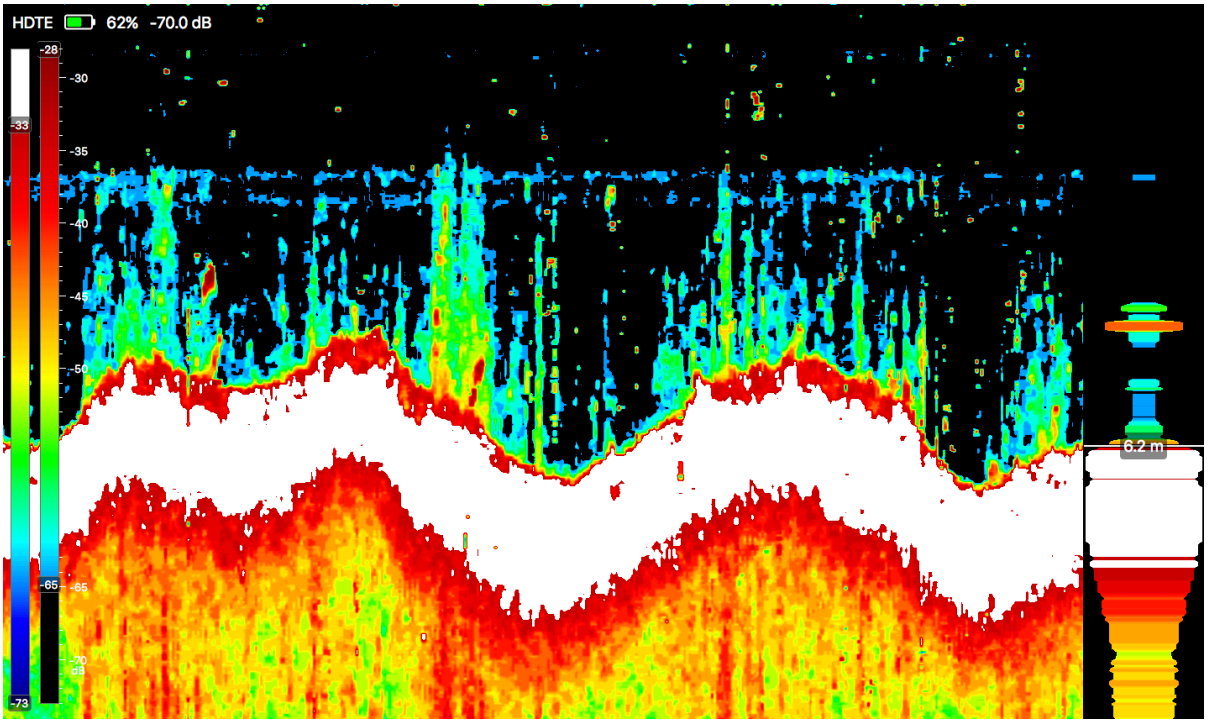
5. You can also create your own palette by copying an existing palette and modifying the RGB color codes manually:
    a. Right-click a palette and click **Copy**.
    b. Enter a name. The new palette appears in the contextual menu.
    c. A file with the list of the colors is saved in **Documents/Marport/ScalaLive/mx/SonarPalettes**. You can modify the file directly.

6. For example, to have the following display with the first type of palette:



a. Right-click each palette and select NC42White for both.
b. Drag the top handle of the left palette down to 91 to see the sea bottom in white.
c. Drag the bottom handle of the right palette up to 27 to better see fish.
d. Drag the gain handle of the right palette up to -2 to change the color level.

7. To have the following display with the second type of palette:



a. Right-click each palette and select NC42White for both.
b. Drag the top handle of the left palette down to -33dB to see the sea bottom in white.
c. Drag the bottom handle of the right palette up to -65dB to better see fish.

8. To have smoother transitions between the colors in the echogram, click ⚙. Click **Display**, then select **Vertical Smoothing** and/or **Horizontal Smoothing**.

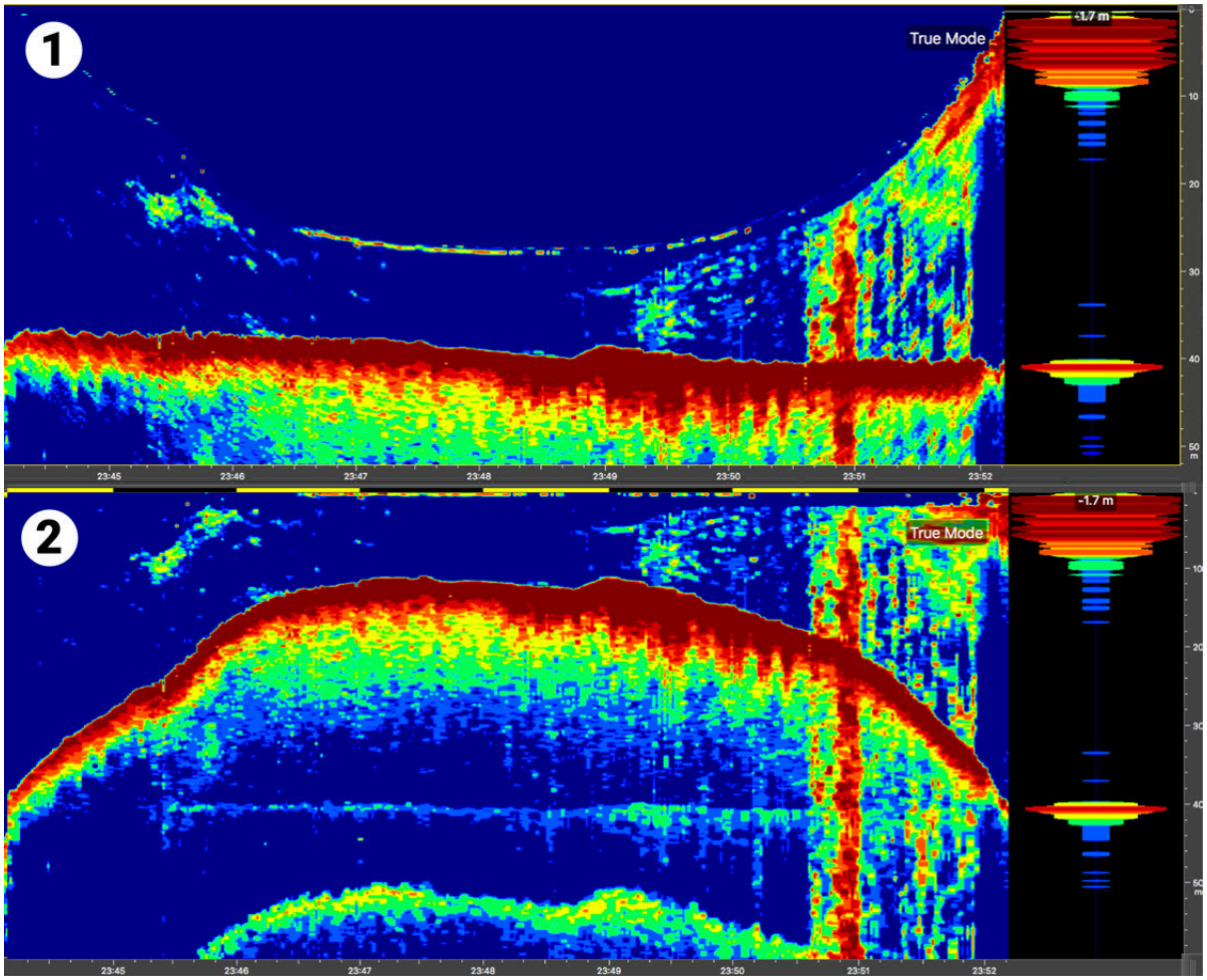
Displaying the View from Surface to Seabed

You can choose to display the echogram beginning from the water surface instead of the default view from the sensor position. Depending on the type of fishery, this is useful to see the trawl descent from the sea surface to the seabed.

Procedure

1. On the echogram, click the wheel icon ⚙ next to the name of the sensor to open the display settings. Click **Z Scale > True Mode**.

   When **True Mode** option is activated, the echogram is displayed beginning from the water surface (1). When the option is deactivated, the echogram is displayed beginning from the sensor position (2).



2. You can set the depth scale to automatically follow the position of the sensor on the screen.
   For example, this option can be useful when using a Door Explorer Pro. The echogram will follow its position, so you can keep an eye on its distance to the bottom without having to scroll on the depth scale.

   a. On the echogram, click ⚙ **> Z Control > Z Scale Follow Sensor**.

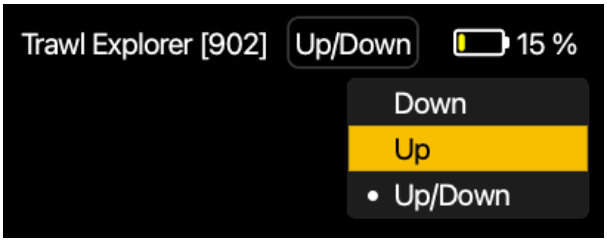
   Note: This option is compatible with **True Mode** only.

Displaying Echograms of Seine Sensors

You can display an echogram image of the contents of a seine purse when using a Seine sensor with side-looking option.

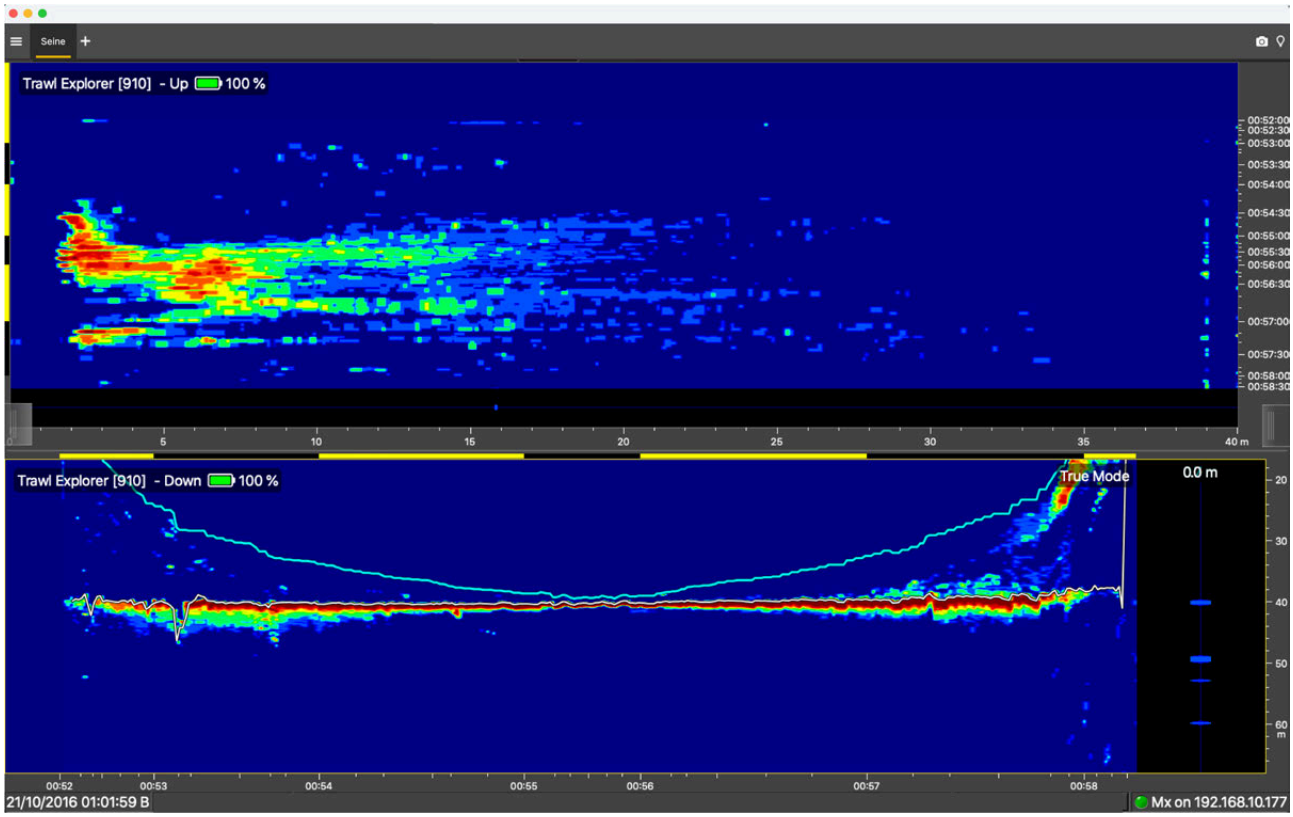
Procedure

1. Drag **Sonar Data** from a Trawl Explorer to a page.
2. Change the sounding direction to **Up**.



3. On the echogram, click ⚙ **> Display > Vertical Display** to see the contents on the seine purse as the sensor goes down.
4. Again, drag **Sonar Data** from the Trawl Explorer and place it next to the first echogram.
5. Change the sounding direction to **Down**, then click ⚙ **> Z Scale > True Mode** to see the descent of the sensor.

Results



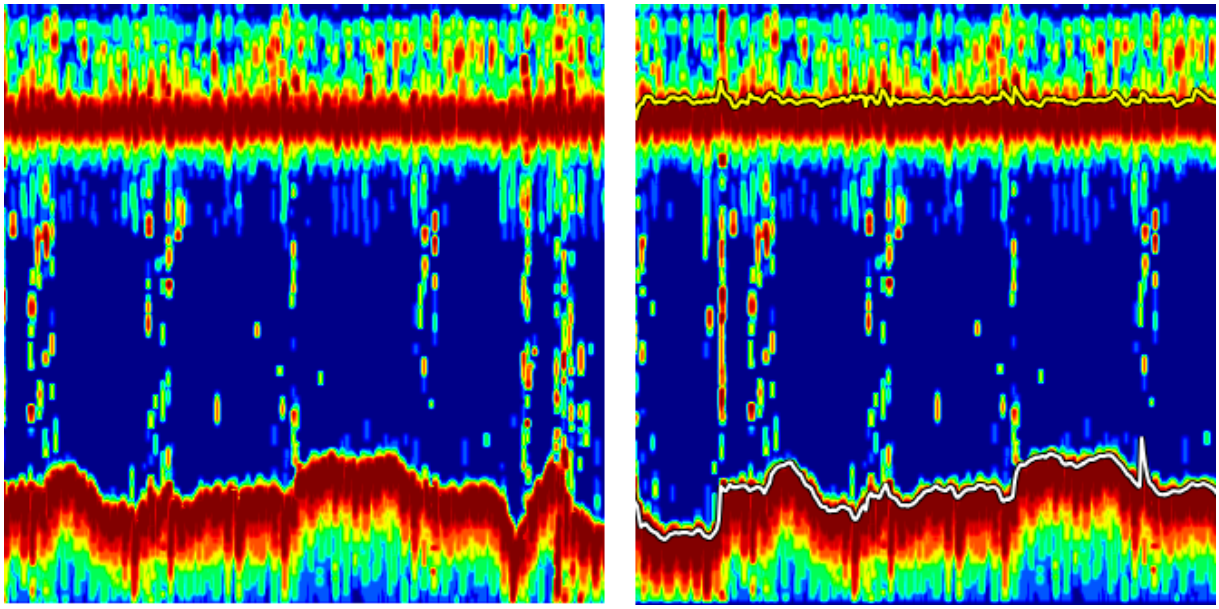
Displaying the Bottom and Footrope Lines

You can display lines on an echogram to mark the bottom of the trawl and the beginning of the seabed.

Procedure

Click ⚙, then click **Display > Bottom Line** and/or **Footrope Line**.

A yellow line appears at the bottom of the trawl and a white line appears at the beginning of the seabed. On the example below, the first echogram does not have a bottom line and the second has one.



Note: In sensors data, the opening is the distance between the sensor and the yellow line and the height is the distance between the sensor and the white line.

Changing the Distance from the Door Sounder to the Bottom

You can change the distance at which the Door Sounder echogram begins.

About this task

By default, the echogram is displayed beginning from the sensor position. You can increase the distance at which the echogram begins to:

- Have distance to bottom values beginning from the shoes, instead of from the sensor position.
- Remove the echo of the shoes from the echogram

Procedure

1. Click **Menu** ☰ **> Settings**, then go to the **Trawl** tab.
2. In **Doors > Distance from sensors to bottom**, enter the distance of the Door Sounder sensors from the door shoes.
   The echoes of the shoes do not appear anymore on the echogram.

   The image below shows the default echogram from Door Sounder sensors. You can see that the echoes of the shoes (**1**) appear above the echo of the ground (**2**).



The image below shows the echogram received from Door Sounder sensors when a distance is added. Now, you can only see the echo of the ground (**2**).

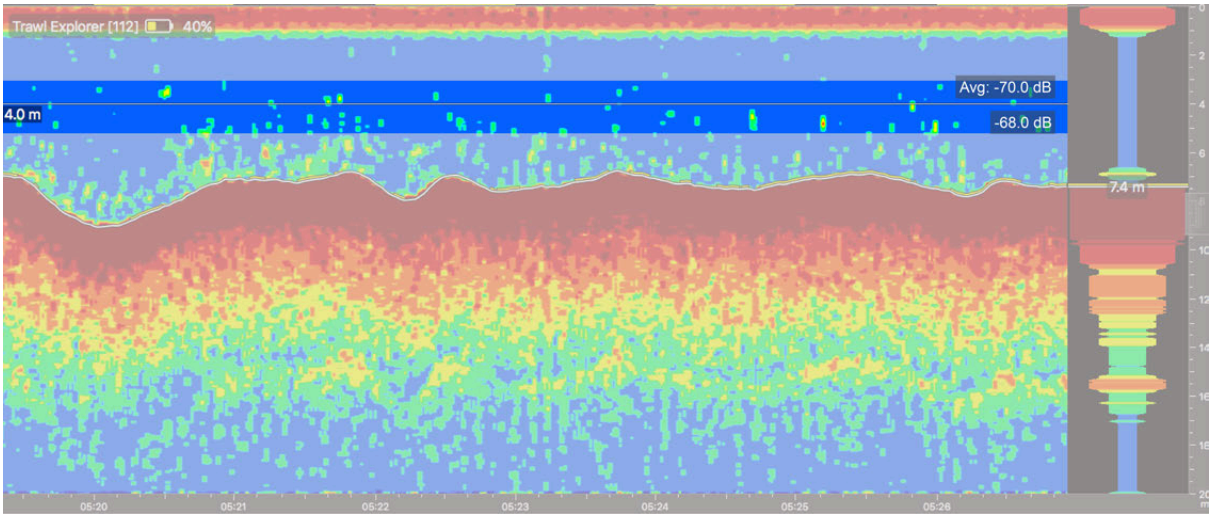


Adding a Range Marker

You can set a range marker at a given depth, for example if you need to ensure that your trawl net stays at this depth. It is called a Variable Range Marker (VRM).

Procedure

1. On the echogram, click **> Display > VRM**.
   The range marker is displayed on the echogram.



2. Click and drag the line to set its position.

Note: You may need to deactivate the **Customize** mode to be able to drag the line without moving the echogram component.

Displaying a Flowgram

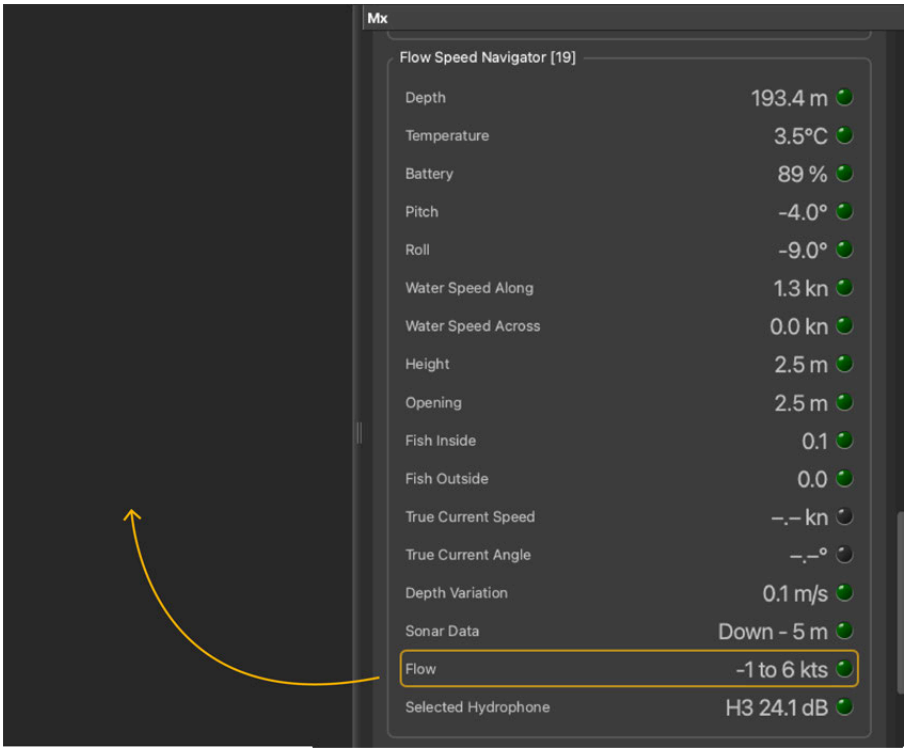
Use the flow data echogram to identify flow speed and variations.

Before you begin

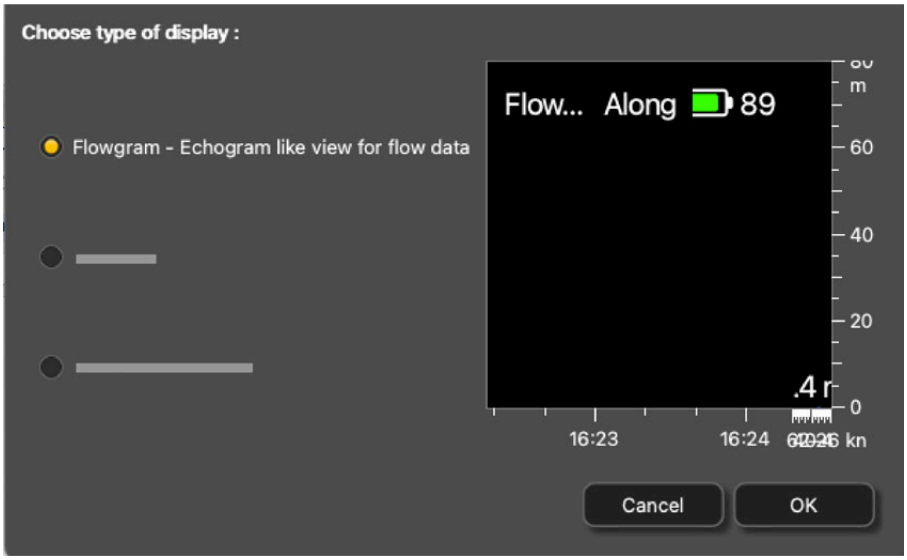
You must be in **Customize** mode to do this task.

Procedure

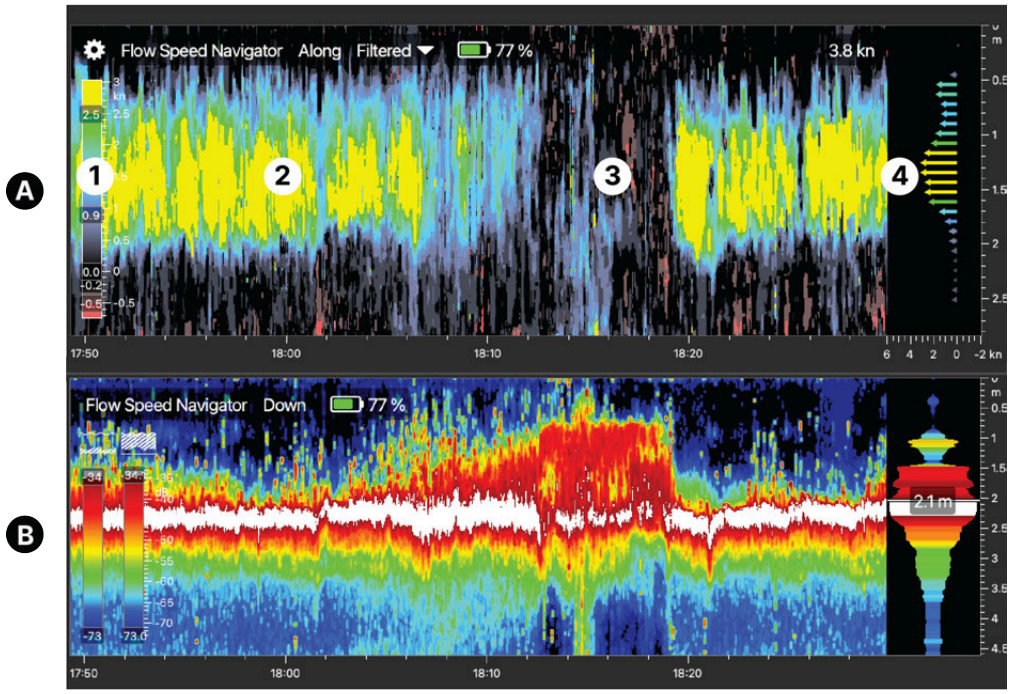
1. Open the control panels and drag **Flow** data from a Flow Speed Navigator to a page.



2. Select **Flowgram - Echogram-like view for flow data**.



The image below shows an example of display. You can combine this view (**A**) with sonar data echogram images (**B**) to see target detections.



A. Flowgram / **B**. Sonar data echogram

1. Color palette: set colors to specific ranges of flow speeds.

2. Example of flow entering inside the trawl.

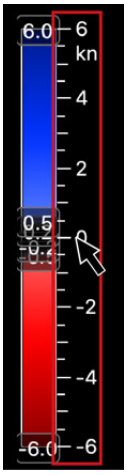
3. Example of targets moving at the same speed as the sensor and trawl, probably trying to escape.

4. These arrows show the flow and target direction. In this example, towards the inside of the trawl.

About the speed values: a positive speed value means a flow or targets entering inside the trawl. A negative value means targets going out.

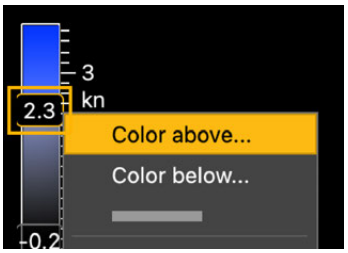
You can customize the color palettes the following way:

3. To zoom in and out of the flow speed scale, place the mouse cursor over the scale and scroll.

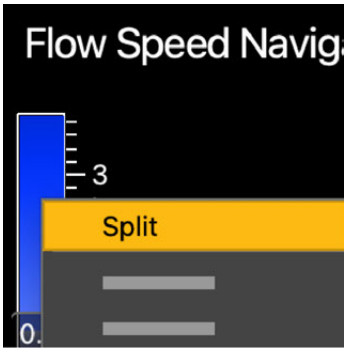


4. Click and drag a handle to adjust the ranges of flow speed colors.

5. To change colors corresponding to ranges of flow speed:
    a. Click one handle.
    b. Click **Color above** or **Color below** and select a color.

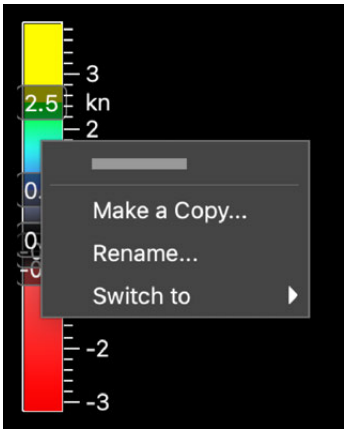


6. Split the palette into different areas to assign colors to specific ranges of flow speeds:
    a. Right-click the bar and click **Split**.



    b. A new handle appears. You can give colors to the area above or below.
    c. To remove a handle, right-click the bar and click **Remove Split**.

7. To manage the palettes, right-click the palette, then:



a. Click **Make a Copy** to save your customized palette.
b. Click **Rename** to change its name.
c. Click **Switch to** to switch to a default or previously saved palette.

Zooming on Timestamp and Distance Scale

In echograms and history plots, you can zoom in and out on the distance scale and timestamp and move them along.

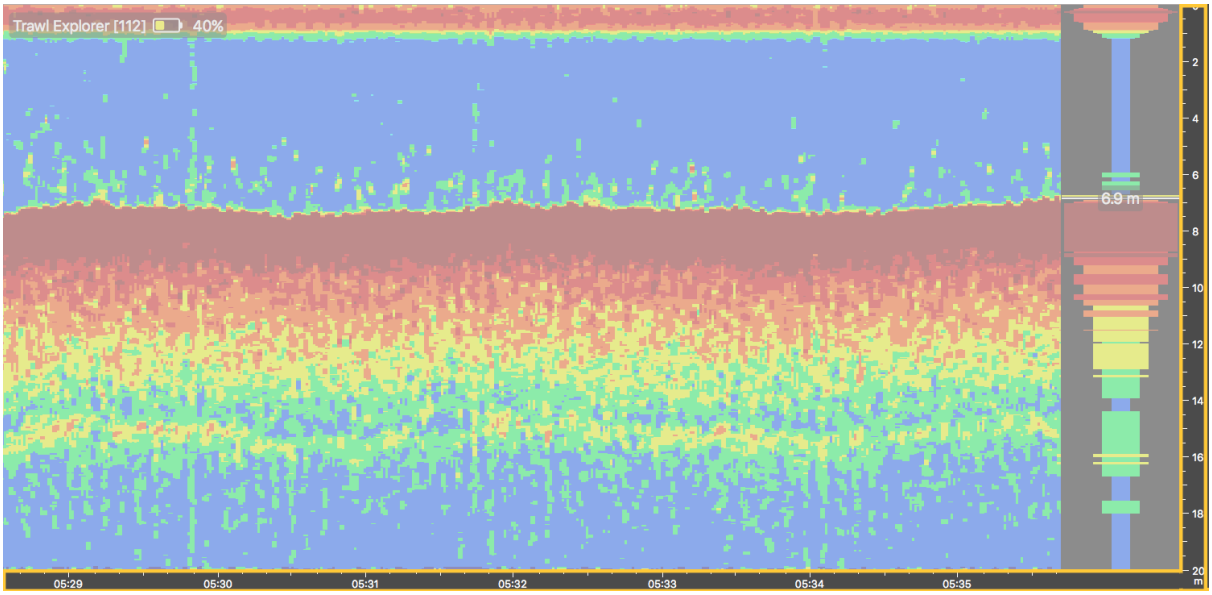
Procedure

1. To zoom in and out of the distance scale, place your cursor on the vertical axis of the echogram or history plot and scroll.

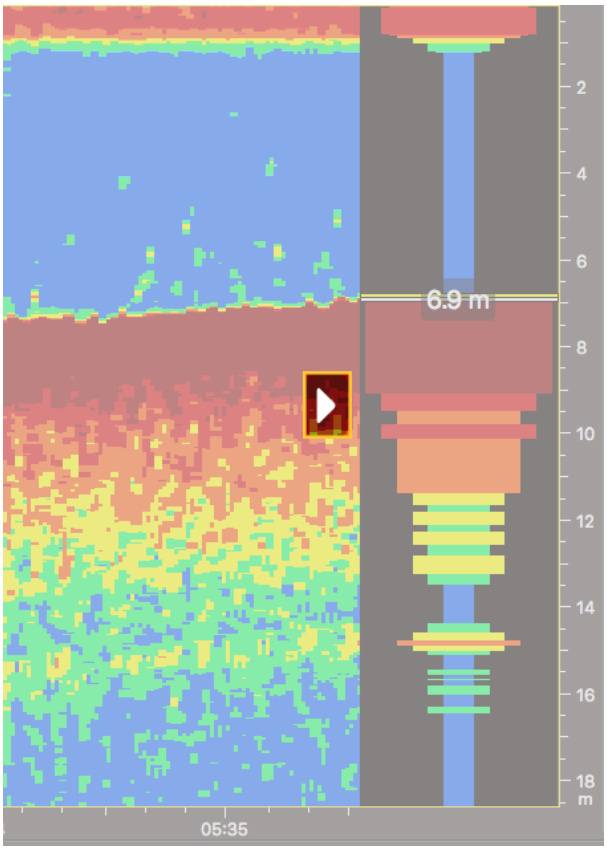
2. To zoom in and out of the time stamp, place the cursor on the horizontal axis and scroll.

   Note: When two echograms or two history plots are displayed one above the other, their time stamp is synchronized by default. So if you zoom on one, the other will also zoom. If you do not want the echograms or plots to be synchronized, click **> Time Scale** on the top left corner of the echogram or right-click the plot, then deselect **Time Synchronization**.

3. Drag the scale to move along the time stamp or distance scale.



4. To come back in the time stamp to data currently being received, click the arrow on the right.



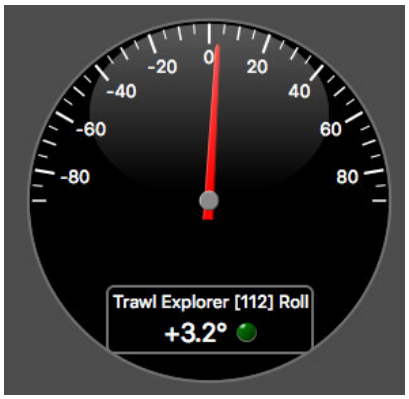
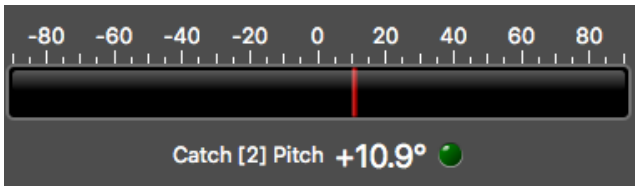
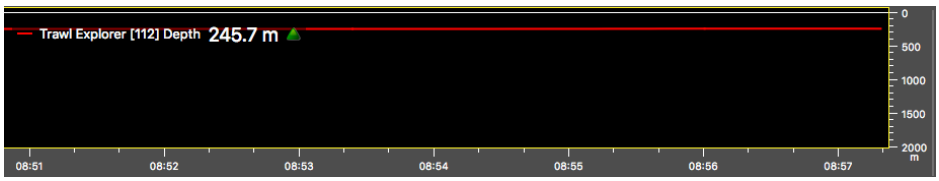
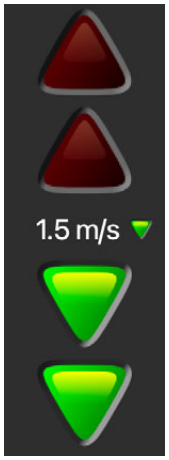
Sensor Numerical Data

Data such pitch and roll, temperature, depth can be displayed in dials, gauges, history plots or text format.

Display Types

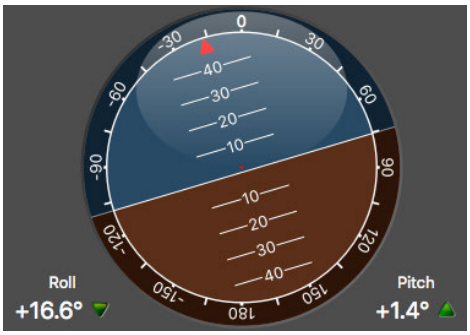
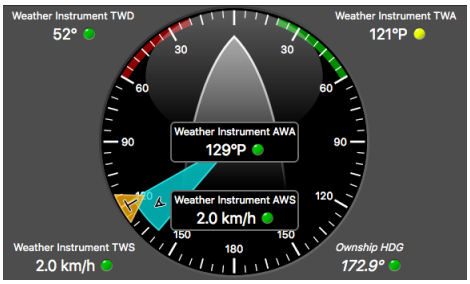
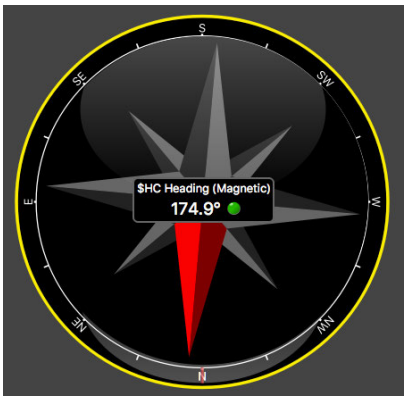
You can choose between different types of display in the customization panel or when you drag numerical data to a page.

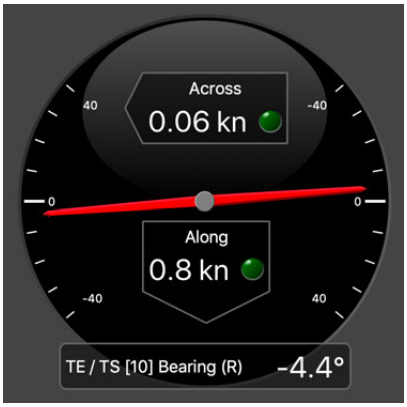
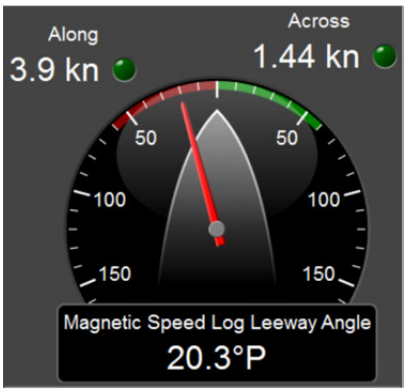
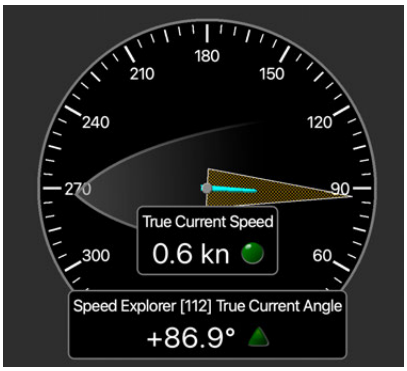
Generic Data Displays

Dial	
Gauge	
History Plot	 **Tip:** Right-click the scales to change the size of their values.
Label	
Trend gauge	

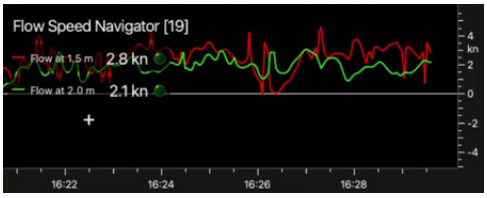
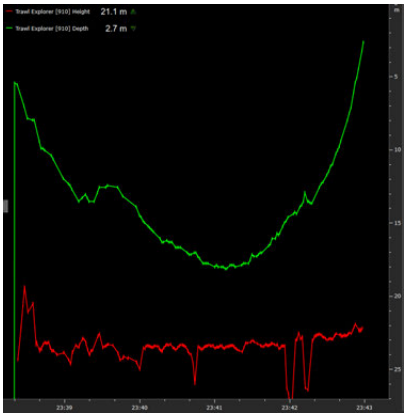
	Indicates when the value of depth or spread variation per second is increasing or decreasing. • With depth data, this gauge is particularly useful to monitor the descent speed of seine sensors. • With spread data, use it to follow the variation of the distance between the doors. Right-click the gauge to set the threshold at which the gauge lights on.

Data-Specific Dials

Name	Types of data	Illustration	Details
Horizon	• Pitch • Roll		Displays horizon line according to pitch and roll. Red dot in the middle indicates pitch angle and red arrow on top indicates roll angle.
Wind dial	• True wind speed • True wind direction • True wind angle • Apparent wind angle • Apparent wind speed		Vessel is displayed in the middle in grey. Apparent wind angle is displayed in blue and true wind angle in orange.
Heading dial	• Heading (True) • Heading (Magnetic)		Red arrow displays North. Cardinal points are displayed around.

Name	Types of data	Illustration	Details
Trawl Speed Dial	For trawl speed type sensors: • Along water speed • Across water speed		Bearing angle is negative when the sensor is oriented toward port and positive when oriented toward starboard.
Water Speed (WS) Dial	For speed log type of device, data received from NMEA inputs: • Water speed along • Water speed across		Leeway angle is displayed for port (P) or starboard (S). Vessel is displayed in the middle in grey.
True Current Speed (TCS) Dial	For speed type of sensors with across and along speed measurements. Displays: • True current speed • True current angle • Vessel's heading		Estimates the speed of the current inside the trawl entry or tunnel. • Vessel shape in the background shows the heading. • Yellow triangle shows the direction of the current. • Cyan needle's size changes according to the true current speed. • Graduations show the angle of the current and heading.

Data-Specific Plots

Name	Type of data	Illustration	Details
Flow Plot	Displays flow data from a Flow Speed Navigator sensor.		Flow values are displayed with a curve. Add flow values from different depth below the sensor using the **+** button.
Height Plot	Displays both height and depth data.		Height and depth data are displayed in a way that shows the descent of the sensor.

Changing the Display of Page Elements

You can change the title, font, unit of measure and arrangement of data displayed on pages.

Before you begin

You must be in **Customize** mode to do this task.

About this task

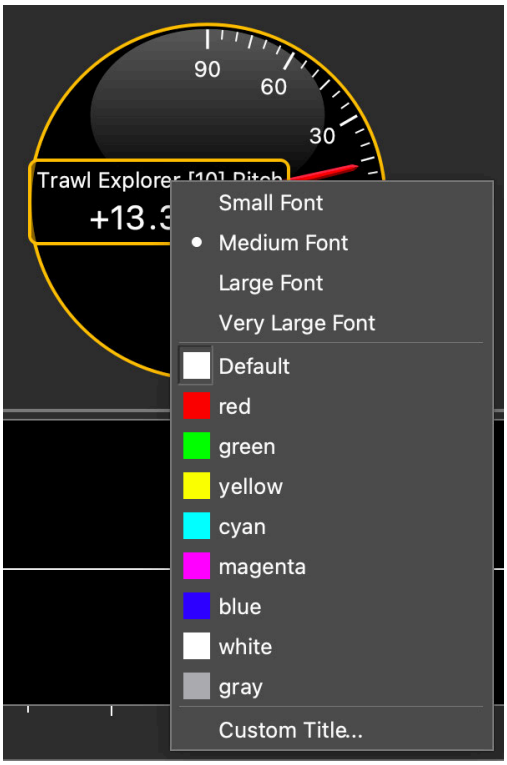
Changing the display of elements can be done on different areas:

- The title of the element
- The element itself (dial, gauge or history plot).

Procedure

1. To change the title, right-click the title and choose:
    - Font size
    - Font color: it changes only the color of numerical data, except for history plots where it changes the color of the line.

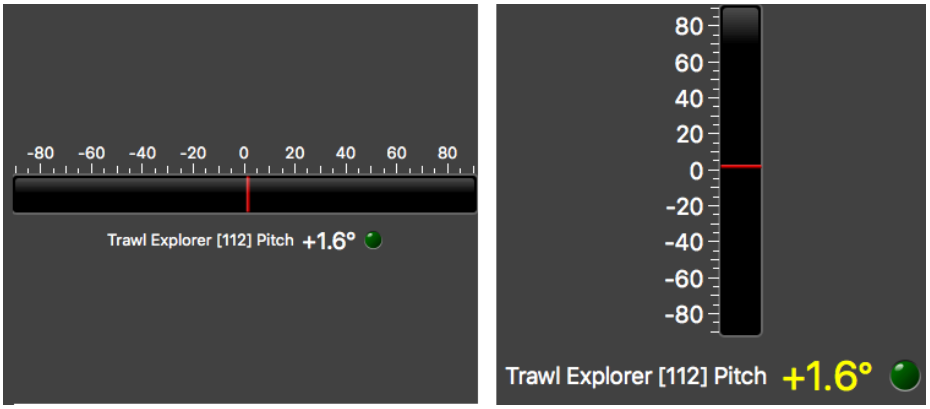
- **Custom Title** to change the default title.



2. To change the display of plot, gauge or dial, right-click the element and choose:

Option	Description
Dial	◦ Font size
Gauge	◦ Rotate ◦ Font size ◦ Units
History Plot	◦ Show raw data: useful to check if there are communication problems ◦ Show points: useful to see the interval of received data ◦ Show bars: if you use a seiner, useful to identify the different depths ◦ Vertical/horizontal
Text Display	◦ Font size ◦ Font color ◦ Units

In the example below, the gauge orientation has been changed to vertical, the font size of the units and title have been changed to large fonts and the font color to yellow.



3. To change the type of display, for example switching from a text label to a plot, right-click the data item and click **Change Type of View**.

What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ > **Customize** again.

Displaying Catch Monitoring

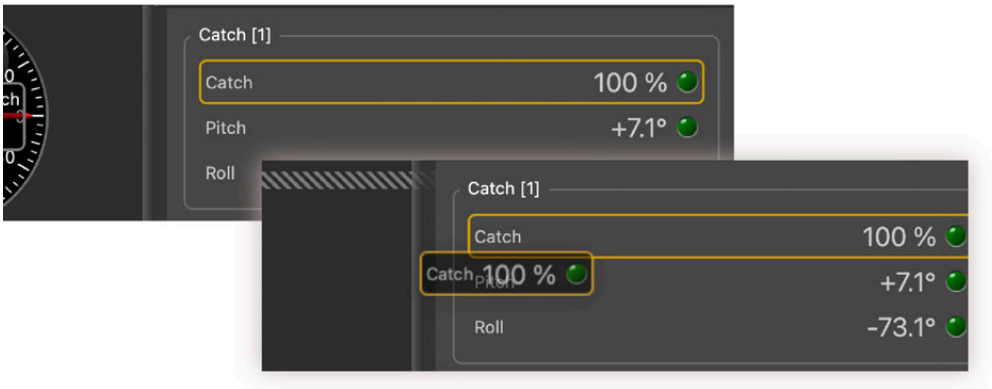
You can be alerted when the codend is full.

Before you begin

You must be in **Customize** mode to do this task.

Procedure

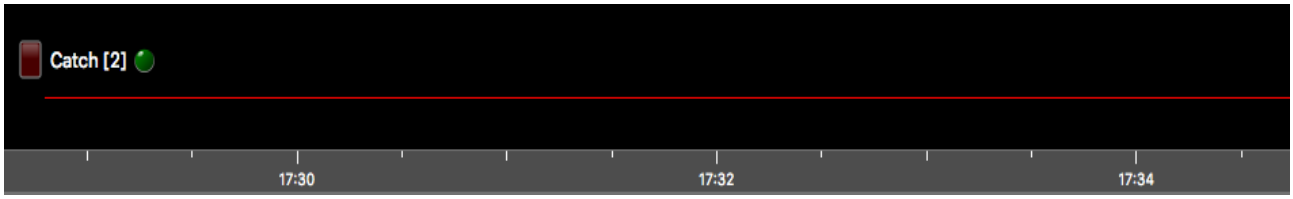
1. Open the control panels and drag **Catch** data to a page.



2. In the **Choose type of display** dialog box, select **History Plot**.

Results

When there is no catch the history plot is:



When the codend is full:



What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ > **Customize** again.

Displaying Single Trawl Spread

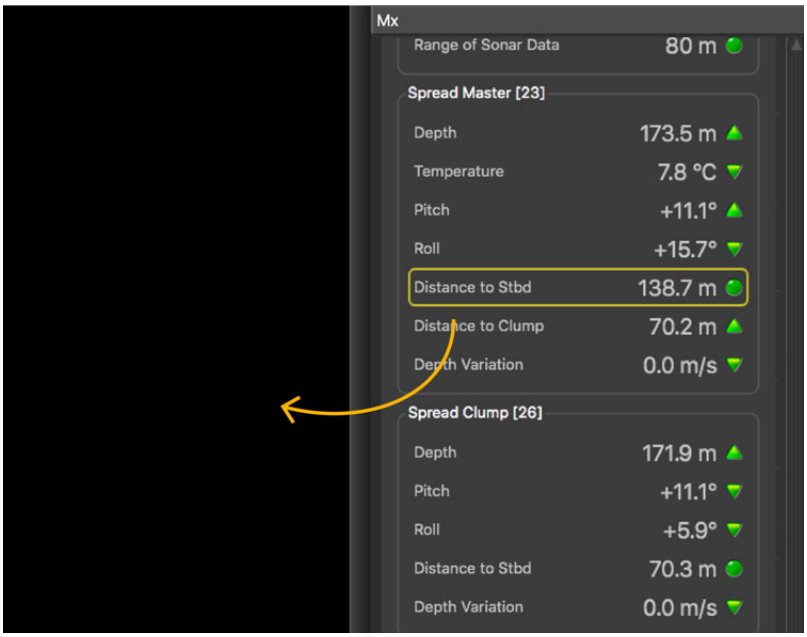
If you have a trawl with door sensors, you can display a plot to see the distance between the trawl doors. For twin trawls, you can also see the distance between both doors and the clump.

Before you begin

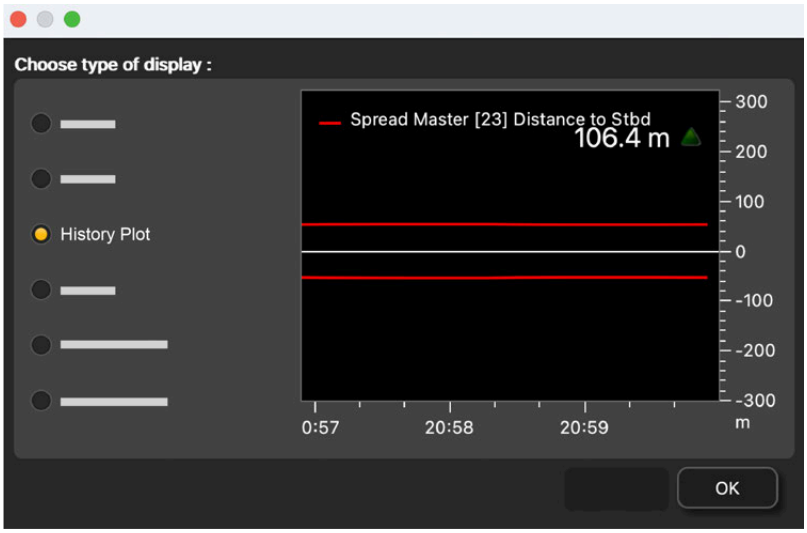
You need to have Spread sensors that send distance between port and starboard doors.

Procedure

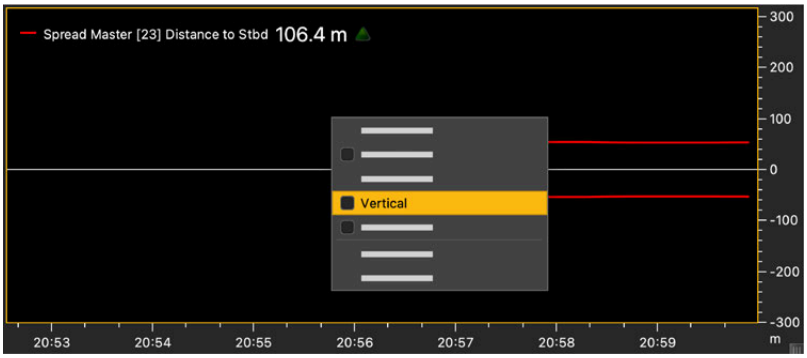
1. Open the control panels and from the **Mx** tab, click + hold distance data from spread sensors such as **Distance to Stbd** from a **Spread Master** and drag it to the page display.



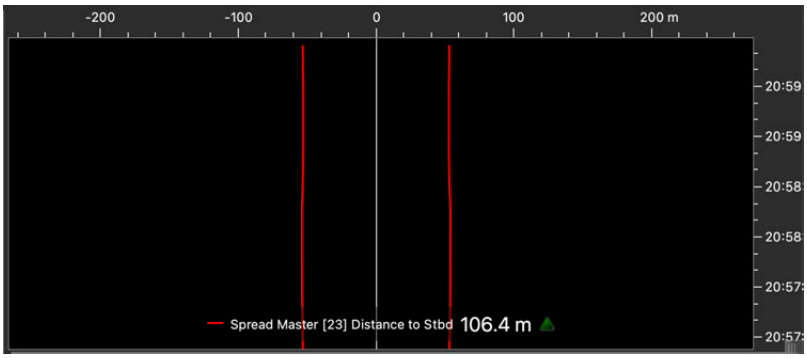
2. In **Choose type of display**, select **History Plot**.



3. Right-click the history plot and select **Vertical**.



The history plot becomes vertical. You can see the distance between the port and starboard door.



Displaying Twin Trawl Spread

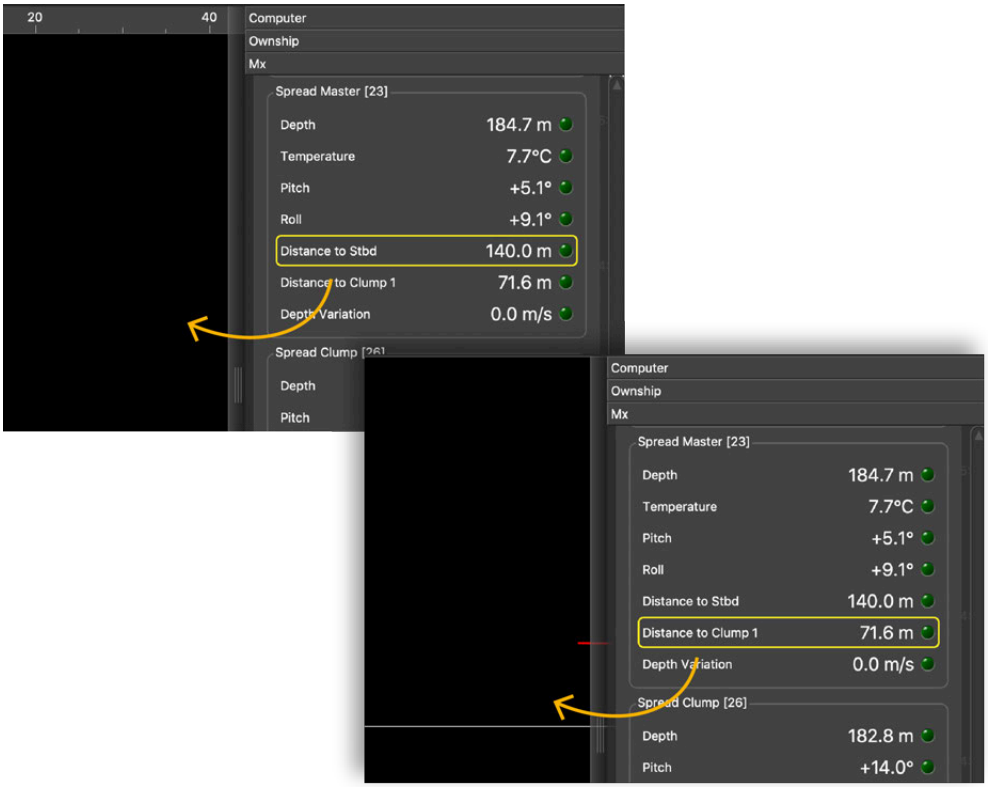
You can display a diagram of twin trawl spread in order to see the distance between the port and starboard doors, and between the clump and port/starboard doors. This way, if the trawl is asymmetric you can adjust accordingly and see live results very easily.

Before you begin

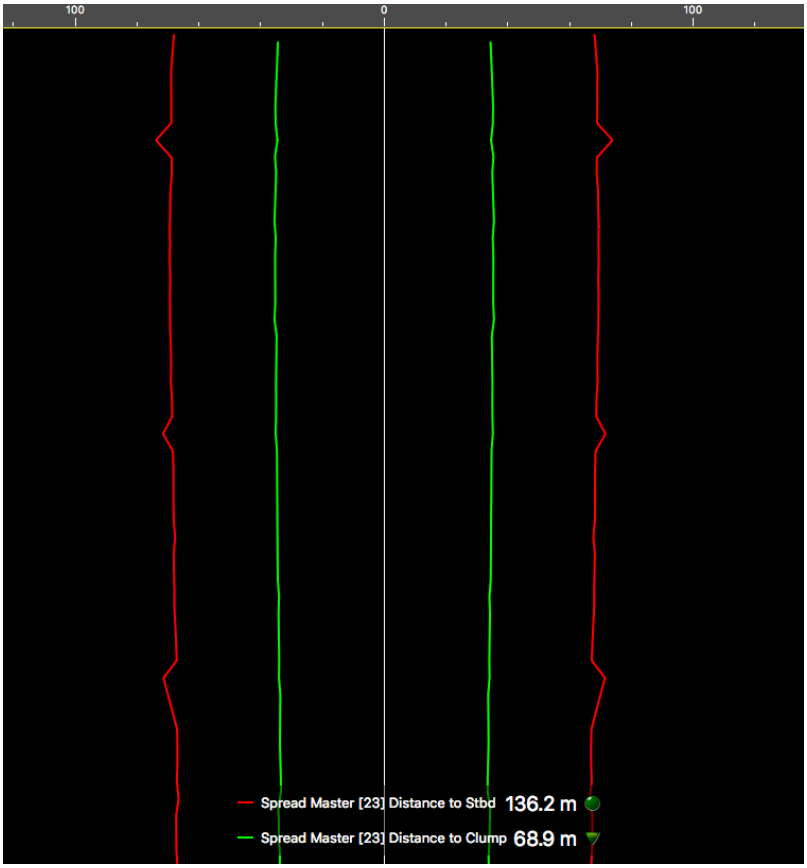
- You must be in **Customize** mode to do this task.
- You need to have twin trawls and door sensors with dual or triple distance option.

Procedure

1. If you have twin trawls with **2 measured distances**, drag to the page the Spread Master **Distance to Stbd**, then drag **Distance to Clump** above the plot of the distance to starboard. Right-click the plot and click **Vertical**.

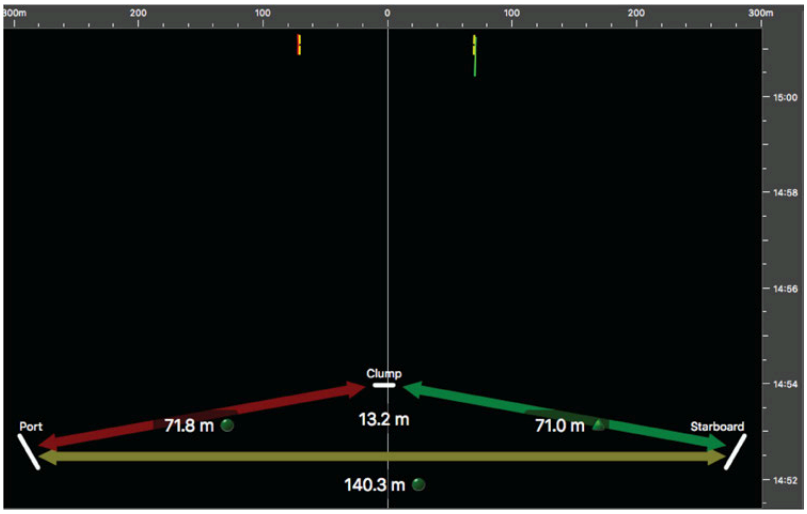


Distances between the port door and starboard door and between the port door and clump are displayed.

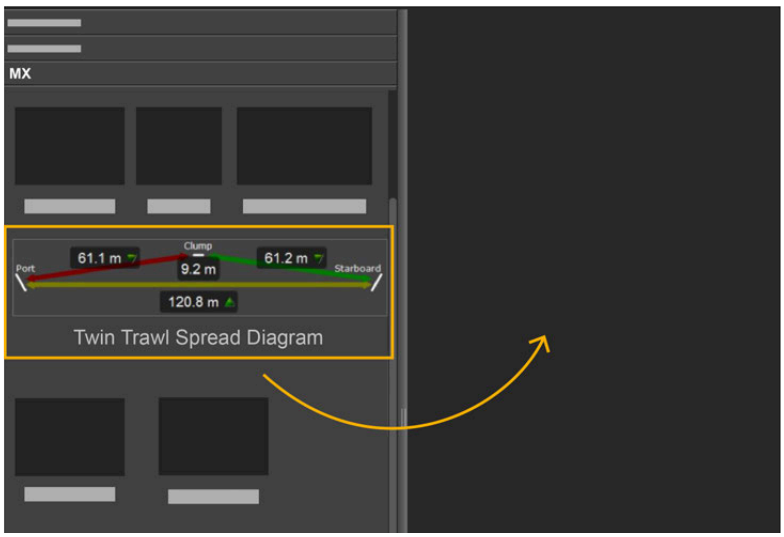


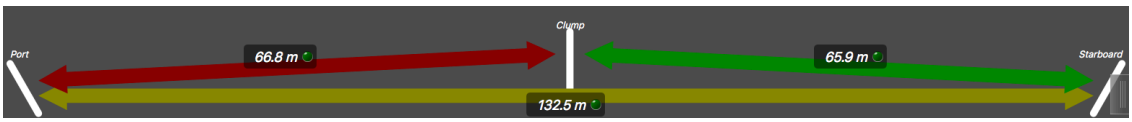
2. If you have twin trawls with **3 measured distances**, open the **Customize** panel and go to the **Mx** tab.
    - Click + drag a **Twin Trawl Spread Plot** to the page. You can know if the clump is centered when the yellow dashed line is above the red and green lines.





- Or click + drag a **Twin trawl Spread Diagram** to only display the diagram.





Now you can see the distances between:

- port door and starboard door,
- port door and clump,
- clump and starboard door.

Note: Right-click the plot and click **Single Trawl Spread Plot** if you need to switch to single trawl.

What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ > **Customize** again.

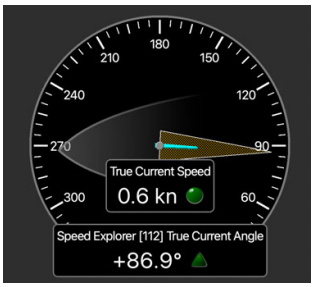
Displaying True Current Speed Data

When you have speed sensors sending along and across water speeds, you can also display the estimated current speed and angle flowing inside the trawl entry or tunnel.

Procedure

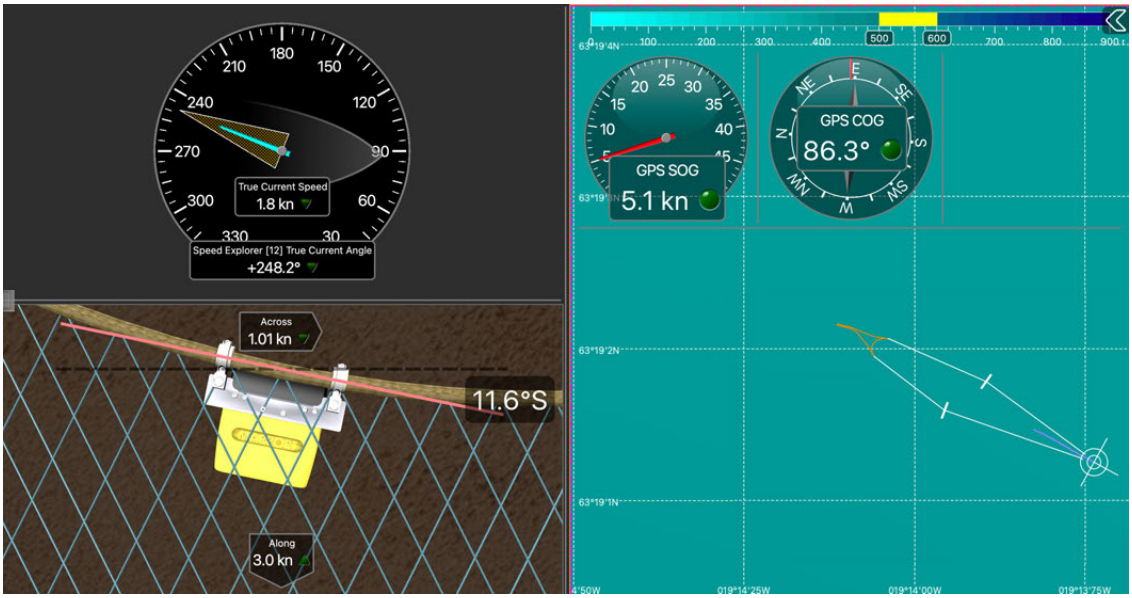
1. Open the customization panel.
2. In the **MX** tab, click + hold **TCS Dial** and drag it to a page.



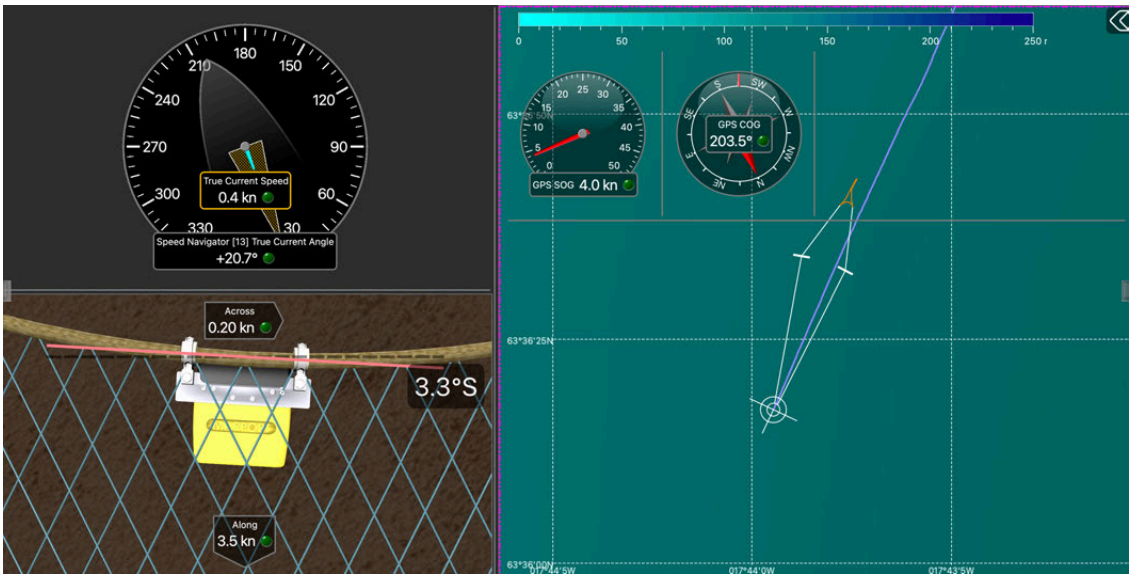


- Vessel shape in the background shows the heading.
- Yellow triangle shows the direction of the current.
- Cyan needle's size changes according to the true current speed.
- Graduations show the angle of the current and heading.

- In this example, the needle goes toward the port side of the vessel shape. It means there is a side current flowing toward port.



- In this example, the needle aligns with the vessel shape. It means the current goes straight into the trawl.



3D Views

You can display 3D views of different elements from the system, for example the trawl doors or trawl speed sensors.

Using the MultiTrawl View

You can display data from door spread sensors on a 3D view of the trawls and doors.

Displaying the MultiTrawl View

Before you begin

- Go to **Menu** ☰ **> Settings > Trawl**, then select **Auto** to automatically detect the number of trawls or select manually the type of trawl gear in use. If you change the trawl gear, change this setting accordingly.

Procedure

1. Click **Menu** ☰ **> Customize** and enter the password `eureka`.
2. Open the **Customize** panel on the left side of the screen, then drag **MultiTrawl** to a page.

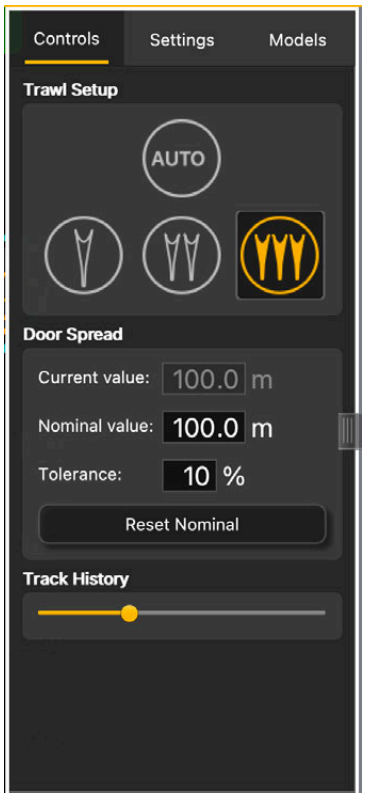


3. Click the arrow on the right side of the view to show the display options. See **Display Options (on page 77)**.

Display Options

You can change the display of the **MultiTrawl** using customization panels. Right-click the view to open them.

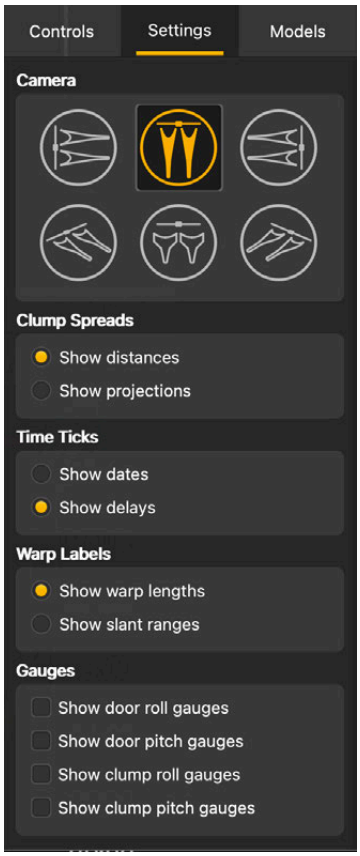
Controls



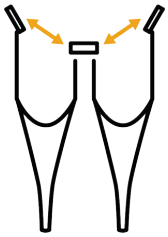
- **Trawl Setup**: select **Auto** to automatically detect the number of trawls or select manually the type of trawl gear in use. If you change the trawl gear, change this setting accordingly.
- **Door Spread**:
  - **Current value**: current total spread distance.
  - **Nominal value**: total spread distance you want to have. If the value of the current distance becomes larger or smaller than the nominal value, the alignment axis appears in red.
  - **Tolerance**: tolerance threshold between the current and nominal values.
- **Reset nominal**: if the current spread distance is correct, click to make this distance the nominal value.
- **Track History**: zoom in and out of the time scale of the trawl tracks.

Important: To have correct door spread values displayed on Scala2, you need to be careful when you reduce the number of trawls. See **Changing the Number of Trawls (on page 86)**.

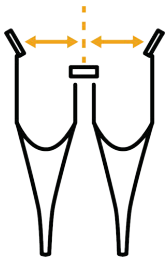
Settings



- **Camera**: change the viewing angle of the 3D view.
- **Clump Spreads**:
  - **Show distances**: real values of spread between two door sensors.



  - **Show projections**: calculated values of linear spread between door sensors. These values have a yellow dot instead of a green dot.

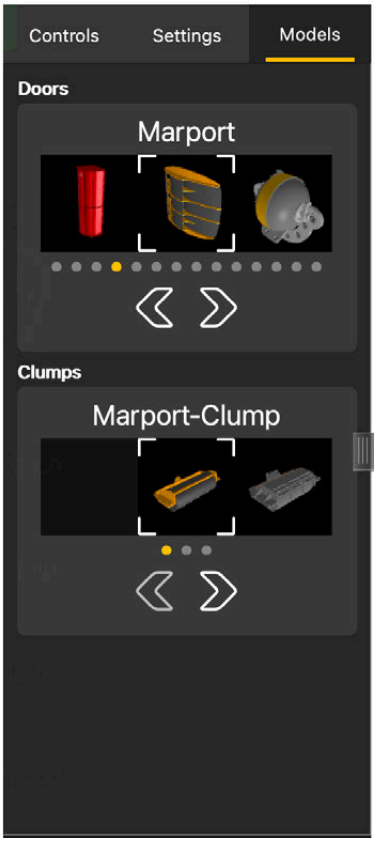


Note: Spread distances and projection distances should be the same. If not, it means the doors or clumps are not aligned.

- **Time Ticks**: select **Show dates** to show the current time on the timescale or **Show delays** to show the time that has elapsed since the trawl was put in water.

- **Warp Labels**: display the warp lengths received from a winch control system or the slant distance received from a Duplex sensor.
- **Gauges**:
  - Display angular gauges to help with door or clump pitch and roll monitoring.

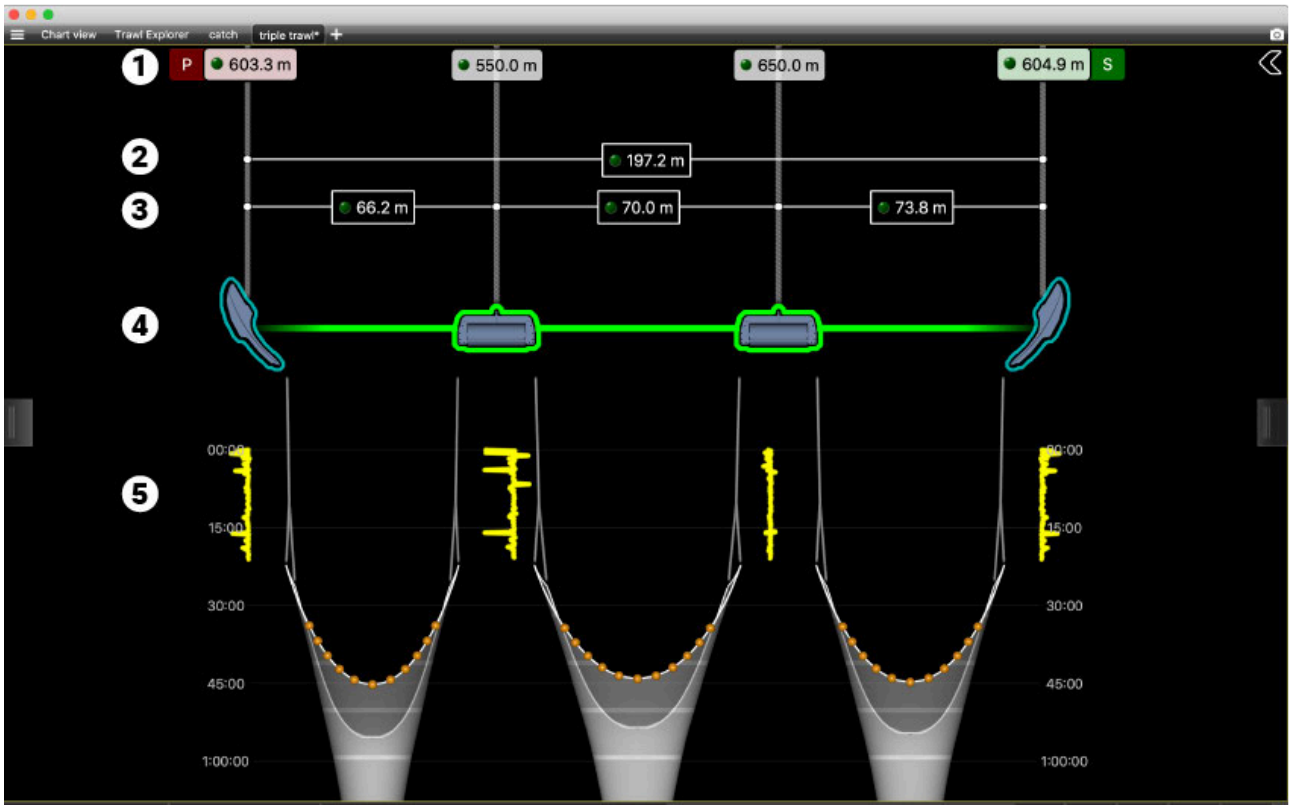
Models



You can change the model of trawl doors or clumps.

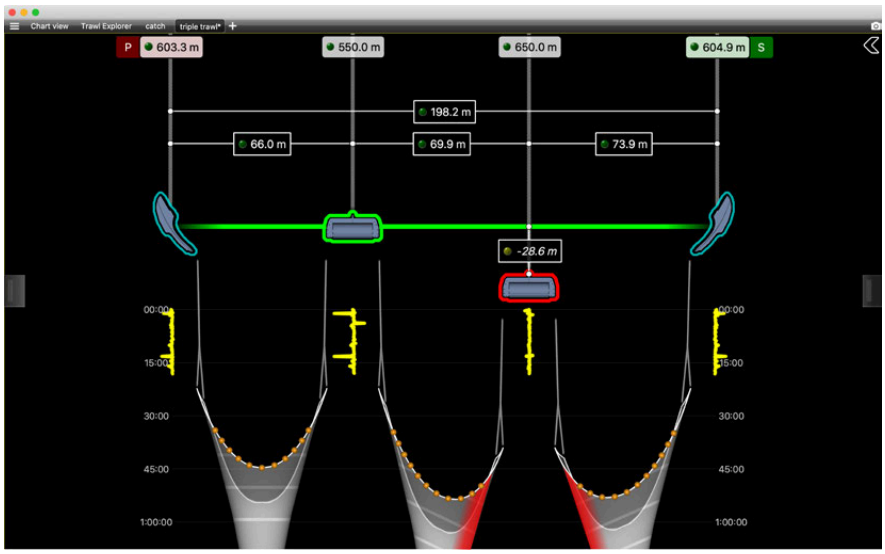
Click the arrows to select the model. The 3D view will change accordingly.

Understanding the MultiTrawl View

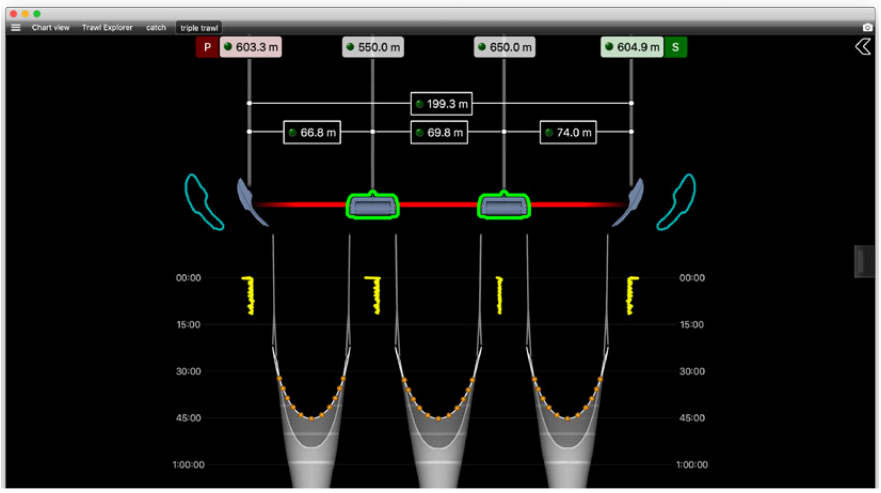


1. Warp lengths, received from a winch control system using NMEA sentences.
2. Total spread distance.
3. Spread distances between doors and clumps (or between doors for a single trawl).
4. 3D representation of the position of the doors and clumps. Alignment is correct when the doors are inside their outline, clumps are framed in green and axis is green.
5. Track of the trawl doors and clumps. Timescale is on both sides of the trawls. Timescale can show the current time or the time that has elapsed since the trawl was put in water. In this example, the elapsed time is displayed.

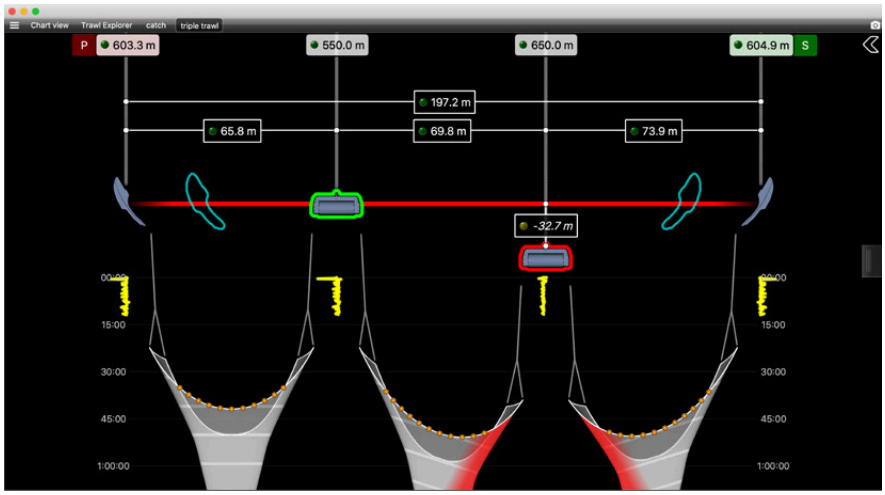
Examples of data received



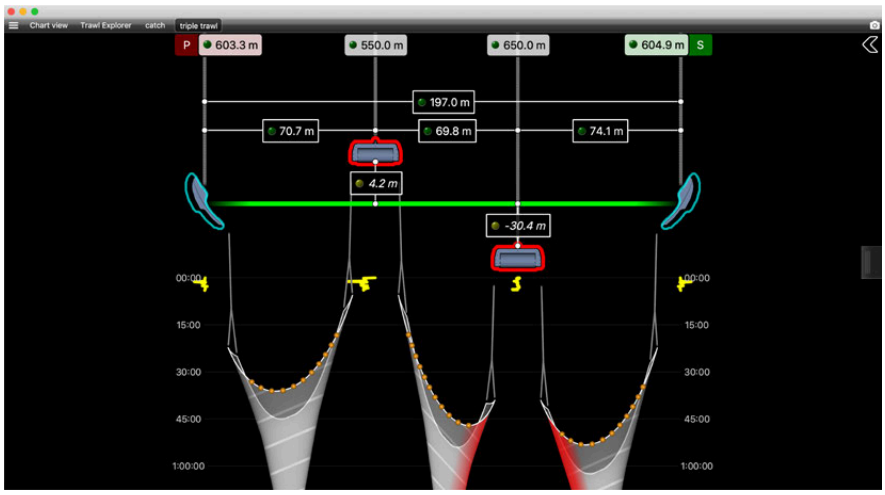
When a door or clump is out of alignment, it is displayed in red. The distance from the alignment axis is displayed above.



In this case, the current spread distance is inferior to the nominal spread distance that was set. Doors are shown out of their expected position and axis is in red.



In this case, the current spread distance is superior to the nominal spread distance. One of the clump is out of alignment.



In this case, both clumps are out of alignment.

Important: If you do not receive warp lengths, Scala2 is not able to show the correct position of the clumps. By default, Scala2 will display the clumps in a static position out of the alignment axis, closer to the vessel.

Using the MultiDepth View

You can display a 3D view showing the trawl gear and the echogram images received from door sensors with echograms.

Displaying the MultiDepth View

Before you begin

Go to **Menu** ☰ **> Settings > Trawl**, then select **Auto** to automatically detect the number of trawls or select manually the type of trawl gear in use. If you change the trawl gear, change this setting accordingly.

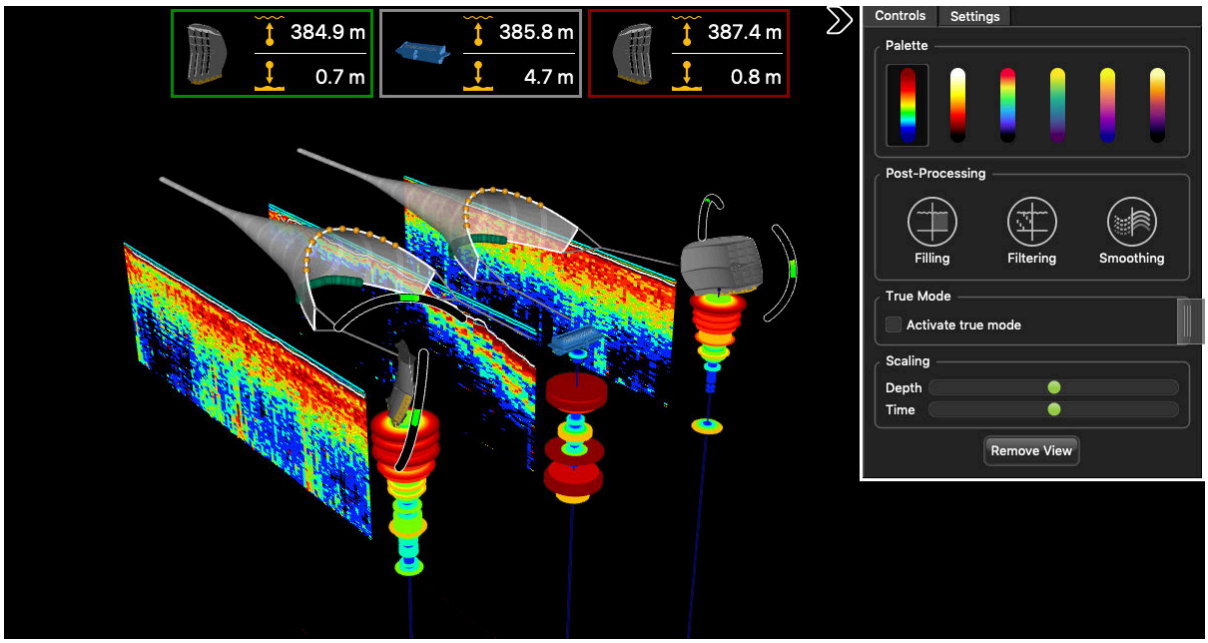
Procedure

1. Click **Menu** ☰ **> Customize** and enter the password `eureka`.
2. Open the **Customize** panel on the left side of the screen, then drag **MultiDepth** to a page.

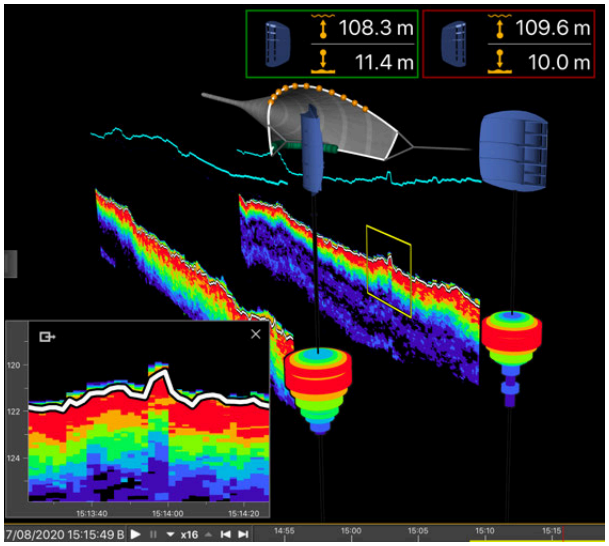


Results

The view is displayed. You can see the depth (distance from the sensor to the sea surface) and height (distance from the sensor to the seabed) of the sensors above the 3D view. Click the arrow on the right side of the view to show the display options.



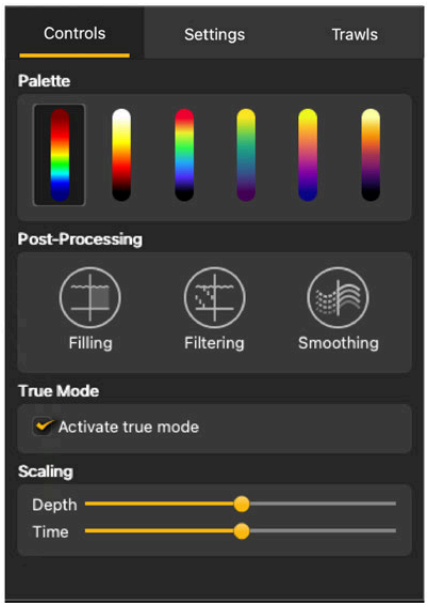
To zoom on a specific area of the echogram, deactivate the **Customize** mode, then right-click the echogram and move the mouse while you hold down the right button.



Display Options

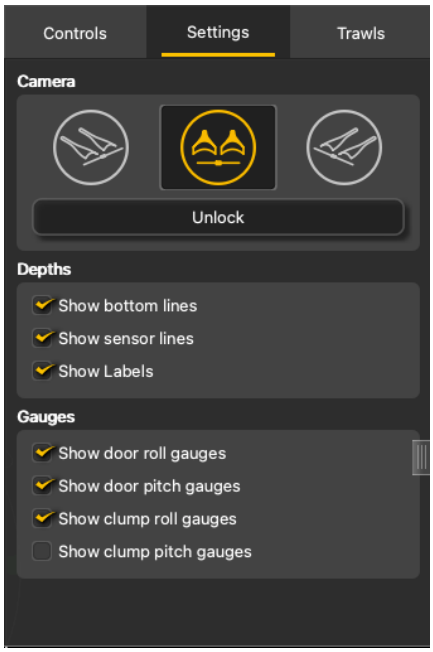
You can change the display of the **MultiDepth** view using a setting panel. Click the arrow on the right side of the view to show the display options.

Controls



- **Palette** : echogram color palettes
- **Post-Processing**
  - **Filling**: add a background to the echogram with a coordinate grid showing depth and time values.
  - **Filtering** : display filtered data. See .
  - **Smoothing**: set smoother transitions between the colors in the echogram.
- **True Mode**: select to see the echogram beginning from the water surface. If not selected, the echogram begins from the sensor position.
- **Scaling**: zoom in and out of the echogram depth or time.

Settings



- **Camera**:
  - Click the icons to change the viewing angle of the 3D view.
  - **Lock**/**Unlock**: unlock to use to mouse to change the viewing angle and lock to deactivate the mouse control.
- **Depths**:
  - **Show bottom lines**: show the detected seabed.
  - **Show sensor lines**: show the sensor position on the echogram.
  - **Show labels**: show the depth and height of the sensor above the 3D view.
- **Gauges**:
  - Display angular gauges to help with door or clump pitch and roll monitoring.

Trawls



Trawl Setup: select **Auto** to automatically detect the number of trawls or select manually the type of trawl gear in use. If you change the trawl gear, change this setting accordingly.

Important: To have correct door spread values displayed on Scala2, you need to be careful when you reduce the number of trawls. See **Changing the Number of Trawls (on page 86)**.

Note: To change the 3D models of the doors, clumps, or inner doors, go to **Menu** ☰ > **Settings** and select the models from the **Trawl** tab.

Changing the Number of Trawls

You need to remove specific clumps when reducing the number of trawls in water.

To have correct door spread values displayed on Scala2, you need to be careful when you reduce the number of trawls. Door sensors are configured to operate on specific locations on doors and clumps. If the composition of the trawl gear does not correspond to the configuration of the sensors, spread data will not be displayed.

Triple trawl



Distances sent by Master on port door

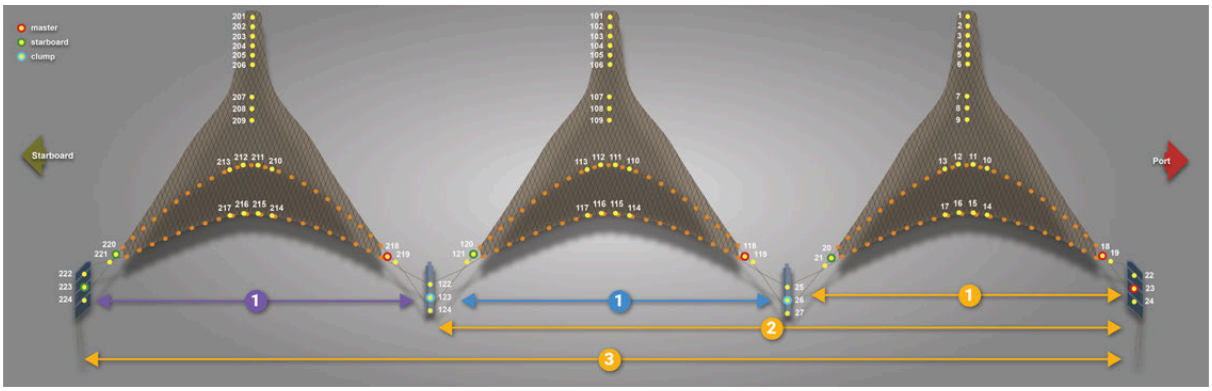


Distance sent by inner port clump

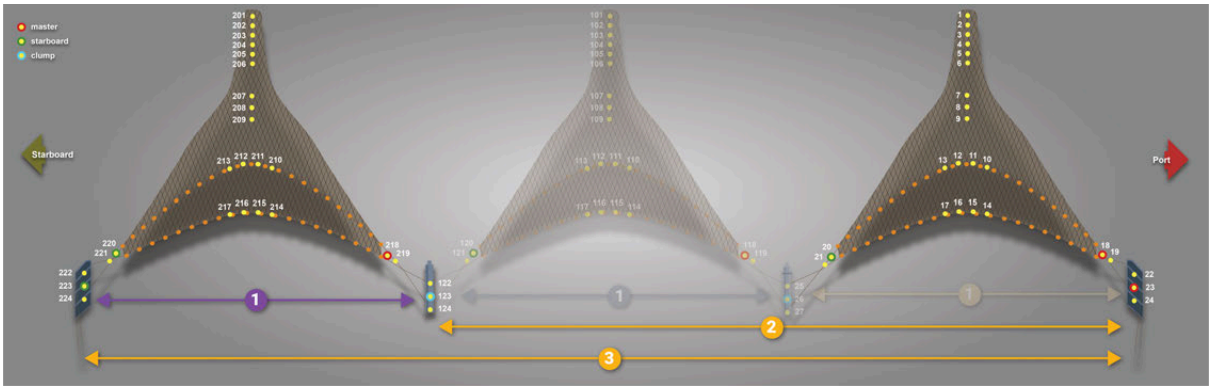


Distance sent by inner starboard clump

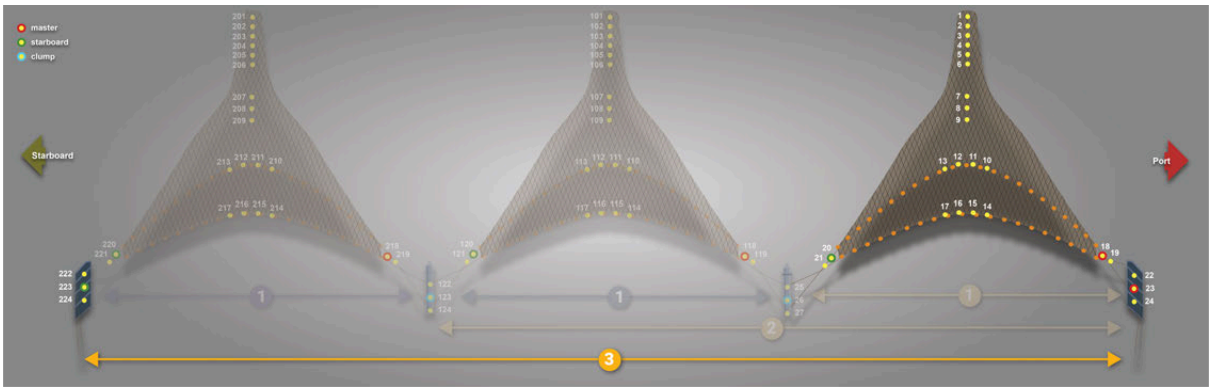
- Triple trawl:



- Triple to twin: keep the inner starboard clump in water.



• Triple to single: only keep the starboard and port trawl doors in water.



Quadruple trawl



Distances sent by Master on port door



Distance sent by inner port clump

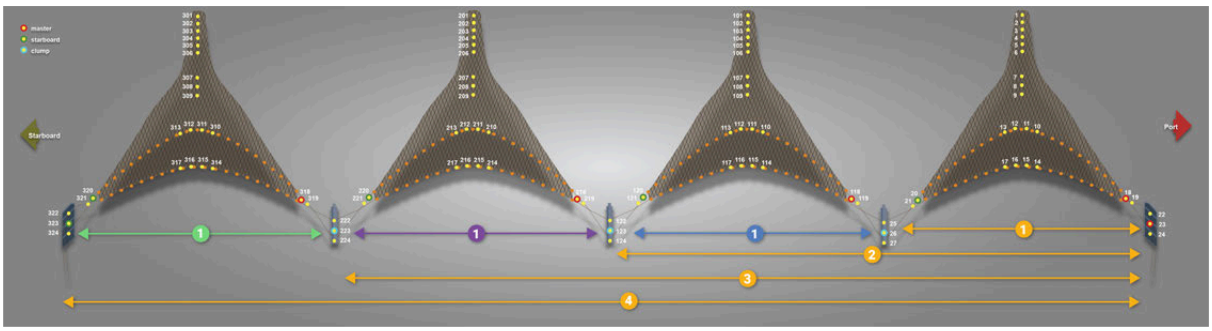


Distance sent by center clump

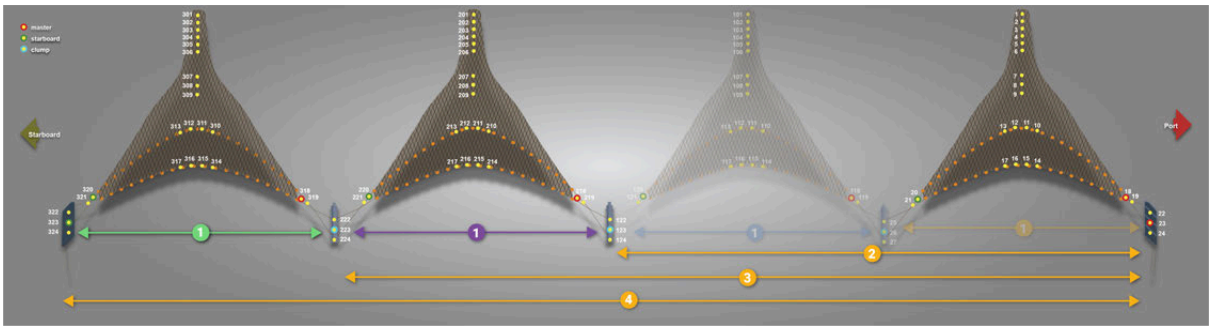


Distance sent by the inner starboard clump

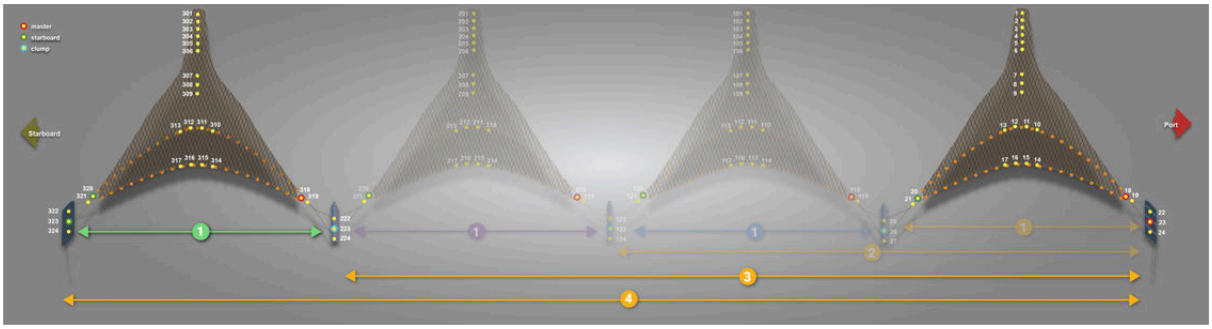
• Quadruple trawl:



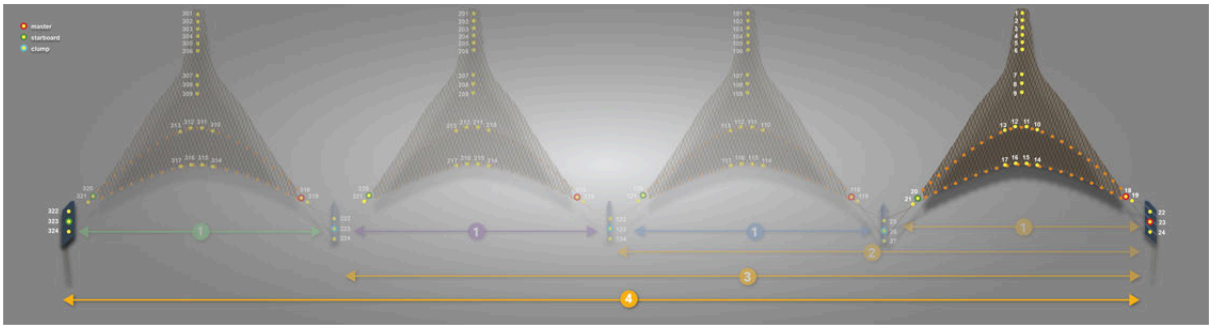
• Quadruple to triple: keep the center and inner starboard clump in water.



• Quadruple to twin: keep the inner starboard clump in water.



- Quadruple to single: only keep the port and starboard doors in water.



Penta trawl

 Distances sent by Master on port door

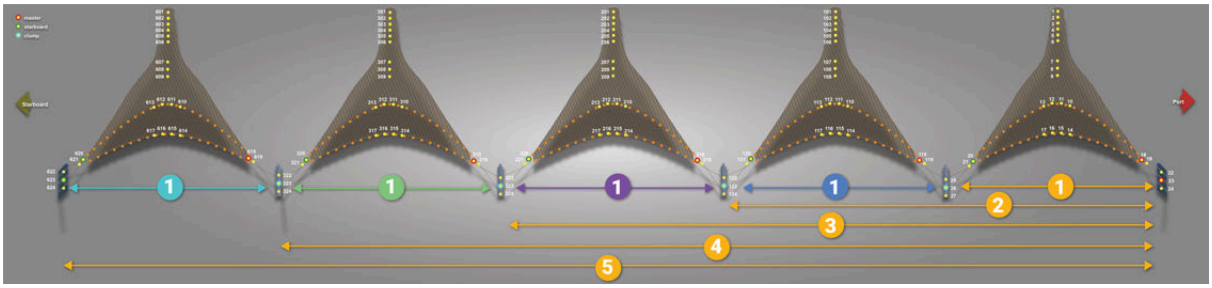
 Distance sent by inner port clump

 Distance sent by center clump

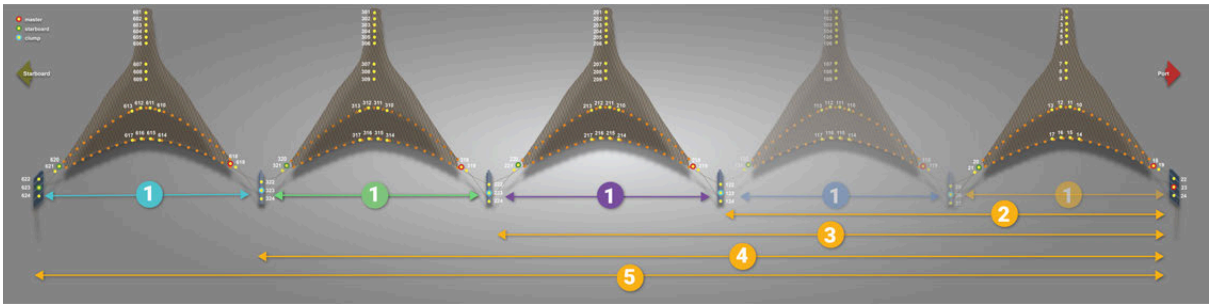
 Distance sent by the inner starboard clump

 Distance sent by the starboard clump

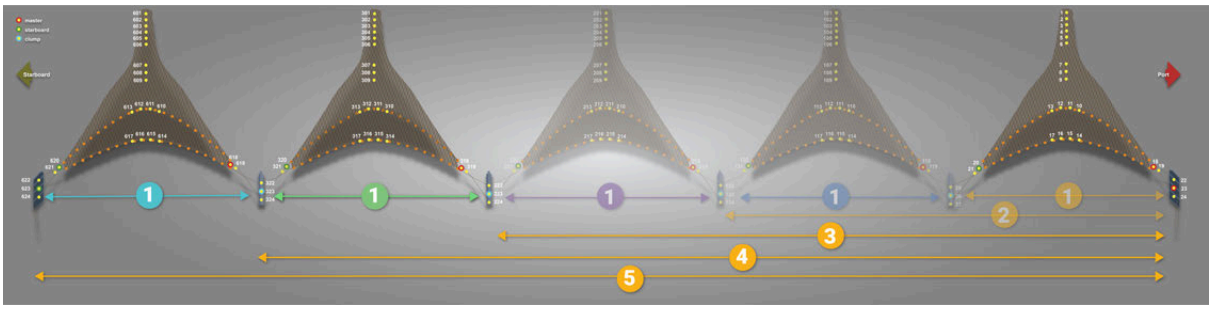
- Penta trawl:



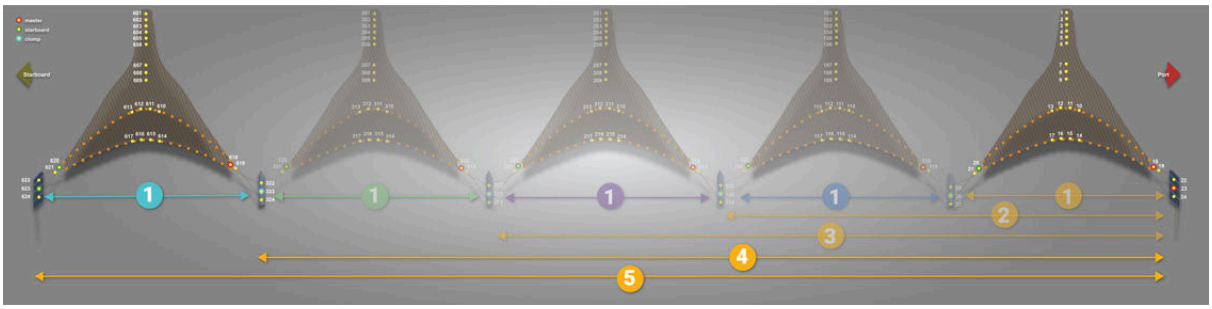
- Penta to quadruple:



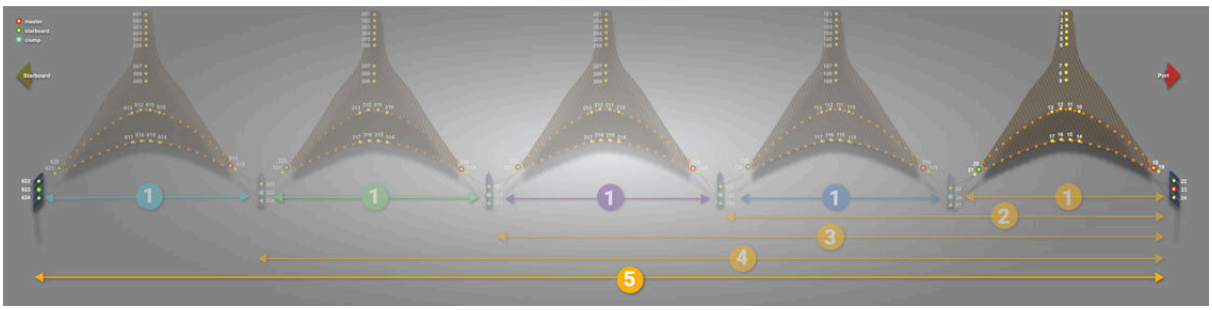
- Penta to triple:



- Penta to twin:



- Penta to single:



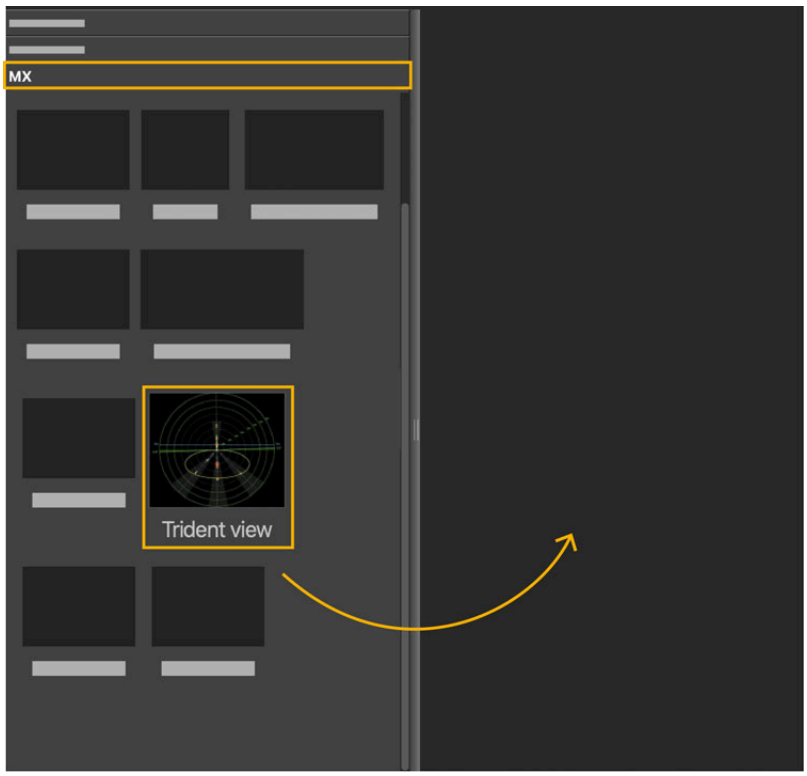
Displaying the Trident View

Trident Pro sensors have a dedicated 3D view, showing the echogram beams, the sounding range, the depth and roll values of the sensor.

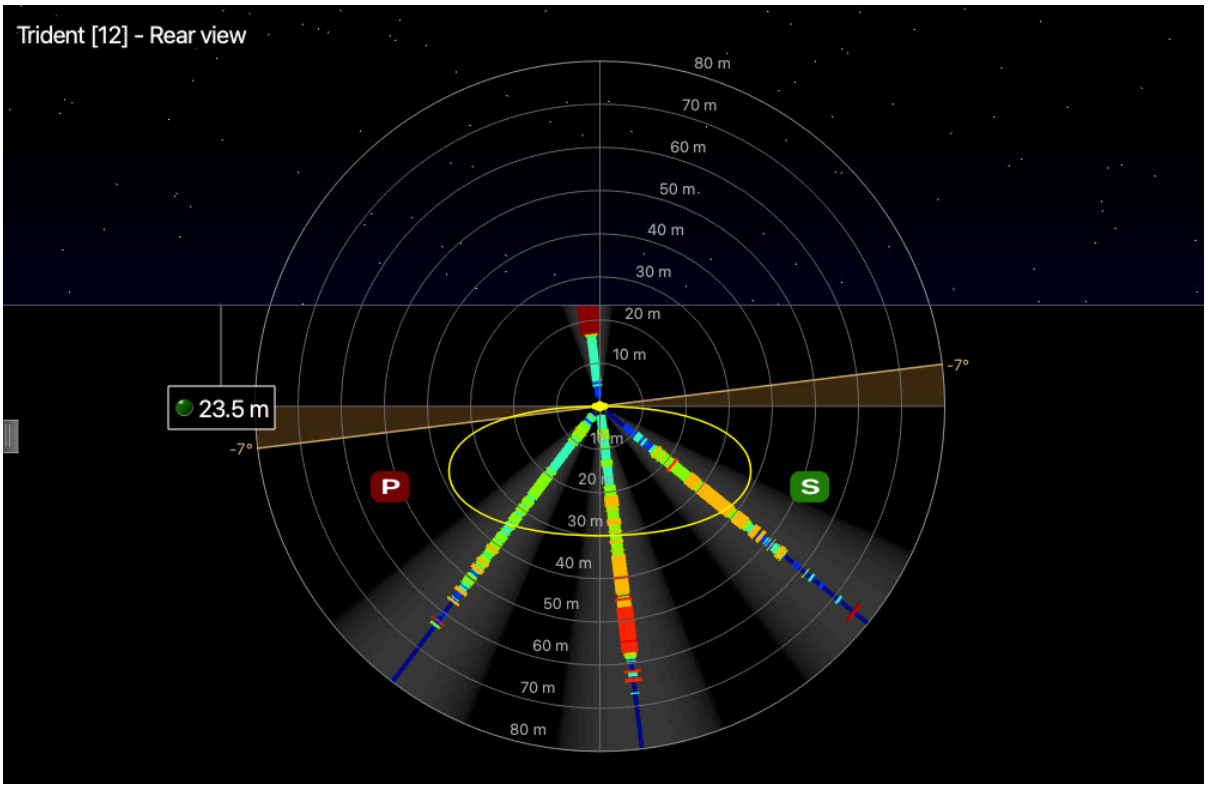
Procedure

1. Click **Menu** ☰ **> Customize** and enter the password eureka.

2. Open the **Customize** panel on the left side of the screen, then drag **Trident View** to a page.



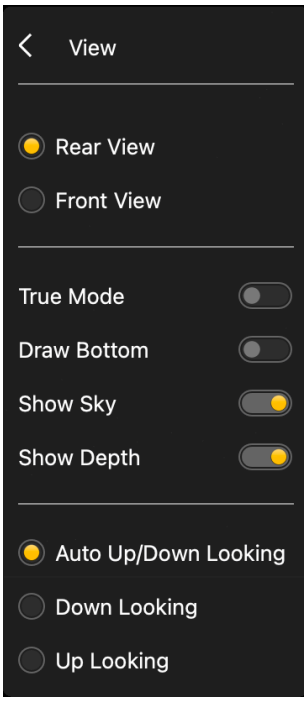
The view is displayed. Port and starboard sides are indicated. The roll values appear in red in the center of the view, on both sides of the sensor.



3. Click and drag inside the view to move it.

4. Click **Settings** on the top left corner of the view to show the display options.

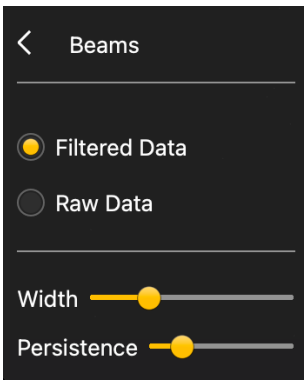
View



- Choose the viewing angle of the trawl between front and rear.
- **True mode**: the water surface is fixed so you can see the descent of the sensor.
- **Draw bottom**: show the detected seabed.
- **Show sky**: display a sky above the sea level.
- **Show depth**: display the distance between the sensor and the sea level.
- Looking orientation: **Auto Up/Down Looking** automatically sets the looking orientation according to the nodes:
  - Sensors placed on the footrope have an up-looking view (for example, nodes 14 to 17 on a single trawl).
  - Sensors placed on other locations such as the headrope or tunnel have a down-looking view (for example, nodes 7 to 13 on a single trawl).

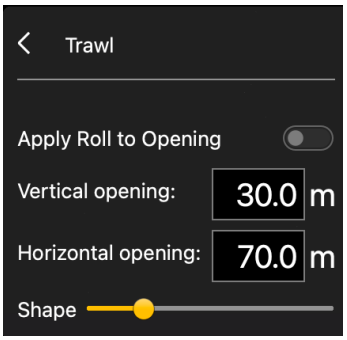
  If the sensor's mode and location are different from these conventions, manually set the looking orientation.

Beams



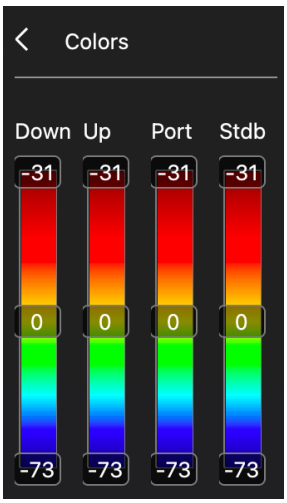
- Choose to display the filtered or raw data.
- **Width**: adjust the width of the echogram.
- **Persistence**: the detections remain longer on the echogram image.

Trawl



- Select **Apply Roll to Opening** so that the trawl opening (yellow circle) follow the roll movements measured by the sensor.
- You can enter a value for the trawl vertical or horizontal opening to correspond to the reality.
- **Shape**: change the shape of the trawl opening, from oval-shaped to a rounded rectangle.

Colors



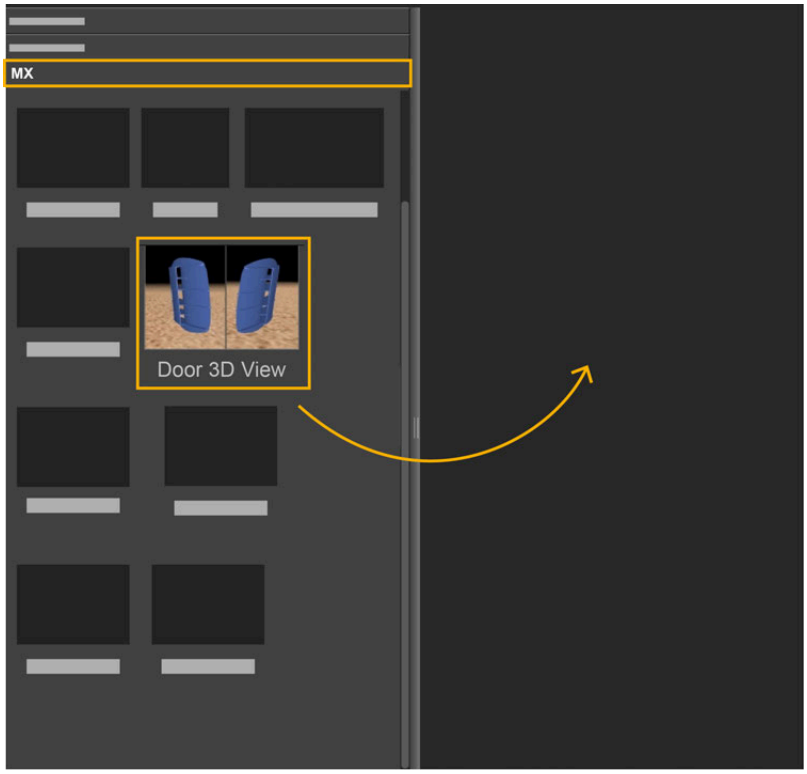
Use these palettes to change the echogram colors.

Displaying Trawl Door 3D View

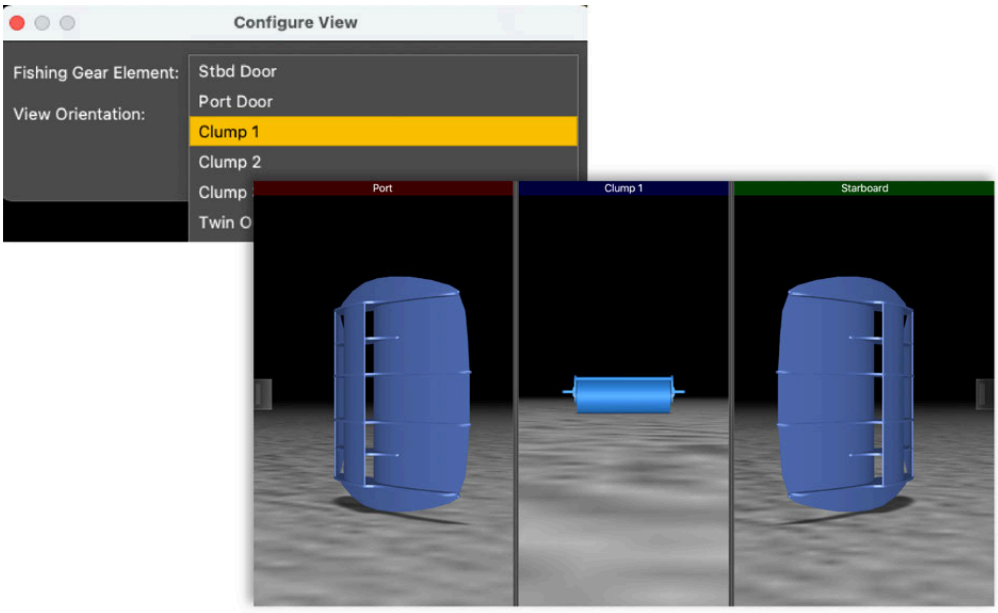
You can display a 3D view of the trawl doors and clump(s). This way, you can see the movements of the doors and clump.

Procedure

1. Open the customization panel and go to the **MX** panel. Click + drag the **Door 3D View** to the page and select the fishing gear element. If you have twin trawls, you can display the clump and if you have twin outrigger trawls, you can set which doors are displayed. Repeat for all fishing gear elements.

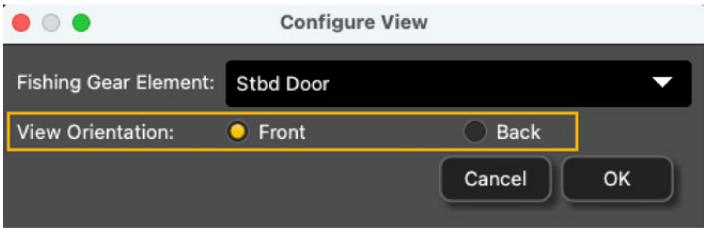


The 3D view is displayed:

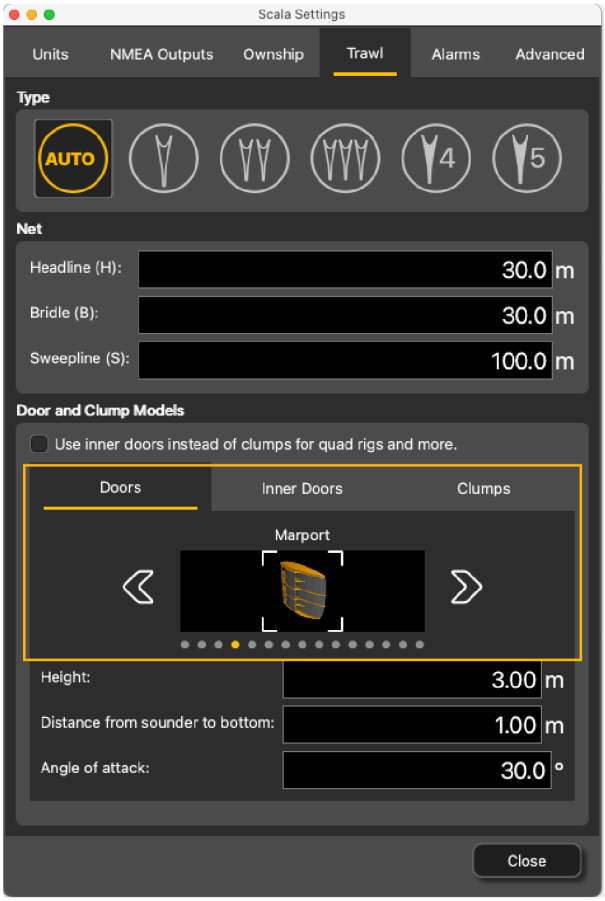


Tip: You can change the fishing gear element anytime: right-click the 3D view and click **Configure**.

2. You can also change the viewing angle: looking from the trawl toward the vessel (front), or from the vessel toward the trawl (back).



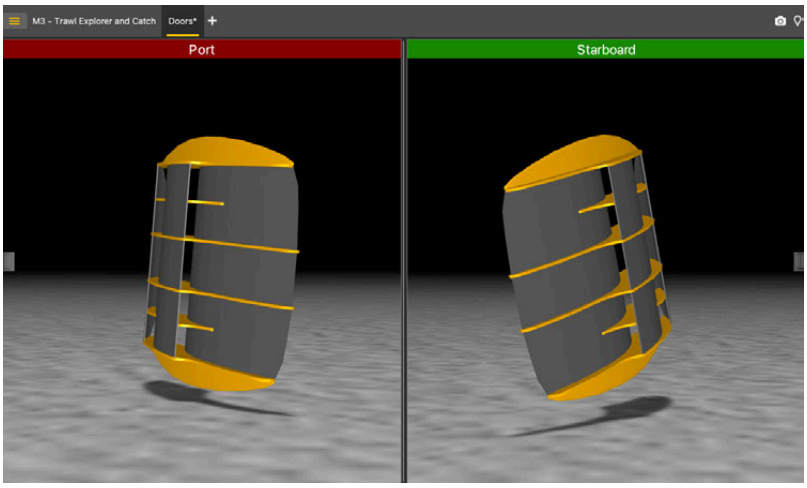
3. To change the door or clump model:
    a. From the top left corner, click **Menu** ☰ **> Settings**.
    b. Click the **Trawl** tab and select the models of doors and clumps from the lists, using left and right arrows.



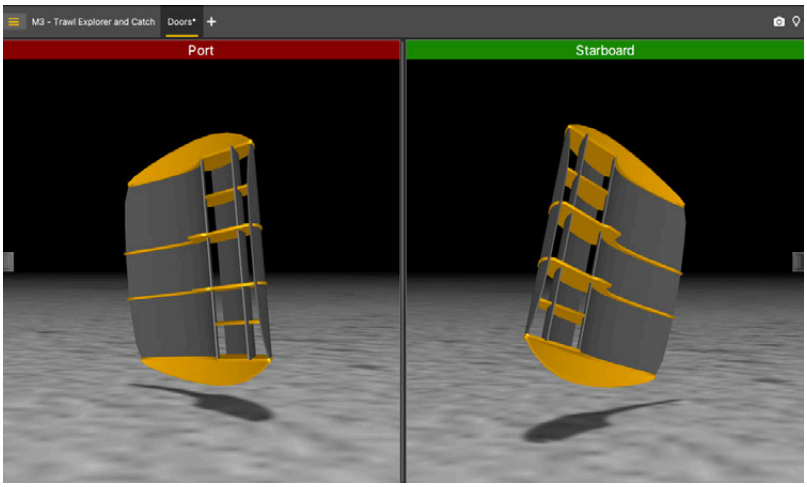
Note: Inner doors models are used on quad and penta trawls only.

4. To change the view angle of the door, right-click the 3D view and choose:

◦ **Horizontal Camera** to see the doors from the front.



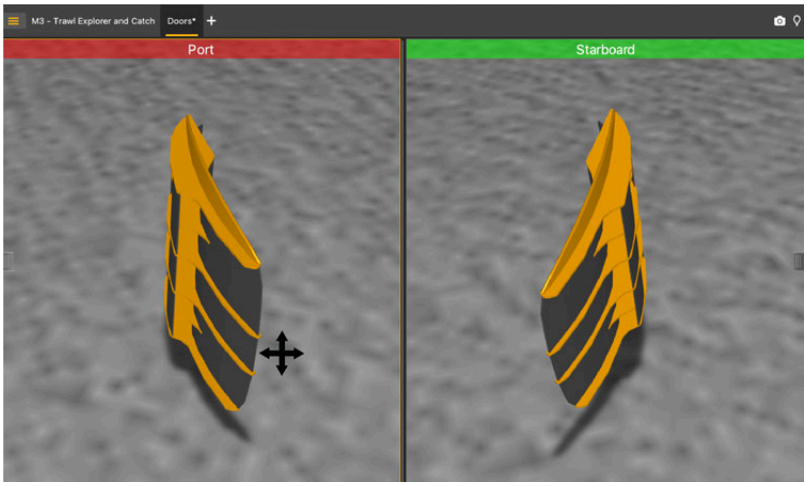
◦ Or back.



◦ **Vertical Camera** to see the doors from above.



- **Free Camera** to adjust the viewing angle yourself, by clicking and dragging the 3D doors.



5. To display the ground, right-click the 3D view and select **Display Ground**. You should leave the ground displayed in order to see if the doors are touching it.

Displaying Speed Sensor 3D View

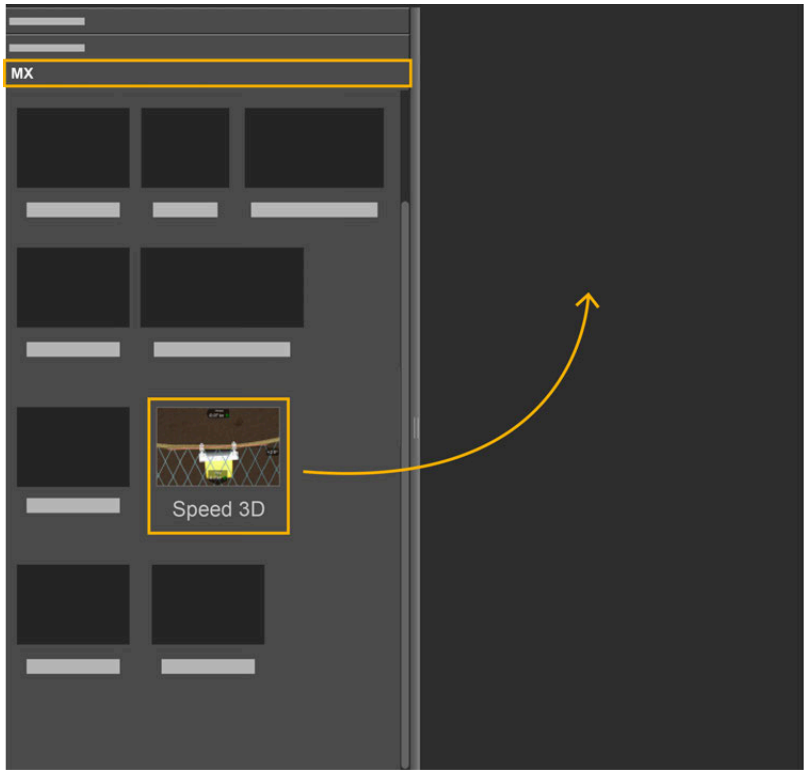
Display a 3D view of a speed sensor to monitor the movements of the trawl, the along and across water speeds, as well as flow behaviour inside the trawl when a Flow Speed Navigator is installed.

Before you begin

You must be in **Customize** mode to do this task.

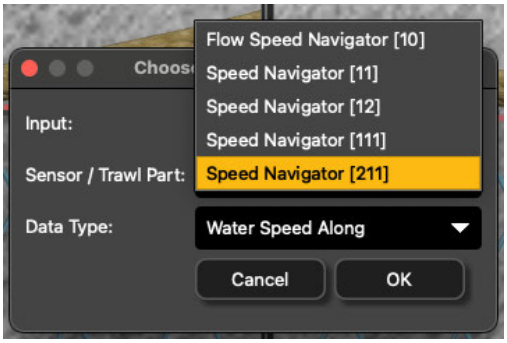
Procedure

1. Open the customization panel and go to the **MX** panel.
2. Click + drag **Speed 3D** to the page.



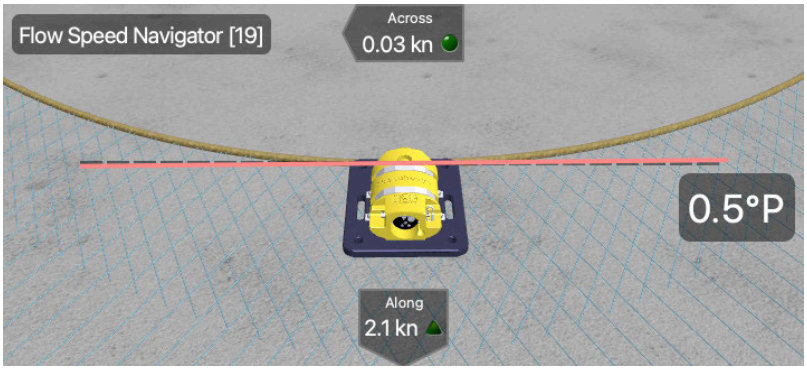
3. Drop it in a yellow area.

4. In the dialog box that appears, select the type of sensor in **Sensor / Trawl Part**.



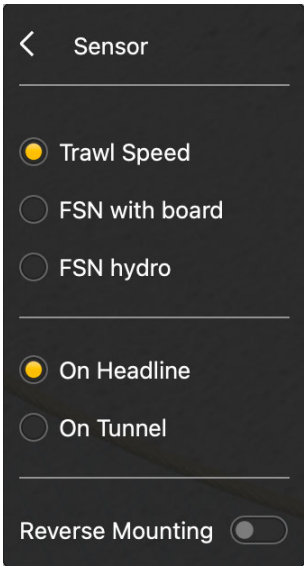
The 3D view of the speed sensor is displayed. You can see the along and across speeds and the positioning angle of the trawl.

Tip: Click and drag to tilt the viewing angle. Scroll to zoom in and out.



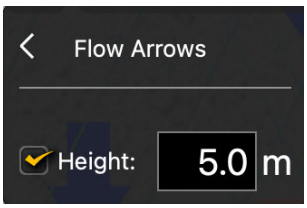
5. Click **Settings** on the top left corner of the view to show the display options.

Sensor



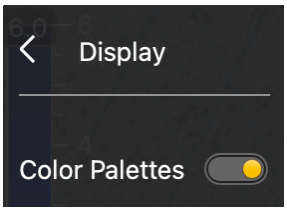
Choose the type of sensor and location on the trawl to display the corresponding 3D image.

Flow Arrows



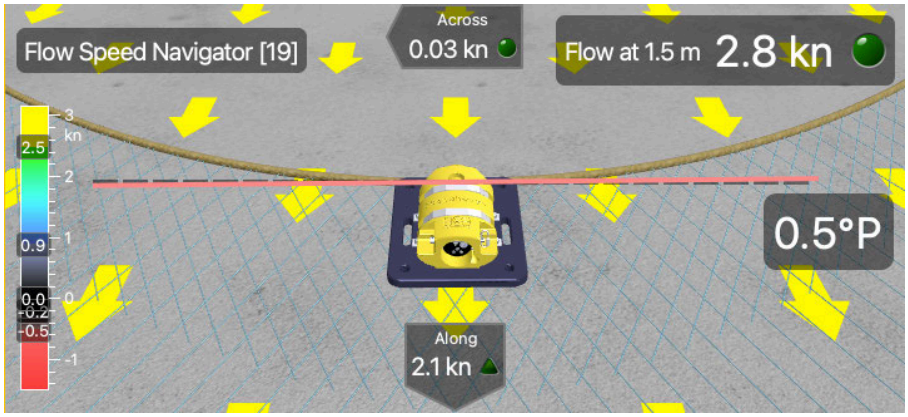
- Select to display arrows showing the water flow direction and speed.
- Choose a depth below the sensor at which to display flow speed measurements.

Display



Set colors to the arrows according to the flow speed. We recommend to set the same palette as the flowgram.

Results



What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ > **Customize** again.

Displaying the Chart View

You can display the location and trajectory of the trawl behind the vessel if you receive GPS data and have door positioning sensors.

Before you begin

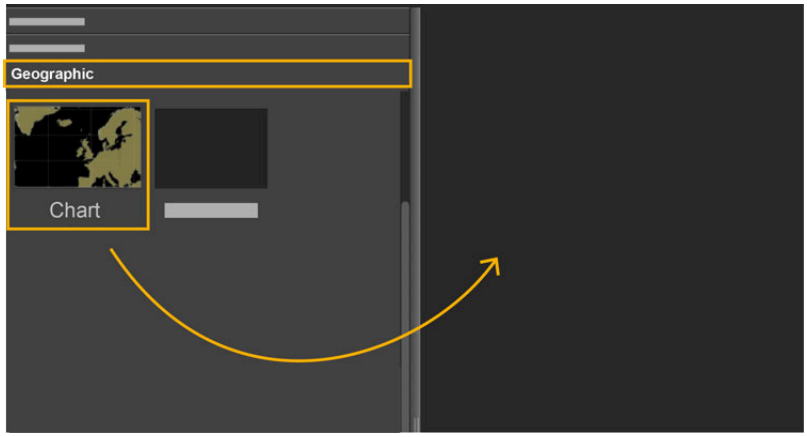
- You must be in **Customize** mode to do this task.

You must have:

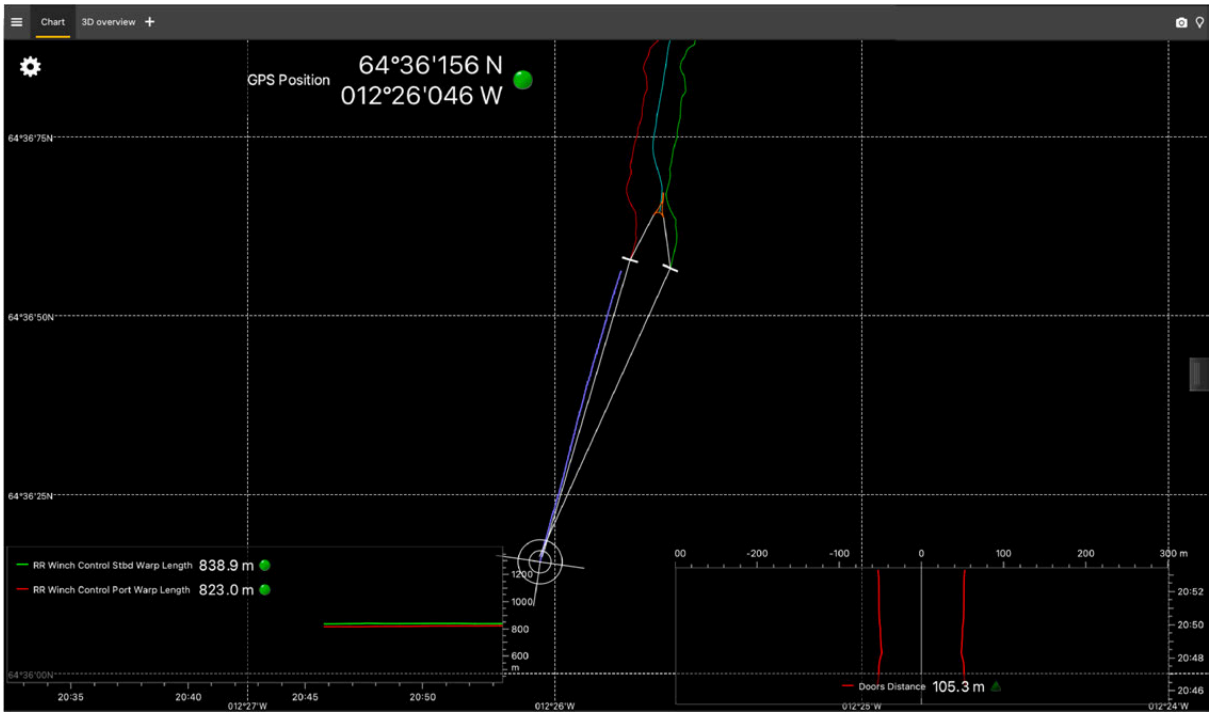
- Incoming GPS data and heading data.
- Spread or Slant Range sensors with bearing measurement
- Warp lengths or Slant Range sensors giving distance to vessel

Procedure

1. Open the customization panel, then go to **Geographic**.
2. Click + drag **Chart** to the page.

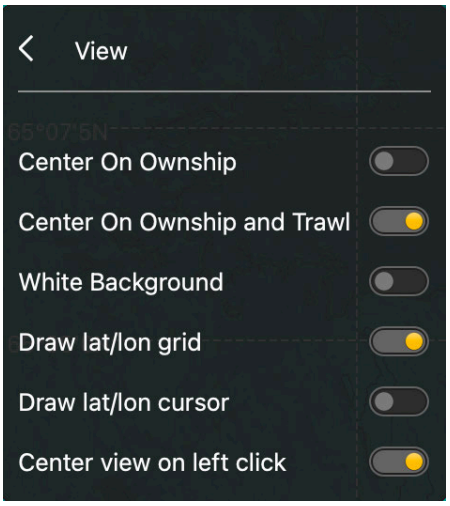


3. Drop it in a yellow area.
   The chart view is displayed.



4. Click **Settings** on the top left corner of the view to show the display options.

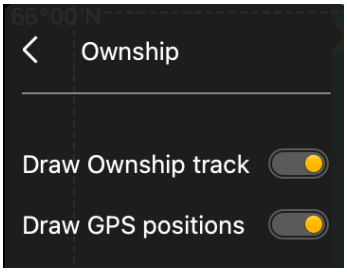
View



- **Center on Ownship**: center the view on the vessel only.
- **Center on Ownship and Trawl**: center the view on both vessel and trawl.
- **White Background**: change the chart background to white instead of black.
- **Draw lat/lon grid**: display the coordinate grid.
- **Draw lat/lon cursor**: display the coordinates at the location of the mouse cursor.
- **Center view on left click**: center the view on the location of the left mouse click.

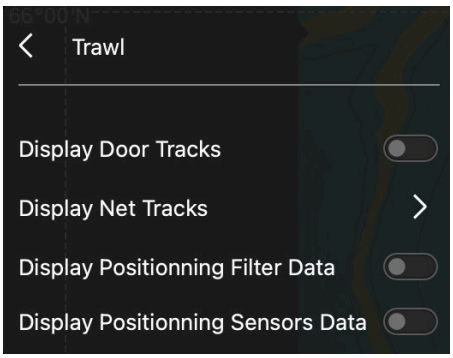
Tip: If the view looks empty it might be because the view is not centered on the vessel. Select one of the "**Center on...**" options.

Ownship



- **Draw Ownship track**: displays the path of the vessel, based on the GPS position.
- **Draw GPS positions**: displays points corresponding to the raw GPS positions.

Trawl

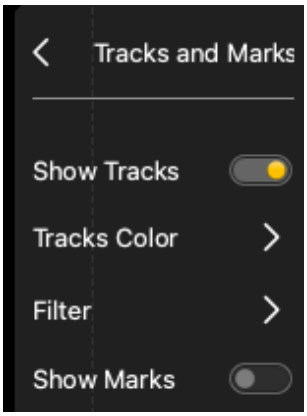


- **Display Door Tracks**: displays the path of the doors, according to the door positionning data. Green track is starboard door, red track is port.
- **Display Net Tracks**: displays the path of the headline, body or codend.

Tip: For a more accurate position of the headline, complete the trawl measurements in **Settings > Trawl > Net**.

- **Display Positionning Filter Data**: used for development only.
- **Display Positionning Sensors Data**: displays raw data used to get the trawl position.

Tracks and Marks



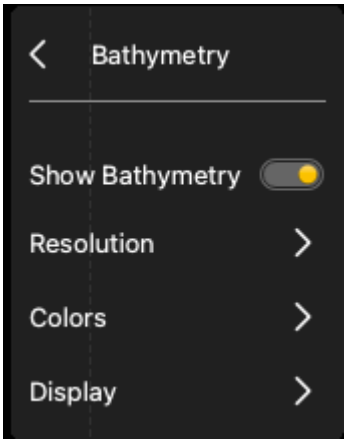
- **Show Tracks**: show the trawl tracks on the chart.
- **Tracks Color**: change the track colors according to the type of data received during towing.
- **Filter**: choose to display the tracks or marks over a given period, by database or folder in which they are stored.
- **Show Marks**: show the marks that were added to the chart.

For more details about the track feature, see **Managing the Tracks and Marks on the Chart View (on page 103)**.

If the bathymetry feature is activated:

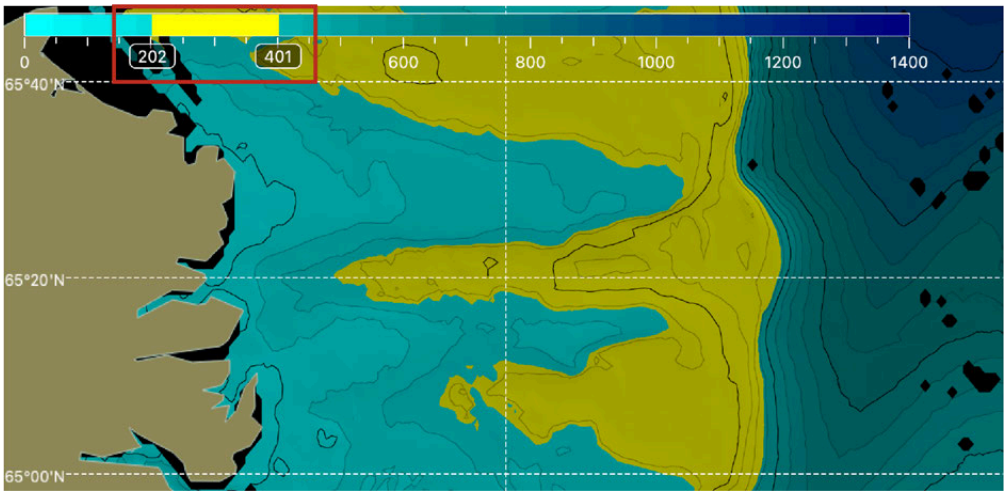
Note: The bathymetry feature is available as an option only.

Bathy



- **Show Bathymetry**: display the bathymetry on the chart.
- **Resolution**: you can lower the resolution if the image is lagging.
- **Colors**:
  - **Automatic depth range**: the range of the color scale adjusts according to the minimum and maximum water depth of the area displayed on the chart.
  - **Depth range from zero**: if **Automatic depth range** is activated, the color scale adjusts according to the maximum water depth.
- **Display**: show on the chart **Shaded Relief**, **Isolines** or a **Depth Grid** (only appears when zoomed in closely).

The water depth is shown using a color palette on the top left corner of the view. Use the two handles to color in yellow a specific depth zone.



What to do next

Deactivate the Customize mode when you have finished customizing pages: click **Menu** ☰ **>** **Customize** again.

Managing the Tracks and Marks on the Chart View

Learn how to manage the trawl tracks and marks appearing on the chart view.

Before you begin

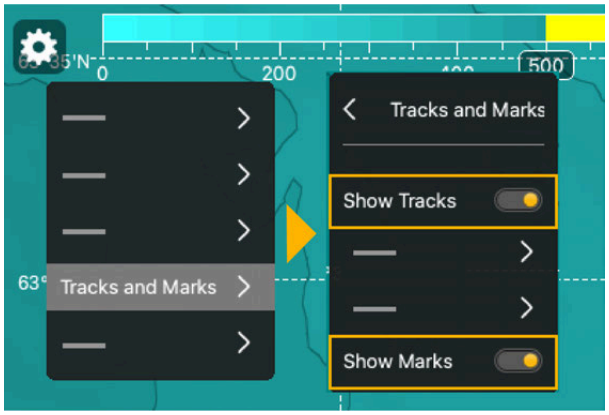
Trawl tracks are recorded only if the following data are received in Scala2:

- Vessel positioning data
- Depth of the doors
- Warp lengths (received from a winch control system or manually entered)

About this task

- Tracks are automatically recorded and saved on the computer. You can delete them and organize them in folders for easier management.
- You can set a **default recording folder (on page 108)** at the start of your trawling operations.
- Marks are manually created and customized. You can find them back when replaying the files in ScalaReplay2.

Before working with the tracks and marks, make sure their display is turned on: go to **Settings** ⚙, then click **Tracks and Marks > Show Tracks** and/or **Show Marks**.

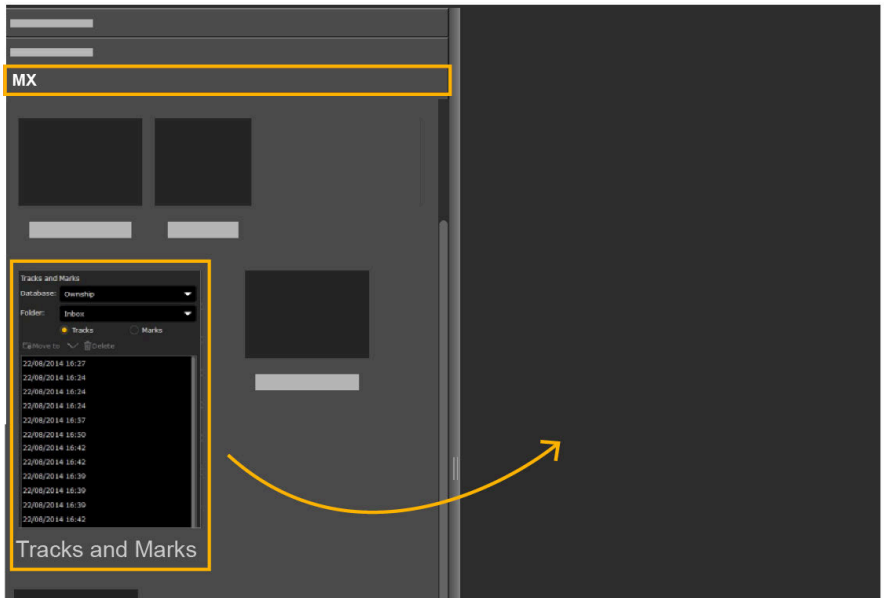


Displaying the Tracks and Marks panel

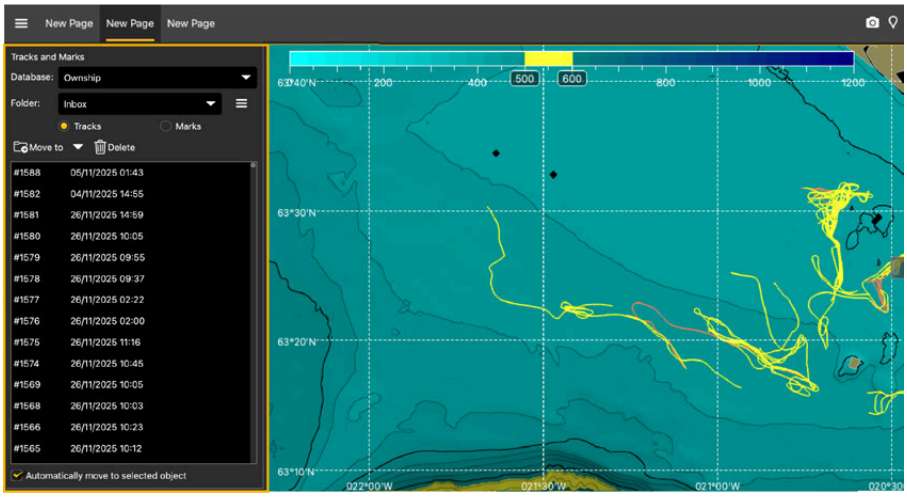
Display the **Tracks and Marks** panel to be able to manage the recorded tracks and marks.

Procedure

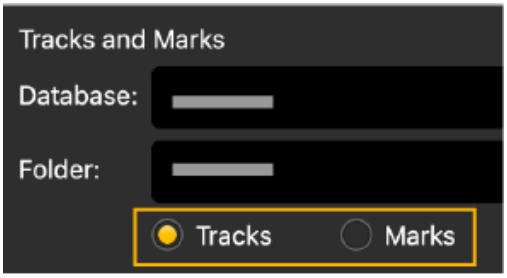
1. Open the customization panel and click the **MX** tab.
2. Click + hold **Tracks and Marks**, and drag it to a yellow area next to the chart.



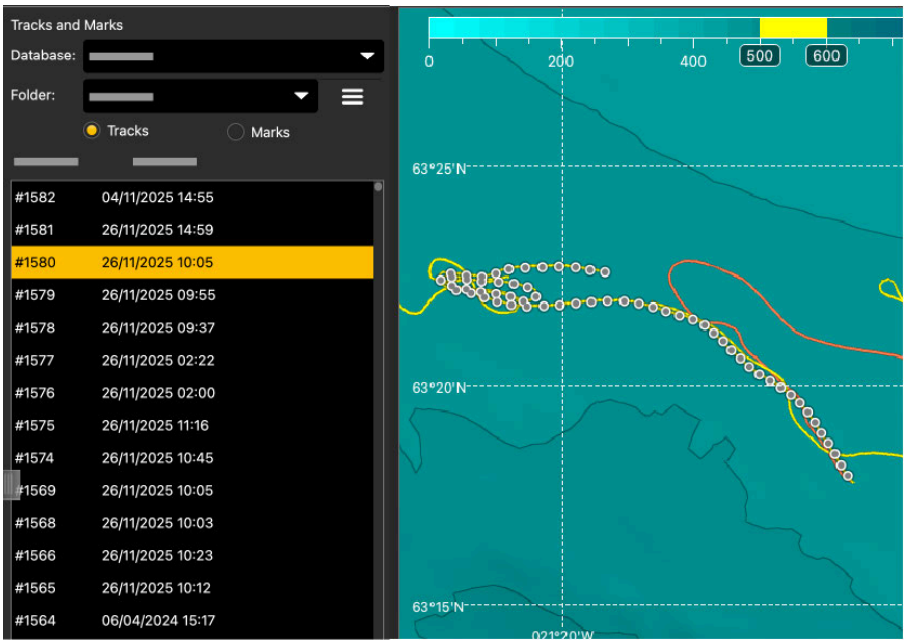
The **Tracks and Marks** panel is displayed. You can see the list of tracks or marks (if any).



3. Select **Tracks** or **Marks** to show the list of recorded tracks or marks that you have created.



4. Select a track or mark in the list to highlight it in the chart, or in the chart to highlight it in the list.

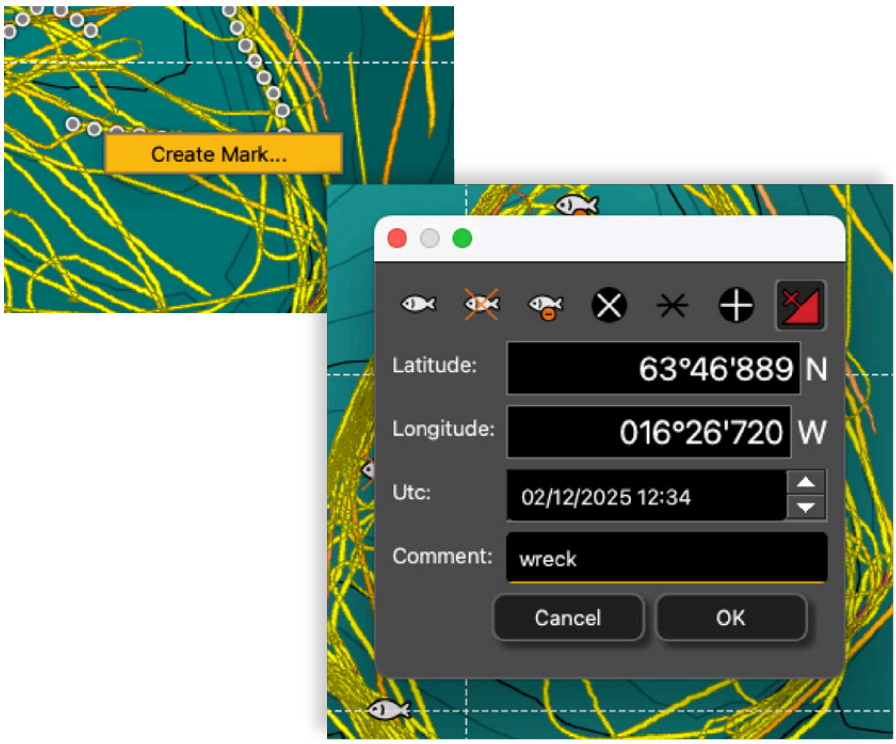


Adding and deleting marks

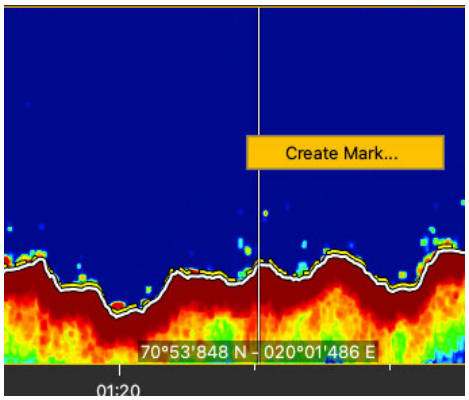
You can display marks on the chart to identify dangers, ship wrecks, or fish-related information.

Procedure

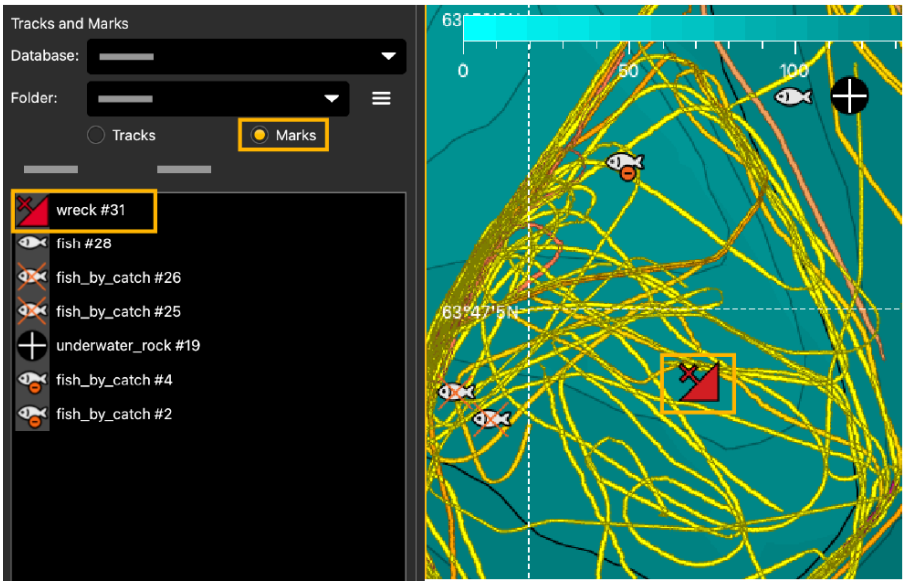
1. Right-click the chart to add a mark, then select **Create Mark**.



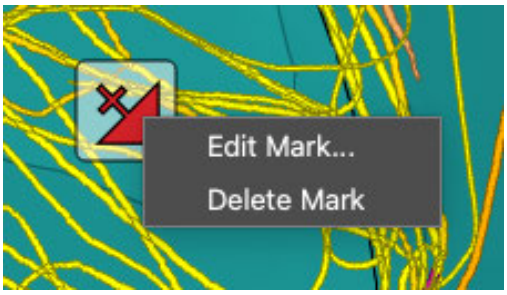
2. You can also add a mark from an echogram: right-click the echogram and select **Create Mark**.



3. Choose a type of mark, change the properties if needed, then click **OK**.
4. Go to the **Tracks and Marks** panel and select **Marks** to display the list of marks.



5. Right-click a mark to edit or delete it.



Managing the saved tracks and marks

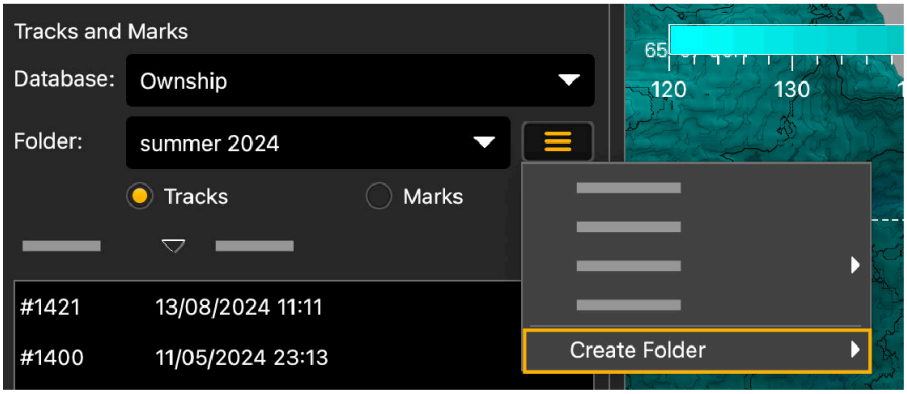
You can organize the tracks and marks in folders, to navigate easier through the records and to remove unnecessary files.

About this task

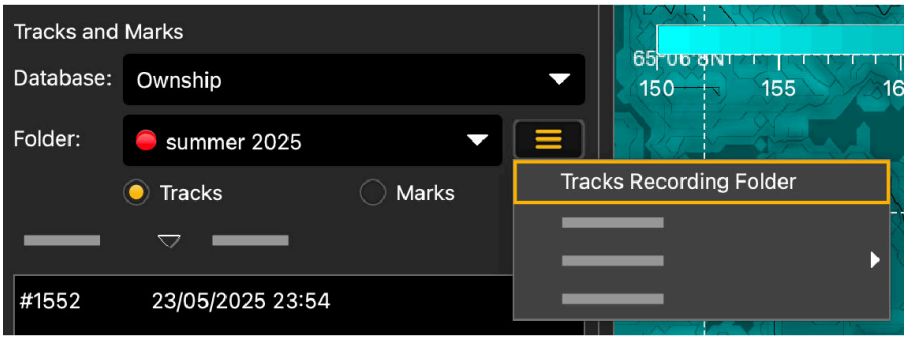
Tip: Once organized in folders, you can afterwards filter the tracks and marks on the chart by folder.

Procedure

1. To create a new folder, click ☰ **> Create Folder**.

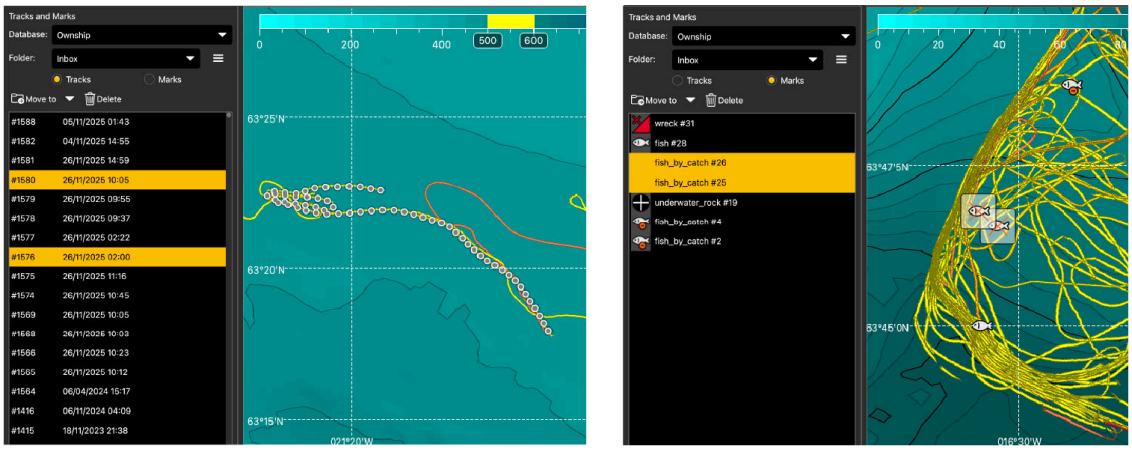


2. To set a default folder in which tracks and marks are saved, select the folder in the drop-down list then click ☰ **> Tracks Recording Folder**.



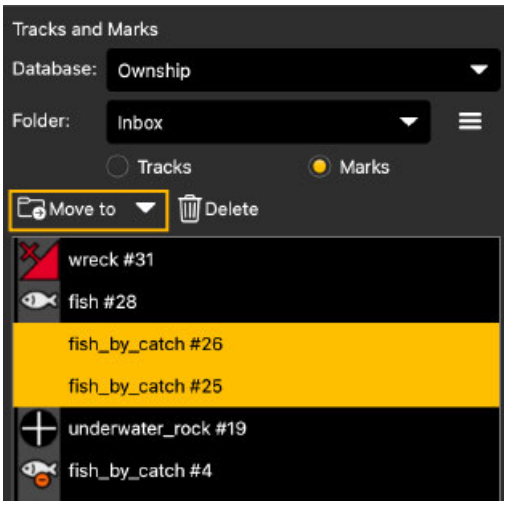
A red dot is displayed next to the name of the default recording folder.

3. To organize your tracks or marks in folders:
   a. In the **Tracks and Marks** panel, select **Tracks** or **Marks**, then select the tracks or marks from the list or directly on the chart view.



Tip: Use **Shift + click** or **Cmd + click** to select several items in the list at once.

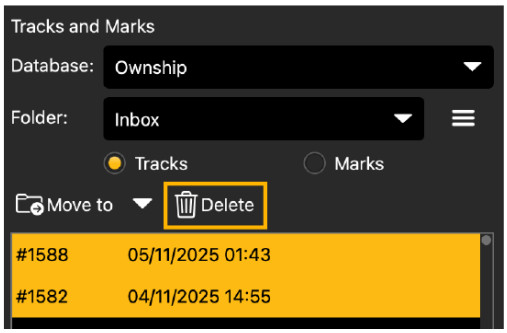
b. Click **Move to**.



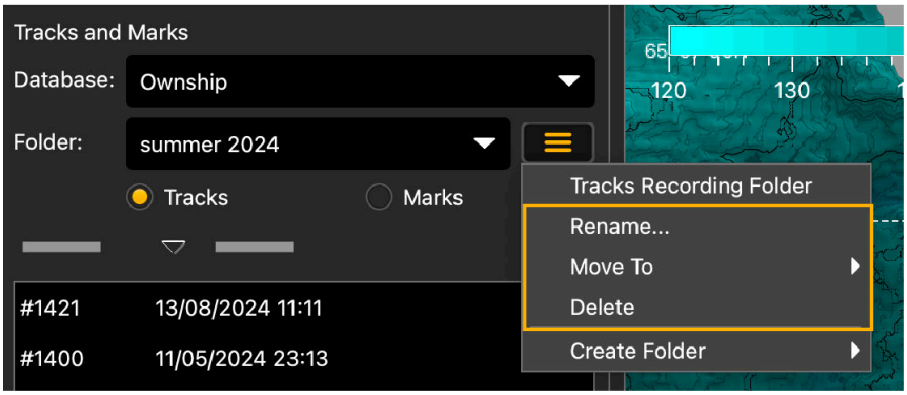
c. Create a new folder, or choose one in the list.

4. Select a folder in the **Folder** drop-down menu to see the list of items saved in this folder.

5. To delete a track or mark, select them from the list, then click **Delete**.



6. To display the folder editing options, select a folder from the drop-down list and click ☰.



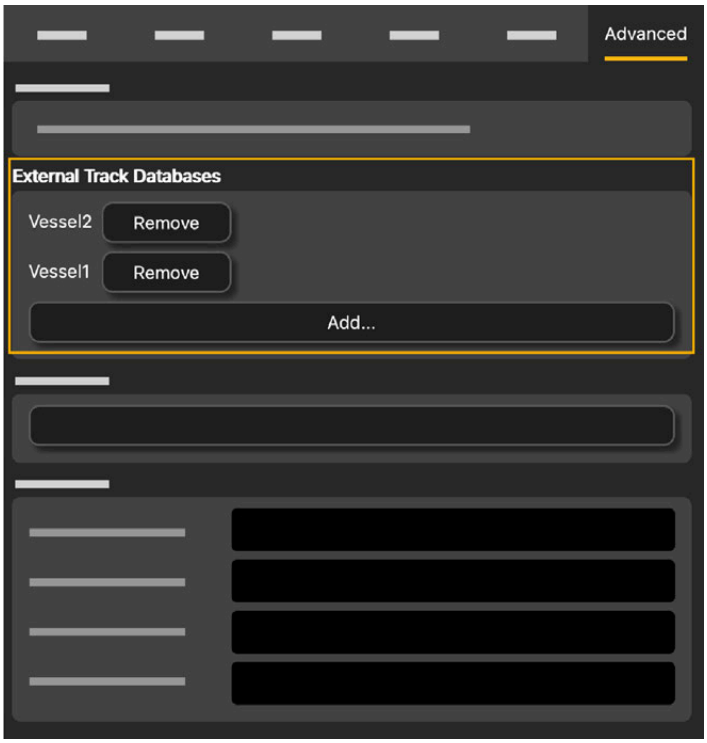
a. Click **Rename** to change its name.
b. Click **Move To** to move all the tracks from the folder to another one.
c. Click **Delete** to delete the folder and tracks inside, if any.

Importing tracks

You can import track databases from other vessels.

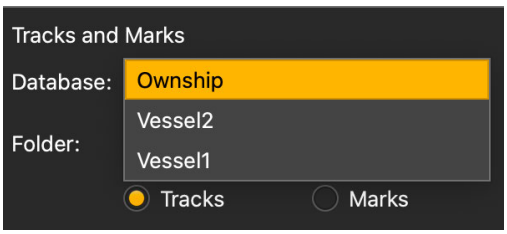
Procedure

1. Click **Menu** ☰ **> Expert Mode** and enter the password.
2. Go to **Menu** ☰ **> Settings > Advanced**.
3. Under **External Track Databases** click **Add** and select a track file (*.trk).



The name of the file appears in the **External Track Databases** list.

4. In the **Tracks and Marks** panel, open the **Database** drop-down menu and select the track file to display the tracks in the list.

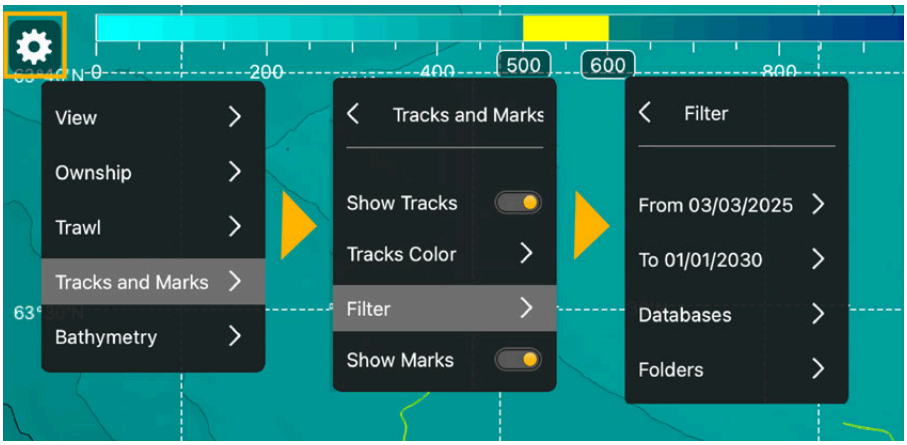


Filtering tracks and marks displayed on the chart

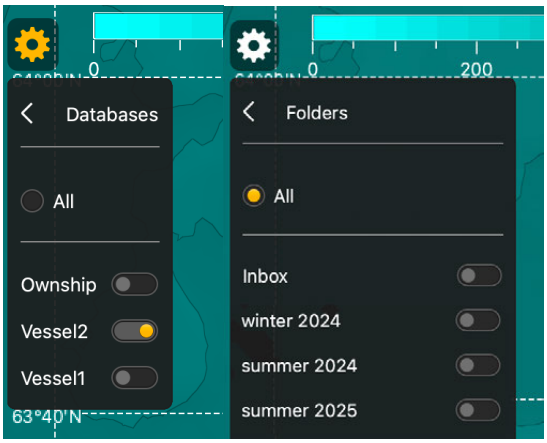
By default, all tracks and marks are displayed on the chart view. You can filter them by database, folder or date.

Procedure

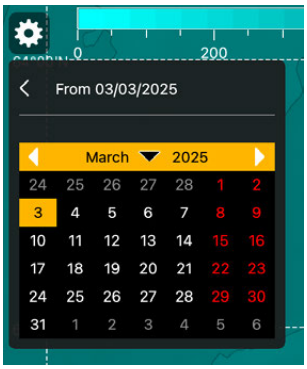
1. Click **Settings**, then **Tracks and Marks > Filter**.



2. In **Databases** or **Folders**, turn on the database(s) and folder(s) contaning the tracks or marks that you want to display.



3. You can also select specific dates.



Results

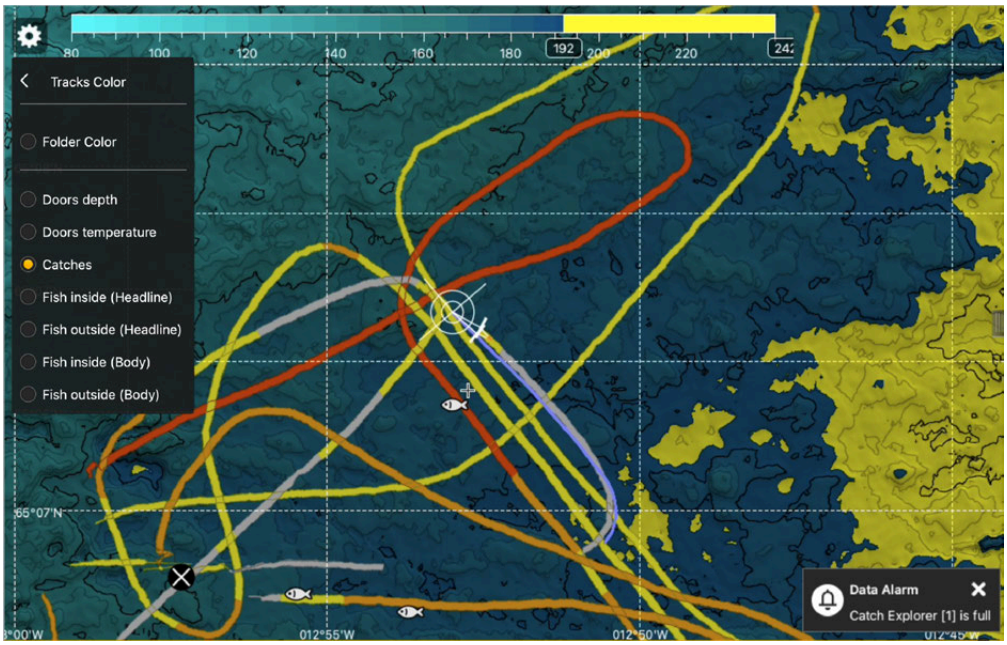
The view updates and displays only the tracks and/or marks from the database and/or folders that you selected.

Changing the track colors

The colors of the tracks can be changed according to some types of data received during towing.

Procedure

1. Click **Settings**, then **Tracks and Marks > Tracks Color**.
2. Select the type of data. Each type of data has a different color palette.



   - Catches (colors not editable):
     - grey: no catch,
     - yellow: 1 catch sensor sends a full status,
     - orange: 2 catch sensors send full statuses,
     - red: 3 catch sensors or more send full statuses.
   - Door temperature and door depth: data received from the sensors on the doors.
   - Fish inside / outside (beta): data received from the sensors placed on the headline or body.
3. Use the palette bar on the top of the chart to adjust the color hues according to the values.

Displaying a Position Marker

You can place a marker on plots and echograms to display the GPS position at a given time on the timestamp.

Before you begin

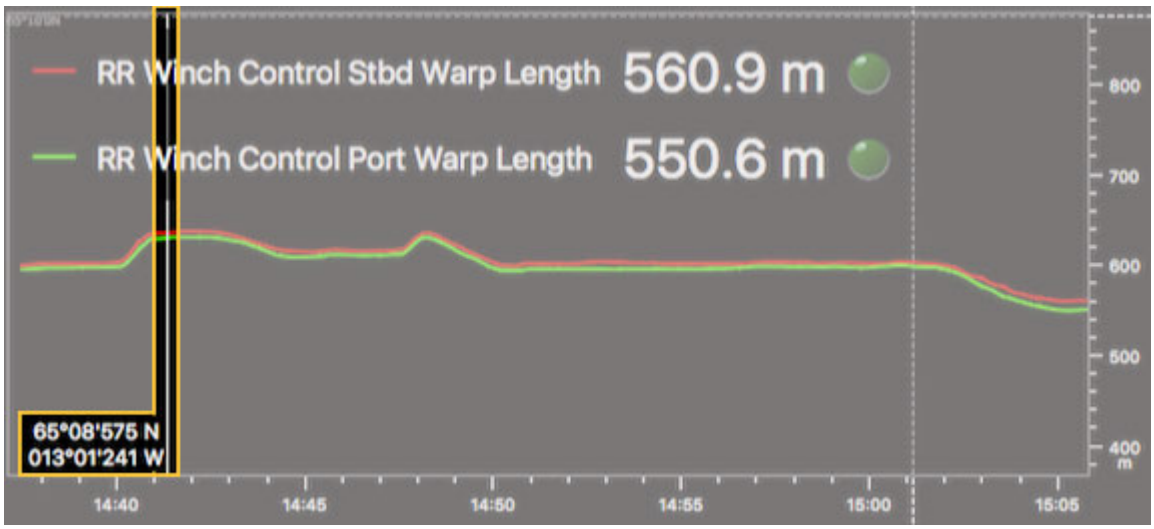
You need incoming GPS data.

Procedure

1. From Mosa2, click **Menu** ☰ **> Expert** and enter the password `copernic`.
2. Click **Menu** ☰ **> Settings**.
3. Under the tab **Advanced**, select **Display global position cursor on plots and echograms**.

Results

A marker with your position is displayed on plots and echograms.

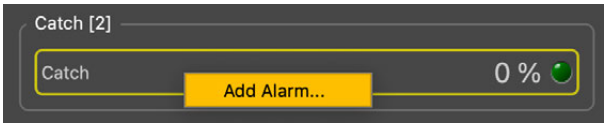


Setting an Alarm on Incoming Data

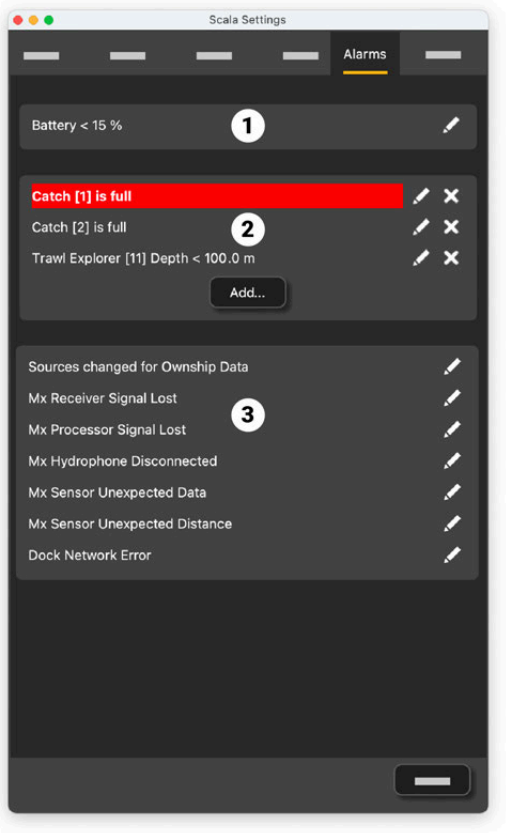
You can be alerted by an alarm when data received have a given value.

Procedure

1. In the control panel, click the data on which you want to set an alarm.



2. Alternatively, from the top left corner of the screen, click **Menu** ☰ **> Settings**, then go to **Alarms** tab.

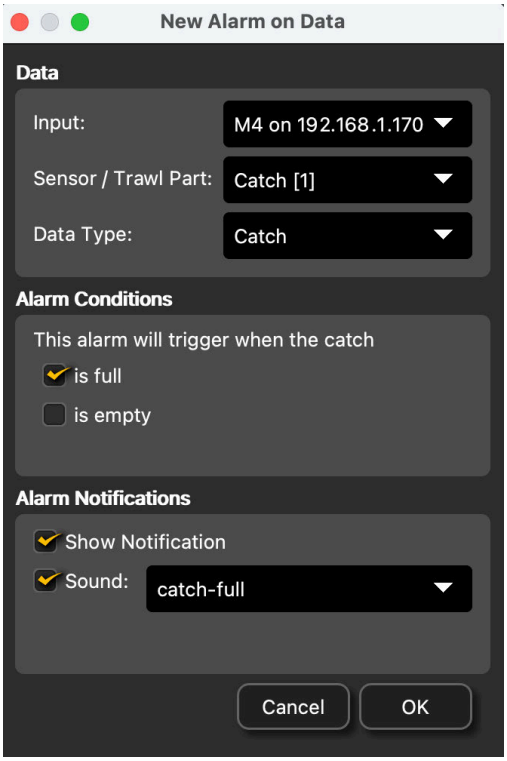


(**1**) Default low battery alarm.

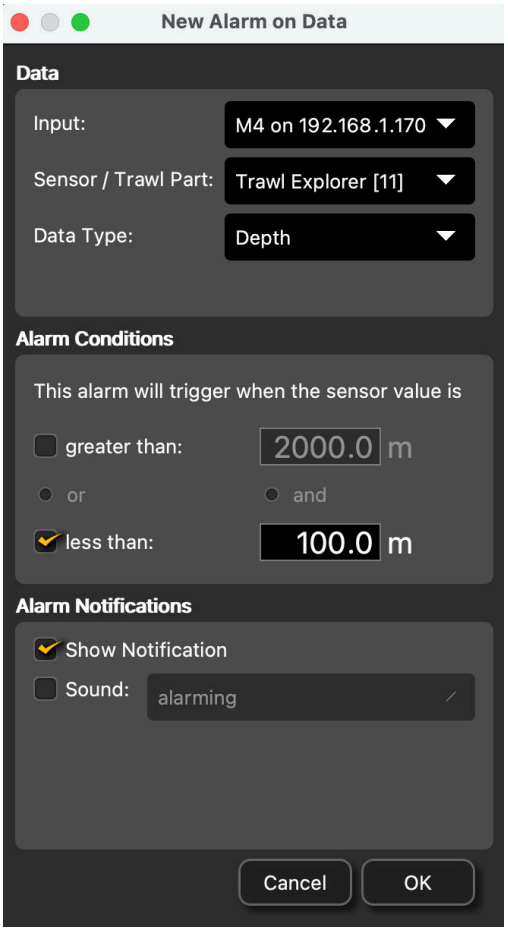
(**2**) Custom alarms created by the user.

(**3**) System alarms: alert in case of communication issues, for example with the receiver, hydrophones, sensors or the Dock. They are deactivated by default. To display a notification, click **Edit** and activate the alarm.

3. Click **Add**.
4. In **Alarm Data**, choose on which equipment and type of data you want to set an alarm.
5. In **Alarm Conditions**, choose the conditions on which the alarm is triggered.
6. In **Alarm Notifications**, choose if you want to display a pop-up notification and/or a sound.
   These are examples of alarm settings:

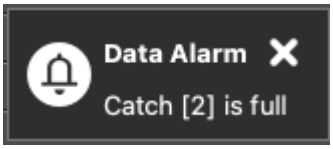


Alarm on the catch status

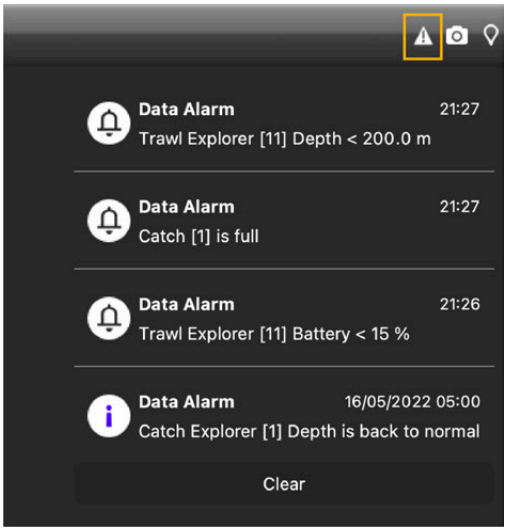


Alarm on a depth value

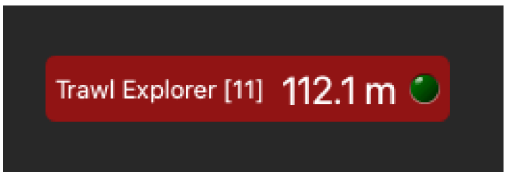
The notification is displayed for 30 seconds in the bottom right corner of the screen.



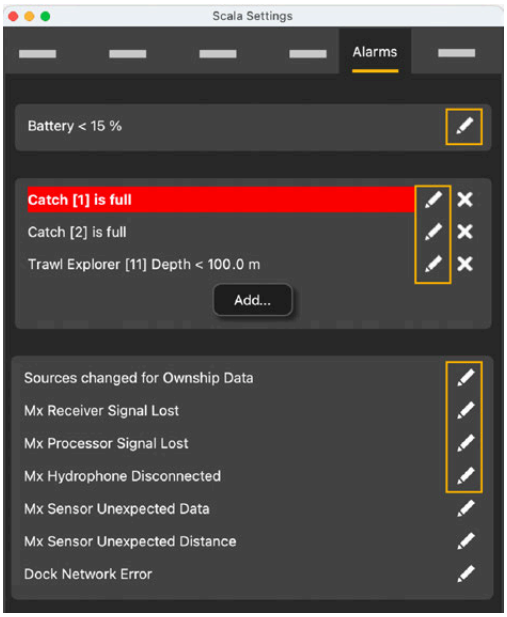
View the full list of notifications by clicking the alarm icon on the top toolbar.



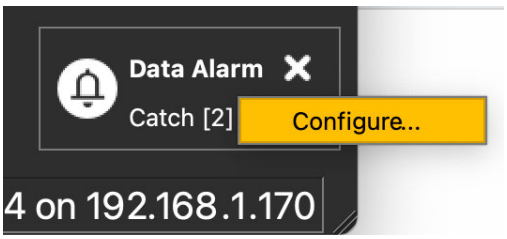
Data labels also become red.



7. To modify an alarm:
    - click **Edit** from the setting panel,



    - or, right-click the notification from the pop-up or list and click **Configure**.



Changing the Default Units

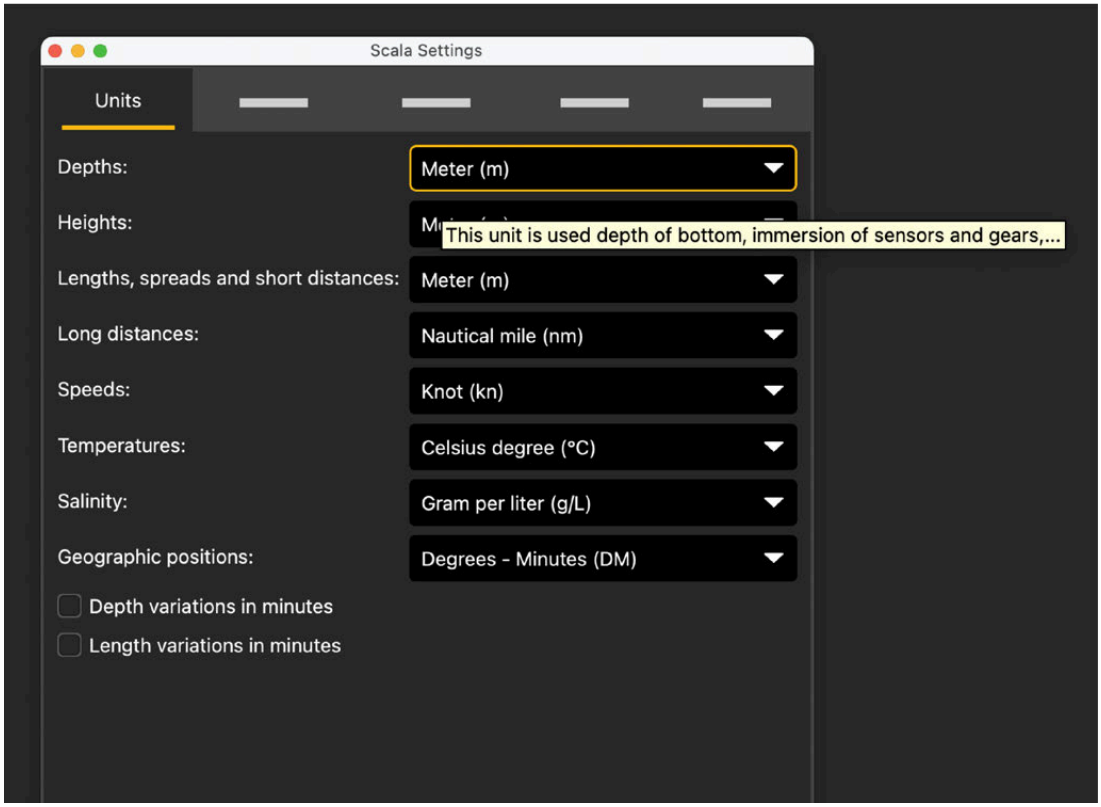
You can change the default units of data displayed in Scala2.

Procedure

1. From the top left corner, click **Menu** ☰ **> Settings**.
2. In **Units**, select the units to use in Scala2 among the following units:
    - For distance data: meter, foot, yard, fathom, cable length (only for lengths)
    - For speed data: kilometer/hour, knot, meter/second, mile/hour

- For temperature data: Celsius or Fahrenheit
- For salinity measurements: part per thousand, gram per liter or kilogram, per mille or Practical Salinity Unit.
- For geographic positions: degrees, degrees-minutes or degrees-minutes-seconds

Tip: Hover over the units in the menu to see for which data they are used.



Recording and Replaying Data

Data received by Scala2 can be replayed with ScalaReplay2 application.

Recording of Incoming Data

Data received by Scala2 can be recorded on your computer.

By default, when you first install Scala2, data are automatically recorded.

If you want to stop or start the recording of data, click **Menu** ☰ **> Stop Recording** or **Start Recording**.

All incoming data is by default recorded in **Documents/Marport/SDSRecord/SDS**.

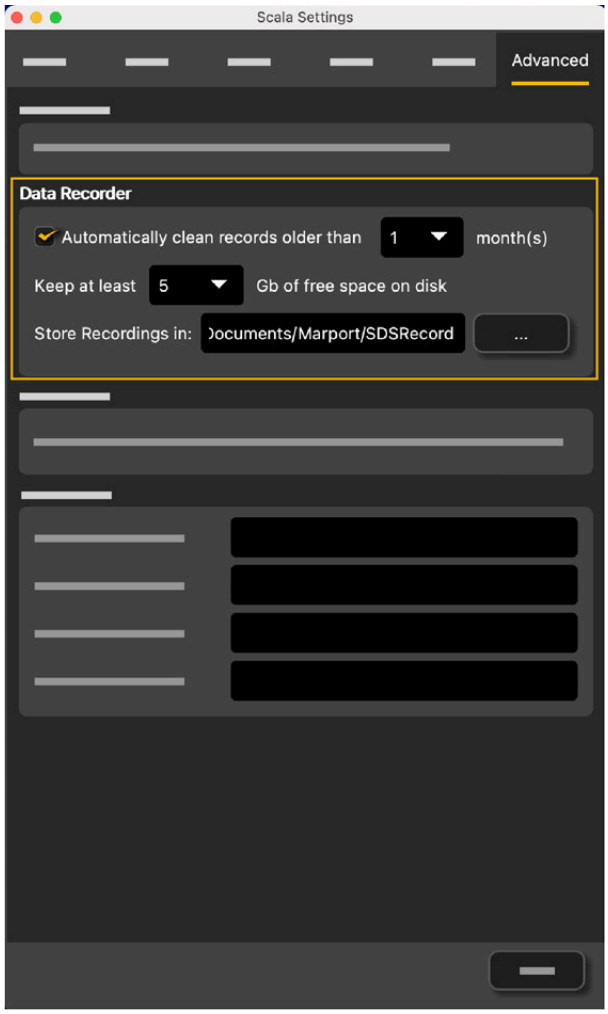
The name of the SDS files indicates the year, month, day and hour of the beginning of the record, in GMT timezone.

To access data recording settings, connect in **Expert Mode**, then click **Menu** ☰ **> Settings > Advanced**.

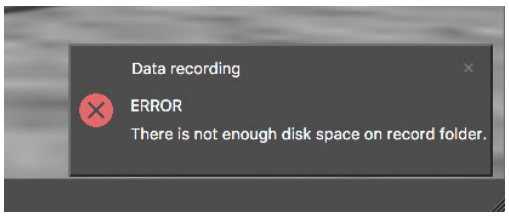
You can change the folder where recorded data are saved.

Data recorded can take a significant amount of space on your computer. Set how much disk space need to remain available on the computer. This will avoid disk overload. When the maximum disk space is reached, the oldest files are deleted as new files are created.

By default, the recording interval is set to 1 month. This means that files older than 1 month are automatically deleted as new files are recorded.



If there is not enough space on the hard drive to record data, Scala2 displays a warning.



Replaying Data on ScalaReplay2

You can replay on ScalaReplay2 data you have recorded.

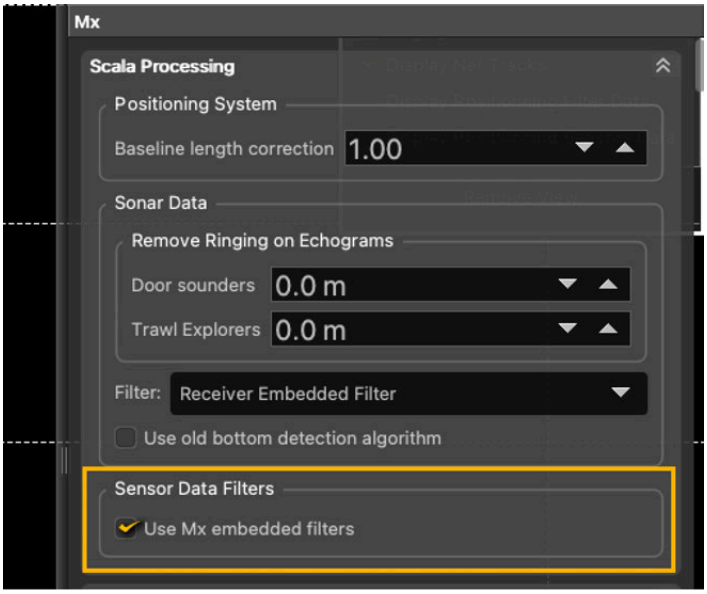
Procedure

1. Click the **Launchpad** icon in the Dock. Then click the ScalaReplay2 icon.

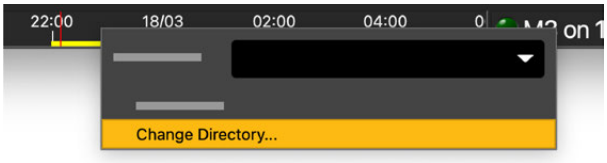


   ScalaReplay2 opens.

2. Open the control panels, then click **Mx > Scala Processing > Sensor Data Filters** and select **Use Mx embedded filters**.

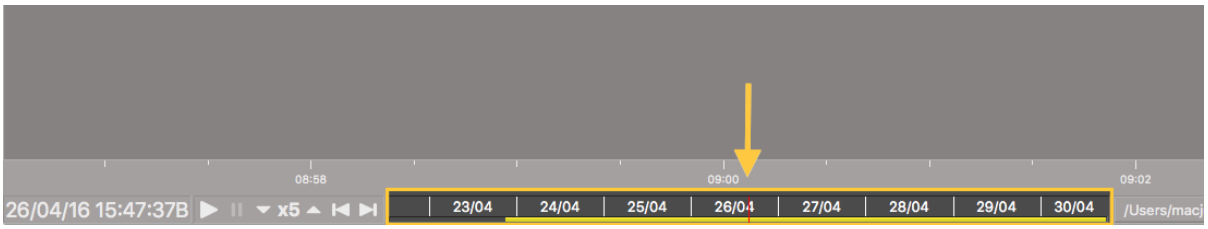


3. To choose the source directory, right-click the timeline and click **Change Directory**.

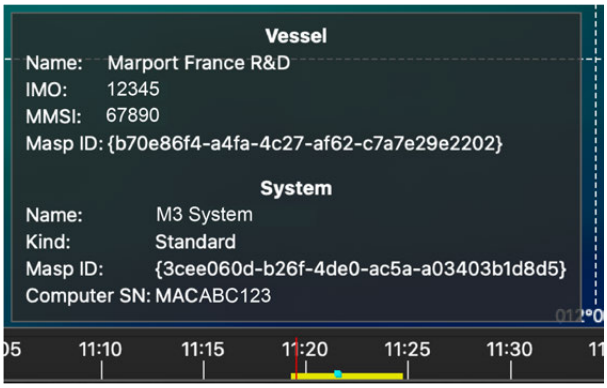


Note: By default, ScalaReplay2 reads files that are in **Documents/Marport/SDSRecord**.

Data from the source folder is displayed at the bottom of the screen, in the timeline. Periods containing recorded data are in yellow and your position in the timeline is marked by a red line.



4. When the marker is on a period containing data and the replay is paused, details about the vessel and system on which the data was recorded are displayed above the replay bar.



Note: In order to be displayed, these details must have been added in Marport Authorized Service Provider (MASP) and the SDS data must have been recorded with Scala2 version 02.14.x and after.

5. You can show on the timeline the moments when specific types of data were received: right-click the timeline and select the data from the **Highlight type** drop-down menu. The moments appear highlighted above the yellow line.

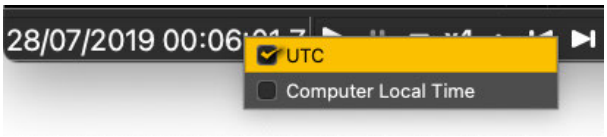


6. To zoom in and out on the timeline, place your mouse on the timeline and scroll.

7. To move along the timeline, click + drag the timeline.



8. The date and time of the recording is displayed on the left side of the timeline. Right-click the hour to change it to UTC timezone.

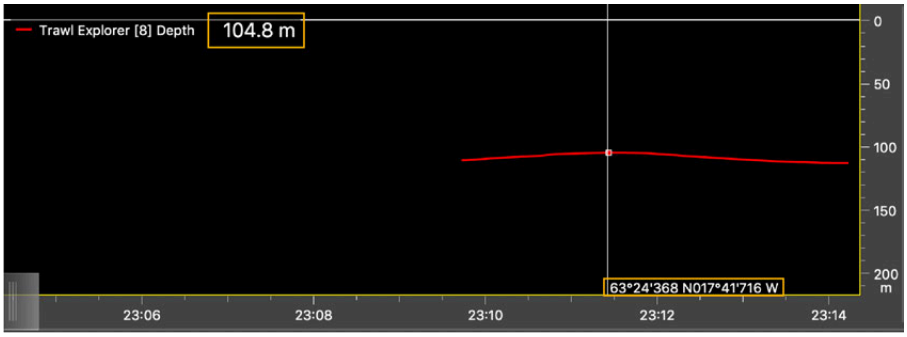


9. Control the playback using the play, pause and speed control buttons at the left of the timeline.

Note: You can change the display of page data only when the playback is paused.



10. To display with a marker the global position and value of data in plots:
    a. Click **Menu** ☰ **> Settings > Advanced**.
    b. Select **Display global position cursor on plots and echograms**.
    c. Pause the replay, then hover the mouse cursor over plots to see the global position and value of data, or over echograms to see the global position.



Adding Events

You can mark a specific moment when receiving live data to find it back when replaying data with ScalaReplay2.

Procedure

1. Make sure the recording of data is activated.
2. On Scala2, click ♡ on the top right corner of the screen when you want to mark an event.
3. Add a legend.
4. Open the corresponding SDS files on ScalaReplay2.
   You can see a marker on the timeline at the time at which you created the event.



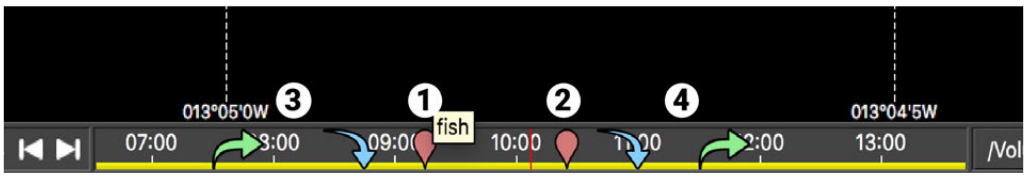
5. You can also manually add events to the timeline of replay files: mark a specific moment in the replay, or jump forward or backward in the timeline:
    a. Create an XML document named Markers.xml and put it in the same folder as the SDS files you are replaying. The document must begin by `<Markers>` and end by `</Markers>`.
    b. To add a marker (**1**, **2**), enter the following line: `<Marker date="YYYY-MM-DDTHH:MM:SSZ" text="xxx"/>`. The time is in UTC time zone. The content of "text" appears when hovering over the marker in the timeline (**1**).
    c. To add jumps, enter the following line: `<Jump from="YYYY-MM-DDTHH:MM:SSZ" to "YYYY-MM-DDTHH:MM:SSZ"`. Jumps allow you to directly jump from a given position (green arrow) to another location (blue arrow). You can jump forward (**3**) or backward (**4**) in the timeline.

Here is an example of a code and the result.

Figure 1. Example of XML file

```
<Markers>
    <Marker date="2016-02-03T08:15:00Z" text="fish"/>
    <Marker date="2016-02-03T09:25:00Z" text="fish"/>
    <Jump from="2016-02-03T06:30:00Z" to="2016-02-03T07:45:00Z"/>
    <Jump from="2016-02-03T10:30:00Z" to="2016-02-03T10:00:00Z"/>
</Markers>
```

Figure 2. Example of display in the timeline



Extracting Data from SDS Files

You can extract data contained in SDS files and display the contents in a table on a spreadsheet application, using Marport sds2txt application.

Ask your local Marport office for more details about how to get the application and how to use it.

Replaying Data Recorded on a Memory Card

you can replay data that have been recorded in high definition on the sensor memory card card .

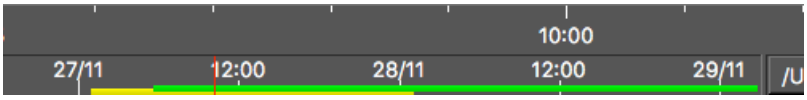
About this task

Note: Data in high definition is available only when downloading them from the sensor memory. Data received in Scala2 will have a lower definition.

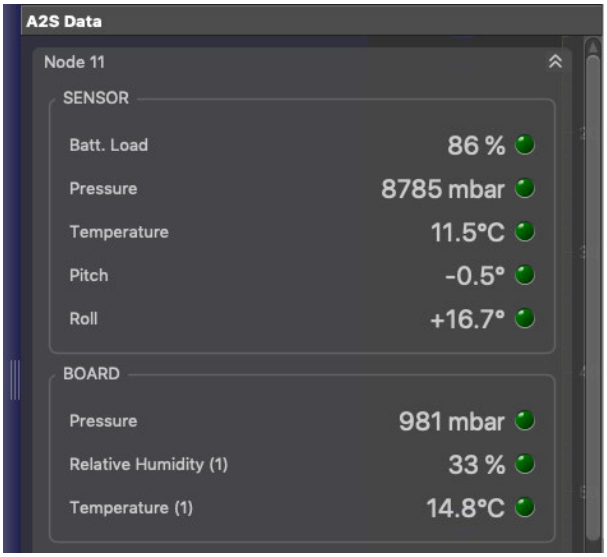
Procedure

1. Download from Mosa2 the files recorded on the sensor memory. (refer to the user guides of the sensors for instructions).

2. Right-click the timeline and click **Change Directory** to choose the source directory where the files are stored.
   In the replay bar, the recording period of the files in high definition is displayed in green.



   In the control panels, data that were received in live are displayed in the **Mx** panel and data recorded on the SD card are displayed in the **A2S Data** panel.



3. Go to the control panels, then click and drag data from the **A2S Data** panel to a page.

Maintenance and Troubleshooting

Read this section for troubleshooting and maintenance information.

Important: Only an approved Marport dealer can access the internal unit. Warranty will become void if anyone other than an approved dealer tries to do internal maintenance duties on the product.

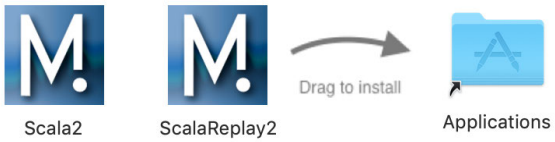
Installing Updates

You can install new versions of Scala2 once they are released. Ask your local dealer to obtain them.

Procedure

To update Scala2 application version:

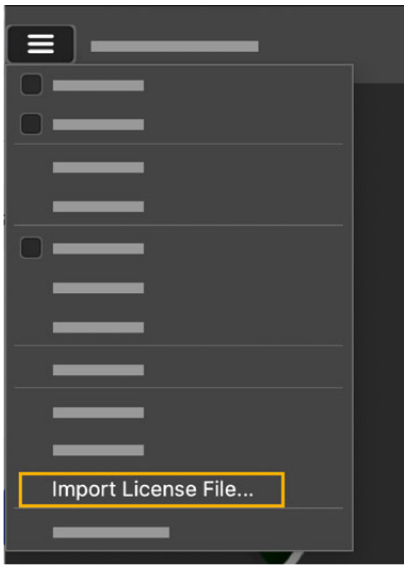
1. Right-click the installation file (*.pkg) and click **Open**.
2. Follow the installation steps.
3. From the installation window that appears, drag Scala2 icon to the **Applications** icon.



4. Do the same for the ScalaReplay2 icon.

To update Scala2 license file:

5. Open Scala2, then click **Menu** ☰ **> Import License File**.



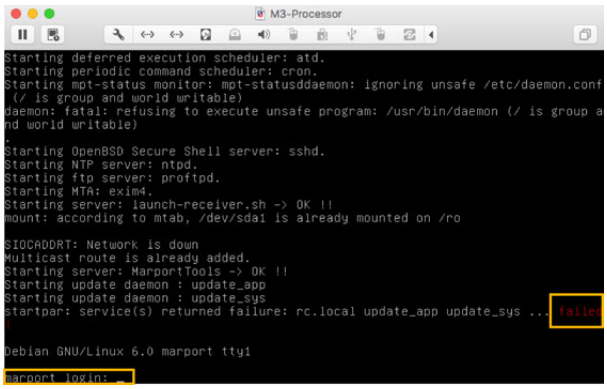
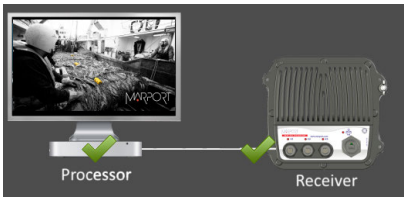
6. Select the new license file.

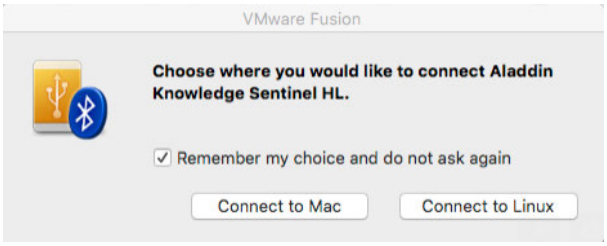
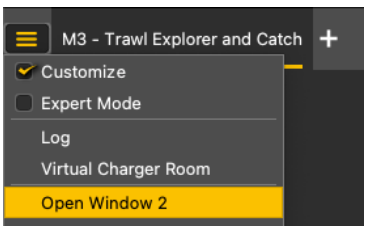
Troubleshooting

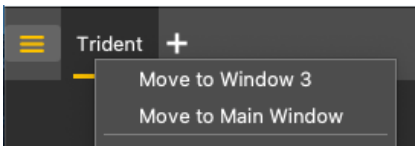
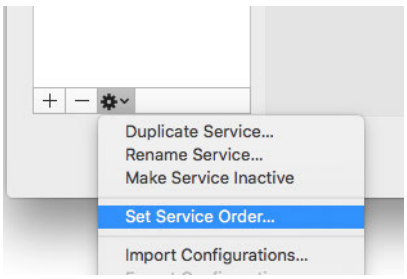
Read this section to find solutions to common problems.

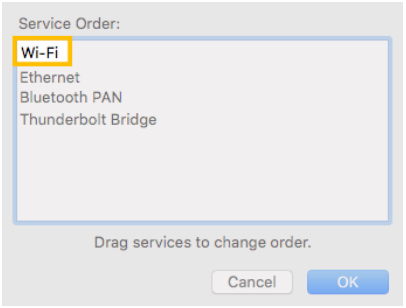
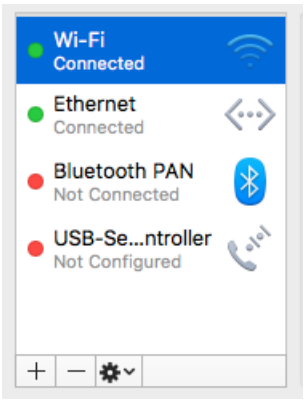
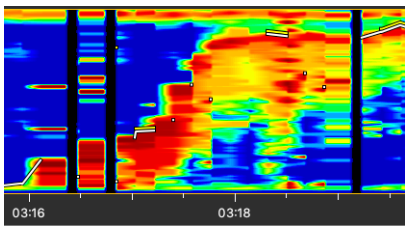
Problem	Possible causes	Solution
Scala2 does not open due to error message saying Scala2 cannot be opened.	Your Mac security preferences do not allow you to open applications not downloaded from the App Store.	1. Click **Apple menu** **> System Preferences > Security & Privacy** 2. From the lower-left corner of the **Security & Privacy** dialog box, click the lock icon and enter your password if you have one. 3. In **Allow apps downloaded from**, select **Anywhere**. 4. If you are under OS X Sierra and above, click **Open Anyway**
Under macOS Ventura, Scala2 takes time to open.	This issue is due to the operating system of the computer, macOS Ventura.	Wait for a few seconds for Scala2 to open. Do not force quit the application.
On Scala2 opening, a message appears saying that the license file is not found.	The license file is not on the computer or not stored in the correct location.	Scala2 needs a licence file to run correctly. It must be stored directly under Documents/Marport.

Problem	Possible causes	Solution
		1. Click **OK** to open the dialog box and select the file, if it is on the computer. The licence file will automatically be added to **Documents/Marport**. 2. If you do not have a license file, contact your local Marport office to get a license file.
	The license file does not correspond to the computer serial number.	1. Go to Documents/Marport to check the *.keep file name. 2. To know the serial number of your mac, click **Apple menu** > **About This Mac**. 3. Compare the numbers: if the Mac serial number is 123ABC, the name of the license file will be MAC123ABC.keep. 4. If the numbers do not correspond, contact your local Marport office to get the correct license file.
A message appears asking for access to your folders when opening Scala2. It also stops the automatic opening of the application.	Under macOS Catalina, you need to give full disk access to Scala2.	Go to the computer's **System Preferences > Security & Privacy > Privacy > Full Disk Access**, then add Scala2 and ScalaReplay2 to the list.
Computers on macOS Monterey and earlier: when starting the system, there is a black window saying **failed** and asking for a login.	This window comes from a virtual machine software that analyzes sensors data. This program is necessary for the correct operation of the receiver.	**Important: DO NOT CLOSE this window**. **Failed** and **login** indications are normal and always appear. You do not need to enter anything. • On the top of the window, click minimize to hide it. This icon should always appear at the bottom of your desktop screen:  • If you close the window, restart the computer. • Do not click inside the window or you will loose the mouse. If you lost the mouse, connect a keyboard and press **ctrl + cmd** (Apple) / **ctrl + window** key (Windows).

Problem	Possible causes	Solution
		
Sensor data is not displayed, LEDs are red or orange.	macOS Monterey and earlier: you may have closed the virtual machine when you opened Scala2 or when you plugged in a device.	1. Check if this icon is in the dock, at the bottom of your screen:  2. If it is not present, restart the system. **Important:** A virtual machine starts automatically when starting your computer and is necessary for Scala2 functioning. The virtual machine window can appear when opening Scala2. Do not close it. A message is also displayed when plugging an USB device. For guidance, see: **A VMware Fusion message appears when adding a new USB key (on page 128)**.
	Ethernet connection is down.	1. Click **Menu** ☰ **> Expert Mode** and enter the password `copernic`. 2. Open the control panels and go to the **Mx** panel. Click the menu icon next to the name of the receiver and click **Configure Receiver**. 3. From the system setting page, check on the schema at the bottom is there are green checks. 

Problem	Possible causes	Solution
		4. If there is a red cross, check that the power supply for PoE adapter is connected to the mains supply. 5. From the system page, click **Hydrophones** from the panel on the left. 6. Check the hydrophones current status. If there is no current: a. Check from the configuration page that the correct hydrophone type between passive and active is selected. b. Check that the wiring in the hydrophone junction box is correct.
A VMware Fusion message appears when adding a new USB key.	This message is due to the virtual machine that is installed on your computer with Scala2. It appears when adding an external USB device.	 1. Select **Remember my choice and do not ask again**. 2. Click **Connect to Mac**.
The size of Scala2 window is smaller than before.	Scala2 window must have lost the full screen display.	Double-click the top of the window to have a full screen window.
I cannot find a window I created.	You may have closed the window.	Click **Menu** ☰ **> Open Window X**.  The window opens. **Note:** If you moved or deleted all the pages contained in a window, this window is permanently deleted.

Problem	Possible causes	Solution
I do not see pages I created on the top toolbar.	You may have moved these pages to a new window.	1. Check your other windows to see if your page appears in it. If you created a window and cannot find it, see the previous troubleshooting case. 2. If you want to move your page to another window, connect in **Customize** mode. To move it to the window with the control panels, right-click the page name and click **Move to Main Window**. To move it to another window click **Move to Window X**. 
	You may have hidden this page (Customize mode only)	See **Hiding a Page (on page 37)**.
I cannot connect to the internet.	Internet network might be too far in the network list.	1. Click **Apple menu** > **System Preferences** > **Network**. 2. From the bottom of the network list, click the wheel icon and select **Set Service Order**.  3. Drag on top of the list the network you use to have internet. It can be for example your phone WiFi, your WiFi router, a USB to Ethernet adapter...

Problem	Possible causes	Solution
		 
The echogram display is interrupted, it shows black lines.	There is a loss of communication between the sensor and the boat.	If the acoustic signal from the sensor is not received, the last sonar data is repeated for a few seconds, then stopped. This will show black lines on the echogram. 
Scantrol application do not receive speed measurements	You have a system configured as a twin trawl and put only one trawl in water. Scantrol does not receive anymore speed measurements from the speed sensor.	**Scala2 2.10.x and later**: If the system is configured to operate on a twin trawl with one speed sensor on each trawl, but only one trawl is put in water: **make sure that the speed sensor in water is the one from the first trawl, configured with a node between 10 and 13**. If not, Scala2 will not send any speed measurements.

Giving Remote Access to the Computer

If you have an issue with the system, you may need to give remote access to the computer to the support team with **TeamViewer** application.

Before you begin

You need to have access to a good internet connection.

Procedure

1. **TeamViewer** is active by default. To open the application window, click **Show status dialog** in the computer status bar.
2. Check that you have the message **Ready to connect** at the bottom left corner of TeamViewer. If the message is **Not ready** it means you have no internet connection.
3. You can give access to your computer to the support team by giving them the ID and Password displayed under **Allow Remote Control**.

Uninstalling Scala2

You can uninstall Scala2 and ScalaReplay2 from your computer.

About this task

Important: Removing completely Scala2 preferences and settings means all pages and customizations will be lost. Only do this task if necessary.

Procedure

1. Go in **Applications**.
2. Right-click Scala2 or ScalaReplay2 icon and select **Move to Trash**.
3. To remove all Scala2 and ScalaReplay2 preferences and settings from the computer:
    a. Find the *.dmg file that you downloaded when you installed Scala2. By default it should be in the **Downloads** folder of the computer.
    b. Double-click the *.dmg file.
    The installation panel appears.
    c. Double-click **Reset Scala Settings**.



Support Contact

You can contact your local dealer if you need maintenance on your Marport products. You can also ask us at the following contact details:

FRANCE

Marport France SAS

8, rue Maurice Le Léon

56100 Lorient, France

supportfrance@marport.com

NORWAY

Marport Norge A/S

Breivika Industrivei 69

6018 Ålesund, Norway

supportnorge@marport.com

SPAIN

Marport Spain SRL

Calle Jacinto Benavente 37 2º

(Acceso C/ La Paz n. 14)

36202 Vigo (Pontevedra), Spain

supportspain@marport.com

USA

Marport Americas Inc.

12123 Harbour Reach Drive, Suite 100

Mukilteo, WA 98275, USA

supportusa@marport.com

ICELAND

Marport EHF

Tónahvarf 7

203 Kopavogur, Iceland

supporticeland@marport.com

SOUTH AFRICA

Marport South Africa

28 Le Sage Close

Edgemead

7441 Cape Town, South Africa

jleroux@marport.com

UNITED KINGDOM

Marport UK Ltd

32 Wilson Street

Peterhead, AB42 1UD, United Kingdom

george@marport.com

Appendix

Compatible Incoming NMEA Sentences

Scala2 can decode and use the following types of NMEA sentences coming from external devices (GPS, winch system, sounder...).

NMEA 0183 Standard Sentences

Symbol (*) indicates which parts of the sentence Scala2 uses.

NMEA Sentence	Format	First compliant version of Scala
DBK - Depth Below Keel	`$--DBK,a.a,F,b.b,M,c.c,F*hh<CR><LF>` 1. $--: Talker identifier* 2. DBK: Sentence formatter* 3. a.a,F: Depth, feet 4. b.b,M: Depth, meters* 5. c.c,F: Water depth, fathoms 6. *hh: Checksum*	1.4.0.0
DBT - Depth Below Transducer	`$--DBT,a.a,F,b.b,M,c.c,F*hh<CR><LF>` 1. $--: Talker identifier* 2. DBT: Sentence formatter* 3. a.a,F: Water depth, feet* 4. b.b,M: Water depth, meters* 5. c.c,F: Water depth, fathoms* 6. *hh: Checksum*	1.2.0.0
DPT - Depth	`$--DPT,a.a,b.b,c.c*hh<CR><LF>` 1. $--: Talker identifier* 2. DPT: Sentence formatter* 3. a.a: Water depth relative to the transducer, meters* 4. b.b: Offset from transducer, meters (positive = distance from transducer to water line; negative = distance from transducer to keel)*	1.0.0.0

NMEA Sentence	Format	First compliant version of Scala
	5. c.c: Maximum range scale in use 6. *hh: Checksum*	
GGA - Global Positioning System Fix Data	`$--GGA,hhmmss.ss,aaaa.aa,b,cccc.cc,d,e,ff,g.g,h.h,M,i.i,M,j.j,kkkk*hh<CR><LF>` 1. $--: Talker identifier* 2. GGA: Sentence formatter* 3. hhmmss.ss: UTC of position* 4. aaaaa.aa, b: Latitude North/South (N/S)* 5. cccc.cc, d: Longitude East/West (E/W)* 6. e: GPS quality indicator 7. ff: Number of satellites in use (00-12) 8. g.g: Horizontal dilution of precision 9. h.h, M: Antenna altitude above/below mean sea level (geoid), meters* 10. i.i, M: Geoidal separation, meters 11. j.j: Age of differential GPS data 12. kkkk: Differential reference station ID 13. *hh: Checksum*	1.0.0.0
GLL - Geographic Position - Latt/Long	`$--GLL, aaaa.aa,L,bbbbb.bb,L,hhmmss.ss,C,d*hh<CR><LF>` 1. $--: Talker identifier* 2. GLL: Sentence formatter* 3. aaaa.aa,L: Latitude North/South (N/S)* 4. bbbbb.bb,L: Longitude East/West (E/W)* 5. hhmmss.ss: UTC of position* 6. C: status (A: data valid / V: data not valid)* 7. d: Mode indicator 8. *hh: Checksum*	1.2.6.0
GNS - GNSS Fix Data	`$--GNS,hhmmss.ss,aaa.aa,L,bbbbb.bb,L,c--c,dd,e.e,f.f,g.g,h.h,i.i,a*hh<CR><LF>` 1. $--: Talker identifier* 2. GNS: Sentence formatter* 3. hhmmss.ss: UTC of position*	1.0.0.0

NMEA Sentence	Format	First compliant version of Scala
	4. aaaa.aa,L: Latitude North/South (N/S)* 5. bbbbb.bb,L: Longitude East/West (E/W)* 6. c--c: Mode indicator 7. dd: Total number of satellites in use (00-99) 8. e.e: Horizontal dilution of precision 9. f.f: Antenna altitude above/below mean sea level (geoid), in meters* 10. g.g: Geoidal separation, meters 11. h.h: Age of differential data 12. i.i: Differential reference station ID 13. *hh: Checksum*	
HDG - Heading, Deviation & Variation	`$--HDG,a.a,b.b,M,c.c,M*hh<CR><LF>` 1. $--: Talker identifier* 2. HDG: Sentence formatter* 3. a.a: Sensor magnetic heading (degrees)* 4. b.b,M: Magnetic deviation (degrees), Easterly/Westerly (E/W)* 5. c.c,M: Magnetic variation (degrees), Easterly/Westerly (E/W)* 6. *hh: Checksum*	1.0.0.0
HDT - Heading, True	`$--HDT,a.a,T*hh<CR><LF>` 1. $--: Talker identifier* 2. HDT: Sentence formatter* 3. a.a,T: Heading (degrees) True* 4. *hh: Checksum*	1.0.0.0
MTW - Water Temperature	`$--MTW,a.a,C*hh<CR><LF>` 1. $--: Talker identifier* 2. MTW: Sentence formatter* 3. a.a,C: Temperature, degrees C* 4. *hh: Checksum*	1.4.0.0
MWD - Wind Direction & Speed	`$--MWD, a.a,T,b.b,M,c.c,N,d.d,M*hh<CR><LF>` 1. $--: Talker identifier* 2. MWD: Sentence formatter*	1.6.0.0

NMEA Sentence	Format	First compliant version of Scala
	3. a.a,T: Wind direction, 0° to 359° true* 4. b.b,M: Wind direction, 0° to 359° magnetic* 5. c.c,N: Wind speed, knots* 6. d.d,M: Wind speed, meters/second* 7. *hh: Checksum*	
MWV - Wind Speed & Angle	`$--MWV,a.a,b,c.c,d,E *hh<CR><LF>` 1. $--: Talker identifier* 2. MWV: Sentence formatter* 3. a.a: Wind angle, 0 to 359 degrees* 4. b: Reference, R = relative, T = true* 5. c.c: Wind speed* 6. d: Wind speed units, K = km/h, M = m/s, N = knots* 7. E: Status, A = data valid V= data invalid* 8. *hh: Checksum*	1.0.0.0
RMC - Recommended Minimum Navigation Information	`$--RMC,aaaaaa,A,bbbb.bbb,B,ccccc.ccc,C,ddd.d,eee.e,ffffff,ggg.g,G,H*hh<CR><LF>` 1. $--: Talker identifier* 2. RMC: sentence formatter* 3. aaaaaa: Time (UTC)* 4. A: Status, A = data valid, V = navigation receiver warning* 5. bbbb.bbb, B: Latitude, N/S* 6. ccccc.ccc, C: Longitude, E/W* 7. ddd.d: Speed over ground (knots)* 8. eee.e: Course Over Ground (degrees True)* 9. ffffff: Date: ddmmyy* 10. ggg.g, G: Magnetic variation (degrees E/W)* 11. H: mode indicator: A=Autonomous, D=Differential, E=Estimated, M=Manual input, S=Simulator, N=data not valid (sentence is not accepted if mode indicator = N)* 12. *hh: Checksum*	2.2.2.0

NMEA Sentence	Format	First compliant version of Scala
VBW - Dual Ground/ Water Speed	`$--VBW,a.a,b.b,A,c.c,d.d,A,e.e,A,f.f,A*hh<CR><LF>` 1. $--: Talker identifier* 2. VBW: Sentence formatter* 3. a.a: Longitudinal water speed (knots), "-" = astern* 4. b.b: Transverse water speed, "-" = port* 5. A: Status, A = data valid, V = data invalid* 6. c.c: Longitudinal ground speed, "-" = astern* 7. d.d: Transverse ground speed, "-" = port* 8. A: Status, A = data valid, V = data invalid* 9. e.e: Stern Transverse water speed, "-" = port* 10. A: Status, A = data valid, V = data invalid* 11. f.f: Stern Transverse ground speed, "-" = port* 12. A: Status, A = data valid, V = data invalid* 13. *hh: Checksum*	1.4.0.0
VHW - Water Speed and Heading	`$--VHW,a.a,T,b.b,M,c.c,N,d.d,K*hh<CR><LF>` 1. $--: Talker identifier* 2. VHW: Sentence formatter* 3. a.a,T: Heading, degrees True* 4. b.b,M: Heading, degrees Magnetic* 5. c.c,N: Speed, knots* 6. d.d,K: Speed, km/hr 7. *hh: Checksum*	1.4.0.0
VLW - Dual Ground/ Water Distance	`$--VLW,a.a,N,b.b,N,c.c,N,d.d,N*hh<CR><LF>` 1. $--: Talker identifier* 2. VLW: Sentence formatter* 3. a.a,N: Total cumulative water distance, nautical miles* 4. b.b,N: Water distance since reset, nautical miles* 5. c.c,N: Total cumulative ground distance, nautical miles* 6. d.d,N: Ground distance since reset, nautical miles* 7. *hh: Checksum*	1.3.3.0
	`$--VTG,a.a,T,b.b,M,c.c,N,d.d,K*hh<CR><LF>`	1.3.3.0

NMEA Sentence	Format	First compliant version of Scala
VTG - Course Over Ground and Ground Speed	1. $--: Talker identifier* 2. VTG: Sentence formatter* 3. a.a,T: Course over ground, degrees, True* 4. b.b,M: Course over ground, degrees, Magnetic 5. c.c,N: Speed over ground, knots* 6. d.d,K: Speed over ground, km/hr* 7. *hh: Checksum*	
VWR - Relative (Apparent) Wind Speed and Angle	`$--VWR,a.a,L,b.b,N,c.c,M,d.d,K*hh<CR><LF>` 1. $--: Talker identifier* 2. VWR: Sentence formatter* 3. a.a,L: Relative Wind angle, 0 to 180 degrees, Left or Right (L/R)* 4. b.b,N: Wind speed, knots 5. c.c,M: Wind speed, meters/second 6. d.d,K: Wind speed in Km/Hr 7. *hh: Checksum*	1.3.3.0

Proprietary Sentences

Symbol (*) indicates which parts of the sentence Scala2 uses.

Sentence	Format	First compliant version of Scala2

ATW - Naust Marine winch control system	`$NMATW,aaaaaa,bbbbbb,cccccc,dddddd,eeeeee,ffffff,`
	`ggggg,hhhhh,iiiii,jjjjj,kkkkk,lllll,mm:mm*hh <CR><LF>`
	
	1. $NMATW: Talker identifier + sentence formatter*
	2. aaaaaa: Winch starboard tension (kg)*
	3. bbbbbb: Winch port tension (kg)*
	4. cccccc: Winch middle tension (kg)*
	5. dddddd: Winch starboard length (meter or feet)*
	6. eeeeee: Winch port length (meter or feet)*
	7. ffffff: Winch middle length (meter or feet)*
	8. ggggg: RPM starboard
	9. hhhhh: RPM port
		1.2.0.0

Sentence	Format	First compliant version of Scala2
	10. iiiii: RPM middle 11. jjjjj: Line speed starboard (meter or feet/min) 12. kkkkk: Line speed port (meter or feet/min) 13. lllll: Line speed middle (meter or feet/min) 14. mm:mm: Towing time (meter or feet/min)	
CON - Consumption, attitude of vessel (Silecmar)	`$SICON,aaa,bbb,cc,ddd,ee.e,ff.f*hh<CR><LF>` 1. $SICON: Talker identifier + sentence formatter* 2. aaa: consumption of the main engine (L/H)* 3. bbb: RPM of the main engine* 4. cc: tilt of propeller's blade (%)* 5. ddd: Out temperature of the exhaust gases, Celsius degrees* 6. ee.e: Vessel pitch, degrees* 7. ff.f: Vessel roll, degrees*	1.2.6.0
	`$SICON,aaa,bbb,cc,ddd,e.e*hh<CR><LF>` 1. $SICON: Talker identifier + sentence formatter* 2. aaa: consumption of the main engine* 3. bbb: RPM of the main engine* 4. cc: tilt of propeller's blade (%)* 5. ddd: average trim angle of vessel, degrees* 6. e.e: Out temperature of the exhaust gases, Celsius degrees*	1.6.19.0
FEC - Furuno attitude message	`$PFEC,GPatt,aaa.a,bb.b,cc.c,*hh<CR><LF>` 1. $PFEC: Talker identifier + sentence formatter* 2. GPatt: Global positioning attitude, sentence formatter 3. aaa.a: Heading true* 4. bb.b: Pitch* 5. cc.c: Roll* 6. *hh: Checksum*	1.0.5.0
KW - Karmoy Winch	`$KWIN,a,b.b,T,c.c,M,d.d,rpm*hh<CR><LF>`	1.6.25.0

Sentence	Format	First compliant version of Scala2
	1. $KWIN: Talker identifier + sentence formatter* 2. a: Winch 0 = Stbd / Trawl 1 = Port Trawl Winch 3. b.b, T: Tensions (tons) 4. c.c, M: Length (meters) 5. d.d, rpm: Speed (rpm)	
MA DD - Marelec winch length and tension	`# MA DD dd/mm/yy hh:mm:ss LB aaaam LS bbbbm LM ccccm TB ddddK TS eeeeK TM ffffK gg<CR><LF>` 1. # MA DD: talker identifier* 2. dd/mm/yy: date 3. hh:mm:ss: time 4. LB aaaam: Shooted length portside in meters* 5. LS bbbbm: Shooted length starboard in meters* 6. LM ccccm: Shooted length center in meters* 7. TB ddddK: Tension of portside in kg* 8. TS eeeeK: Tension of starboard in kg* 9. TM ffffK: Tension of center in kg* 10. gg: system in 00 = MANUAL (stop), 10 = auto shooting, 20 = auto fishing, 30 = auto hauling, 40 = slow tension alarm without propeller reduction, 41 = slow tension alarm with propeller reduction, 50 = fast tension alarm without propeller reduction, 51 = fast tension alarm with propeller reduction*	1.2.0.0
MPT TXOR - Marport, transducer orientation	`$PMPT,TXOR,aa.a,bb.b,cc.c,d*hh` 1. $PMPT: talker identifier + sentence formatter. 2. TXOR: Transducer Orientation 3. aa.a: pitch* 4. bb.b: roll* 5. cc.c: yaw* 6. s: V = valid / N = not valid*	2.0.0.0
NAV - Ifremer proprietary sentence	`$NANAV,04/09/yy,hhmmss.sss,NASYC,N,48,22.92315,W,004,28.90527,D,00.0,WG84,04/09/13, 13:05:37.000, COU,346.08,-00.22,+00.13,+00.00,+00052.172,000,0000`	1.0.0.0

Sentence	Format	First compliant version of Scala2

IFM - Ifremer versatile sentence	`$PIFM,EU,MES,dd/mm/yy,hh:hh:ss.sss,TRFUN,`
	`±a,bb,ccccc,dddd,e.e,f,ggggg,hhhh,i.i,j,<CR><LF>`
	
	1. $PIFM: Talker identifier + sentence formatter*
	2. OCGYR: pitch, roll, heading
	3. TRFUN: winch lengths (starboard, port) and winch tensions (starboard, port)
		1.0.0.0

SYN - Winch Syncro 2020, winch length and tension	`$WMSYN,aaa.a,m,bbb.b,m,ccc.c,m,ddd.d,m,ee.e,t,ff.f,`
	`t,gg.g,t,hh.h,t,0.5,r,0.7,r,1.6,s,2.0,s,0,0,1,0,0,`
	`45.5,c,33.0,p,32.8,p*31`
	
	1. $WMSYN: Talker identifier + sentence formatter*
	2. aaa.a: winch starboard length in meters*
	3. bbb.b: winch inner starboard length in meters*
	4. ccc.c: winch inner port length in meters*
	5. ddd.d: winch port length in meters*
	6. ee.e: winch starboard tension in tons*
	7. ff.f: winch inner starboard tension in tons*
	8. gg.g: winch inner port tension in tons*
	9. hh.h: winch port tension in tons*
	10. Other strings are not used.
		1.0.0.0

	`$WMSYN,aaa.a,c,bbb.b,c,ccc.c,c,dd.d,t,ee.e,t,ff.f, t*hh<CR><LF>` 1. $WMSYN: Talker identifier + sentence formatter* 2. aaa.a,l: Starboard wire length (m=meter)* 3. bbb.b,l: Mid wire length (m=meter)* 4. ccc.c,l: port wire length (m=meter)* 5. dd.d,t: Starboard wire tension, tons* 6. ee.e,t: Mid wire tension, tons* 7. ff.f,t: Port wire tension, tons*	1.6.19.0
TAWWL - RappHydema, PTS Pentagon warp length	`@TAWWL,a,M,b,M,c,M*hh<CR><LF>` See below. M = meter	1.4.4.0
	`@TAWWL,x,y,z*hh<CR><LF>`	1.6.19.0

Sentence	Format	First compliant version of Scala2
	1. @TAWWL: Talker identifier + sentence formatter* 2. a: Starboard winch length* 3. b: Port winch length* 4. c: Middle winch length*	
TAWWT - RappHydema, PTS Pentagon warp tension	`@TAWWT,a.a,T,b.b,T,c.c,T*hh<CR><LF>` See below. T = tons	1.4.4.0
	`@TAWWT,a.a,b.b,c.c*hh<CR><LF>` 1. @TAWWT: Talker identifier + sentence formatter* 2. a.a: Starboard winch tension* 3. b.b: Port winch tension* 4. c.c : Middle winch tension*	1.6.19.0
WCT - Warp length and tension (Silecmar)	`$SIWCT,aaa,bbb,ccc,d.d,e.e,f.f*hh<CR><LF>` 1. $SIWCT: Talker identifier + sentence formatter* 2. aaa: Port winch cable, meters* 3. bbb: Starboard winch cable, meters* 4. ccc: Clump winch cable, meters* 5. d.d: Tension in the port winch, tons* 6. e.e: Tension in the starboard winch, tons* 7. f.f: Tension in the clump winch, tons* 8. *hh: Checksum*	1.2.6.0
WIDA1 - Kongsberg warp length (single to triple trawls)	`$WIDA1,aa,bbbb,cc,0,dd,eeee,ff,1,g,h,i,2,k,l,m,3 *hh<CR><LF>` 1. $WIDA1: Talker identifier + sentence formatter* 2. aa: port wire tension, tons* 3. bbbb: port wire out, meters* 4. cc: port wirespeed, m/min 5. 0: port* 6. dd: starboard wire tension, tons* 7. eeee: starboard wire out, meters* 8. ff: starboard wirespeed, m/min 9. 1: starboard*	2.2.2.0

Sentence	Format	First compliant version of Scala2
	10. g: port mid wire tension, tons* 11. h: port mid wire out, meters* 12. i: port mid wirespeed, m/min 13. 2: port mid* 14. k: stb mid wire tension, tons* 15. l: stb mid wire out, meters* 16. m: stb mid wirespeed, m/min 17. 3: starboard mid* 18. *hh: Checksum*	
WIDA2 - Kongsberg warp length (quad and penta trawls)	`$WIDA2,aa,bbbb,cc,4,dd,eeee,ff,5 *hh<CR><LF>` 1. $WIDA2: Talker identifier + sentence formatter* 2. aa: center port wire tension, tons* 3. bbbb: center port wire out, meters* 4. cc: center port wirespeed, m/min 5. 4: center port* 6. dd: center stb wire tension, tons* 7. eeee: center stb wire out, meters* 8. ff: center stb wirespeed, m/min 9. 5: Center stb* 10. *hh: Checksum*	2.12.1.0
WLP - Scantrol winch length (port)	`$SCWLP,a.a,M,b.b,M*hh<CR><LF>` 1. $SCWLP: Talker identifier + sentence formatter* 2. a.a,M: paid out wire in meters* 3. b.b,M: wirespeed in meters/sec., positive when paying out wire 4. *hh: Checksum*	1.0.6.0
WLS - Scantrol winch length (starboard)	`$SCWLS,a.a,M,b.b,M*hh<CR><LF>` 1. $SCWLS: Talker identifier + sentence formatter* 2. a.a,M: paid out wire in meters* 3. b.b,M: wirespeed in meters/sec., positive when paying out wire 4. *hh: Checksum*	1.0.6.0

Sentence	Format	First compliant version of Scala2
WLC - Scantrol winch length (clump)	`$SCWLC,a.a,M,b.b,M*hh<CR><LF>` 1. $SCWLC: Talker identifier + sentence formatter* 2. a.a,M: paid out wire in meters* 3. b.b,M: wirespeed in meters/sec., positive when paying out wire 4. *hh: Checksum*	1.0.6.0
WLD - Scantrol winch length (triple trawl - port clump)	`$SCWLD,a.a,T*hh<CR><LF>` 1. $SCWLD: Talker identifier + sentence formatter* 2. a.a,M: paid out wire in meters* 3. b.b,M: wirespeed in meters/sec., positive when paying out wire 4. *hh: Checksum*	2.0.0.0
WLE - Scantrol winch length (quad trawl - center clump)	`$SCWLE,a.a,T*hh<CR><LF>` 1. $SCWLE: Talker identifier + sentence formatter* 2. a.a,M: paid out wire in meters* 3. b.b,M: wirespeed in meters/sec., positive when paying out wire 4. *hh: Checksum*	2.0.0.0
WTP - Scantrol winch tension (port)	`$SCWTP,a.a,T*hh<CR><LF>` 1. $SCWTP: Talker identifier + sentence formatter* 2. a.a,T: tension in tons* 3. *hh: Checksum*	1.0.6.0
WTS - Scantrol winch tension (starboard)	`$SCWTS,a.a,T*hh<CR><LF>` 1. $SCWTS: Talker identifier + sentence formatter* 2. a.a,T: tension in tons* 3. *hh: Checksum*	1.0.6.0
	`$SCWTC,a.a,T*hh<CR><LF>`	1.0.6.0

Sentence	Format	First compliant version of Scala2
WTC - Scantrol winch tension (clump)	1. $SCWTC: Talker identifier + sentence formatter* 2. a.a,T: tension in tons* 3. *hh: Checksum*	
WTD - Scantrol winch tension (triple trawl - port clump)	`$SCWTD,a.a,T*hh<CR><LF>` 1. $SCWTD: Talker identifier + sentence formatter* 2. a.a,T: tension in tons* 3. *hh: Checksum*	2.0.0.0
WTE - Scantrol winch tension (quad trawl - center clump)	`$SCWTD,a.a,T*hh<CR><LF>` 1. $SCWTD: Talker identifier + sentence formatter* 2. a.a,T: tension in tons* 3. *hh: Checksum*	2.0.0.0

NMEA Outputs from Scala2

Scala2 outputs data in the following formats.

Marport's proprietary sentence

Scala2 uses the following sentence to output sensor data:

$MPMSD, X, YY, ZZZ, TTT, u, VV.VVV*<chk>

1. **$MP**: Talker identifier
2. **MSD**: Sentence formatter (Marport Sensor Data)
3. **X, YY, ZZZ**: location of the emitting sensor on the trawl gear
4. **TTT**: type of sensor data
5. **u**: acronym of the unit
6. **VV.VVV**: decimal value
7. ***<chk>**: checksum. The checksum is a security measure to ensure that the sentence is transmitted accurately. The checksum follows the NMEA specifications (IEC 61162-1 Ed.4).

The following sections give more details about the contents of the sentence.

Sensor location

X, YY, ZZZ specifies the location of the emitting sensor on the trawl gear.

- **X**: 1 or 2 letters indicating on which gear the sensor is installed. This is useful only for twin, triple, quad and penta trawl gears.
- **YY**: 2 letters indicating the part of the gear where the sensor is installed.
- **ZZZ**: numerical code that is a Marport sensor node identifier related to the Mx receiver configuration. It is used in Scala2 to position the sensors in the 3D views.

Type of gear	Gear position	X
Single		T
Twin trawl	Starboard	ST
Twin trawl	Port	PT
Triple trawl	Starboard	ST
Triple trawl	Middle	MT
Triple trawl	Port	PT
Quad trawl	Starboard	ST
Quad trawl	Inner starboard	NT
Quad trawl	Inner port	MT
Quad trawl	Port	PT
Penta trawl	Starboard	ST
Penta trawl	Inner starboard	LT
Penta trawl	Middle	NT
Penta trawl	Inner port	MT
Penta trawl	Port	PT
Unknown		<Empty>

Trawl gear part	YY
Port Door	PD
Starboard Door	SD
Port Wing	PW
Starboard Wing	SW

Trawl gear part	YY
Headrope	HR
Footrope	FR
Body	BO
Cod-end	CE

Clumps in twin or triple gears are coded as a starboard door of the trawl:

Clump	X, YY	Description
Twin trawl	PT, SD	Port trawl, starboard door
Triple trawl, starboard clump	MT, SD	Middle trawl, starboard door
Triple trawl, port clump	PT, SD	Port trawl, starboard door
Quad trawl, starboard clump	NT, SD	Inner starboard trawl, starboard door
Quad trawl, middle clump	MT, SD	Inner port trawl, starboard door
Quad trawl, port clump	PT, SD	Port trawl, starboard door
Penta trawl, starboard clump	LT, SD	Inner starboard trawl, starboard door
Penta trawl, inner starboard clump	NT, SD	Middle trawl, starboard door
Penta trawl, inner port clump	MT, SD	Inner port trawl, starboard door
Penta trawl, port clump	PT, SD	Port trawl, starboard door

Sensor data types and values

TTT, u, VV.VVV contains the type, unit and value of sensor data.

- **TTT**: 3 letter code corresponding to the type of data.
- **u**: acronym of the unit.
- **VV.VVV**: decimal value.

Data type	TTT	Unit	u	Description
Depth	DPT	meters	m	Depth of sensor (distance from surface)
Catch	CAT	%		Currently 0 (sensor OFF) or 100 (sensor ON), unit field is empty
Pitch	PIT	degrees	d	From -90 to 90

Data type	TTT	Unit	u	Description
Roll	ROL	degrees	d	From -180 to 180
Temperature	TMP	Celsius degrees	c	
Spread starboard	XST	meters	m	Distance between the master spread sensor and the slave. If the field is empty, it means “slave lost”.
Spread clump	XC1			
Spread port	XPT			
Battery	BAT	%		From 0 to 100. Unit field is empty.
Speed along	SPL	m/s	ms	
Speed across	SPX	m/s	ms	
Distance to bottom	DTB	meters	m	Distance from the sensor to the sea floor
Distance to bottom from sensor	DFB	meters	m	Distance from the sensor to the sea floor (sensor data)*
Opening	OPN	meters	m	Distance from the headrope to the footrope or from the top to the bottom of the trawl body
Clearance	CLR	meters	m	Distance from the footrope or the bottom of the trawl body to the sea floor
Slant Distance	SLD	meters	m	Distance from the sensor to the hydrophone
Relative Bearing	RBR	degrees	d	Angle from the ownship to the sensor relative to ownship heading
True Bearing	TBR	degrees	d	Angle from the ownship to the sensor relative to True North

*DFB: If value remains equal to the sensor maximum range, it means the bottom is not detected.

Type of gear	X, YY, ZZZ, TTT	
Single	T,PD,23,XST	Distance between doors
Twin trawl	PT,PD,23,XST	Distance between doors
	PT,PD,23,XC1	Distance between port door and clump

Type of gear	X, YY, ZZZ, TTT	
	PT,SD,26,XST	Distance between clump and starboard
Triple trawl	PT,PD,23,XST	Distance between port door and starboard door
	PT,PD,23,XC1	Distance between port door and port clump
	PT,PD,23,XC2	Distance between port door and starboard clump
	PT,SD,26,XC2	Distance between port clump and starboard clump
	MT,SD,123,XST	Distance between starboard clump and starboard door
Quad trawl	PT,PD,23,XST	Distance between port door and starboard door
	PT,PD,23,XC1	Distance between port door and starboard clump
	PT,PD,23,XC2	Distance between port door and middle clump
	PT,PD,23,XC3	Distance between port door and port clump
	PT,SD,26,XC2	Distance between port clump and middle clump
	MT,SD,123,XC3	Distance between middle clump and starboard clump
	NT,SD,223,XST	Distance between starboard clump and starboard door
Penta trawl	PT,PD,23,XST	Distance between port door and starboard door
	PT,PD,23,XC1	Distance between port door and starboard clump
	PT,PD,23,XC2	Distance between port door and inner starboard clump

Type of gear	X, YY, ZZZ, TTT	
	PT,PD,23,XC3	Distance between port door and inner port clump
	PT,PD,23,XC4	Distance between port door and port clump
	PT,SD,26,XC2	Distance between port clump and inner port clump
	MT,SD,123,XC3	Distance between inner port clump and inner starboard clump
	NT,SD,223,XC4	Distance between inner starboard and starboard clump
	LT,SD,323,XST	Distance between starboard clump and starboard door

Positioning sentences

Scala2 can output NMEA data for trawl door positioning with the following sentences:

- $PSIMS (Olex)
- $PTSAL (MaxSea version 12 and SeaPix)
- $PMPT (TimeZero)
- $IIGLL (MaxSea version 12, single position sentence)
- $IITPT (Simrad, single position sentence)

These are examples of PSMIS, PTSAL and IITPT sentences:

$PSIMSn,aaa,M,bbb,M,ccc.c,T,ddd.d,M, hhmmss*hh<cr><lf>

- **$PSIMS**: talker identifier + sentence formatter
- **n**: 1 = Spread1 (port trawl door when Twin Rig) / 2 = Spread2 (starboard trawl door when Twin Rig).
- **aaa,M**: slant range to sensor, in meters (filtered values, no decimals).
- **bbb,M**: horizontal range to sensor, in meters (unfiltered values, no decimals). Transmits null fields if depth-sensor is not activated (will calculate horizontal range with manual set depth).
- **ccc.c,T**: true bearing (deg.rel.north) to sensor. Requires gyro input for reliable data.
- **ddd.d,M**: spread measurement in meters (door to door or door to clump). Transmits null fields if invalid values. Filtered values if sensor's filter is on.
- **hhmmss**: UTC time of data (hour-minutes-seconds)
- ***hh**: checksum

$PTSAL,aaa.a,bbb.b,ccc.c, ddd.d,eee.e,fff.f*hh <cr><lf>

- **$PTSAL**: talker identifier + sentence formatter
- **aaa.a**: horizontal range in meters to sensor 1
- **bbb.b**: horizontal range in meters to sensor 2
- **ccc.c**: bearing to sensor 1 relative to stern line
- **ddd.d**: bearing to sensor 2 relative to stern line
- **eee.e**: depth in meters of sensor 1
- **fff.f**: depth in meters of sensor 2
- ***hh**: checksum

$PMPT,POS,AA,bbb.b,M,ccc.c,T, ddd.d,M,eee.e,M,hhmmss*<chk><cr><lf>

- **$PMPT**: talker identifier + sentence formatter
- **POS**: position
- **AA**: 2 letters code that specifies the part of the gear (SD = starboard door / PD = port door / CL = clump on twin trawl / SC = starboard clump on triple trawl / PC = Port Clump on triple trawl).
- **bbb.b,M**: horizontal distance in meters
- **ccc.c,T**: true bearing (deg.rel.north) to sensor
- **ddd.d,M**: depth below surface distance in meters
- **eee.e,M**: distance to bottom in meters if available, or empty
- **hhmmss**: UTC time of data (hour-minutes-seconds)
- ***hh**: checksum

@IITPT,aaa,M,bbb,P,ccc.c,M<cr><lf>

- **@IITPT**: talker identifier + sentence formatter. (TPT = Trawl position true vessel)
- **aaa,M**: horizontal range in meters to the target (0 - 4000 m). Requires an active depth sensor on the trawl or manual set depth, if not the slant range will be presented.
- **bbb,P**: true bearing to the target (i.e. relative to north). Requires gyro input for reliable data.
- **ccc.c,M** is the depth in meters of trawl below the surface (0 -2000 m). Requires an active depth sensor on the trawl or manual set depth, if not the depth field will be empty

Index

Numerics

3D
- Clump **92**
- Doors **92**
- Trawl **77, 82**

A

A2S
- Replay **122**

Alarm **113**

Applications **12**

B

Bathymetry
- Displaying **99**
- Settings **99**

C

Catch monitoring **69, 113**

Chart view **99, 103**

Compatibility
- macOS **7**

Computer
- Switch off **12**
- Switch on **12**

Contact **132**

Control panels
- A2S Data **18**
- Computer **18**
- MX **18**
- NMEA Inputs **18**
- Open **31**
- Ownship **18**
- Position **31**
- Trawl Data **18**

Customize (Control panels) **71, 96**

Customize Mode **29**

Customizing display **43**

D

Data recording
- Automatic deleting **117**
- Incoming data **117**

Data units **116**

Dock **12, 25**

Dongle **14**

E

Echogram
- Adding **44**
- Bottom Line **55**
- Colors **49**
- Desynchronize **62**
- Horizontal smoothing **49**
- Palette **49**
- Settings **46**
- Synchronize **62**
- True Mode **53**
- Vertical smoothing **49**
- VRM (Variable Range Marker) **57**

F

Flow **58, 96**

Flow Speed Navigator **58, 96**

Flowgram **58**

H

History plot
Desynchronize **62**
Synchronize **62**

I

Internet access **125**

L

Launchpad **12**
Licence file
Not found **125**
License file
Not found **14**
Options **14**
Updating **124**

M

Manual Estimation **18**
Marks **103**
Message
Allow apps **125**
File access **14, 125**
MultiDepth
Controls **84**
Displaying **82**
Settings **84**
Multitrawl view
Display options **77**
Displaying **77**
Examples **80**
Trawl setup **77**

N

NMEA
Inputs **133**
Output from Scala **145**

O

Opening Scala **14**
Options **14**
Overview
Scala **11**
System **9**

P

Page
Adding data **31**
Cannot find **125**
Creating **29**
Deleting **38**
Exporting **37**
Removing data **36**
Resize data **31**
Window **39**
Page display
Color **67**
Dial **64**
Font **67**
Gauge **64**
History Plot **31, 64**
Orientation **67**
Text **64**
Title **67**
Units **67**
Password
Customize **29**
Positioning
NMEA sentences **145**

R

Receiver
Display **25**

IP adress **25**
Replay
A2S files **122**
SD card **122**
Replaying data **118**
Resize **31**

S

Scala Replay
Message access folders **118**
Scale
Distance **62**
Zooming **62**
Sensors Data **31**
Numerical data **64, 67**
Troubleshooting **125**
Show Raw Data **18**
Single Trawl Spread Plot **71**
Slant distances **18**
Sonar Data **44**

T

TeamViewer **12, 131**
Time stamp **62**
Track recording folder **103**
Tracks **103**
Trash **12**
Trawl
3D **92**
Setup **86**
Trawl full **69**
Trawl Modeling **18**
Trawl Speed **96**
Trawl spread plot **70**
Trident **89**
Troubleshooting **125**
Twin trawl spread diagram **71**
Twin Trawl Spread Plot **71**

U

Uninstalling Scala **131**
Update
Application **124**
License file **124**
USB key **125**
User Interface **16**

V

Virtual Charger Room
25
VMware Fusion **125**

W

Window
Cannot find **125**
Closing **42**
Deleting **42**
Moving pages **41**
Opening **39, 42**
Smaller **125**