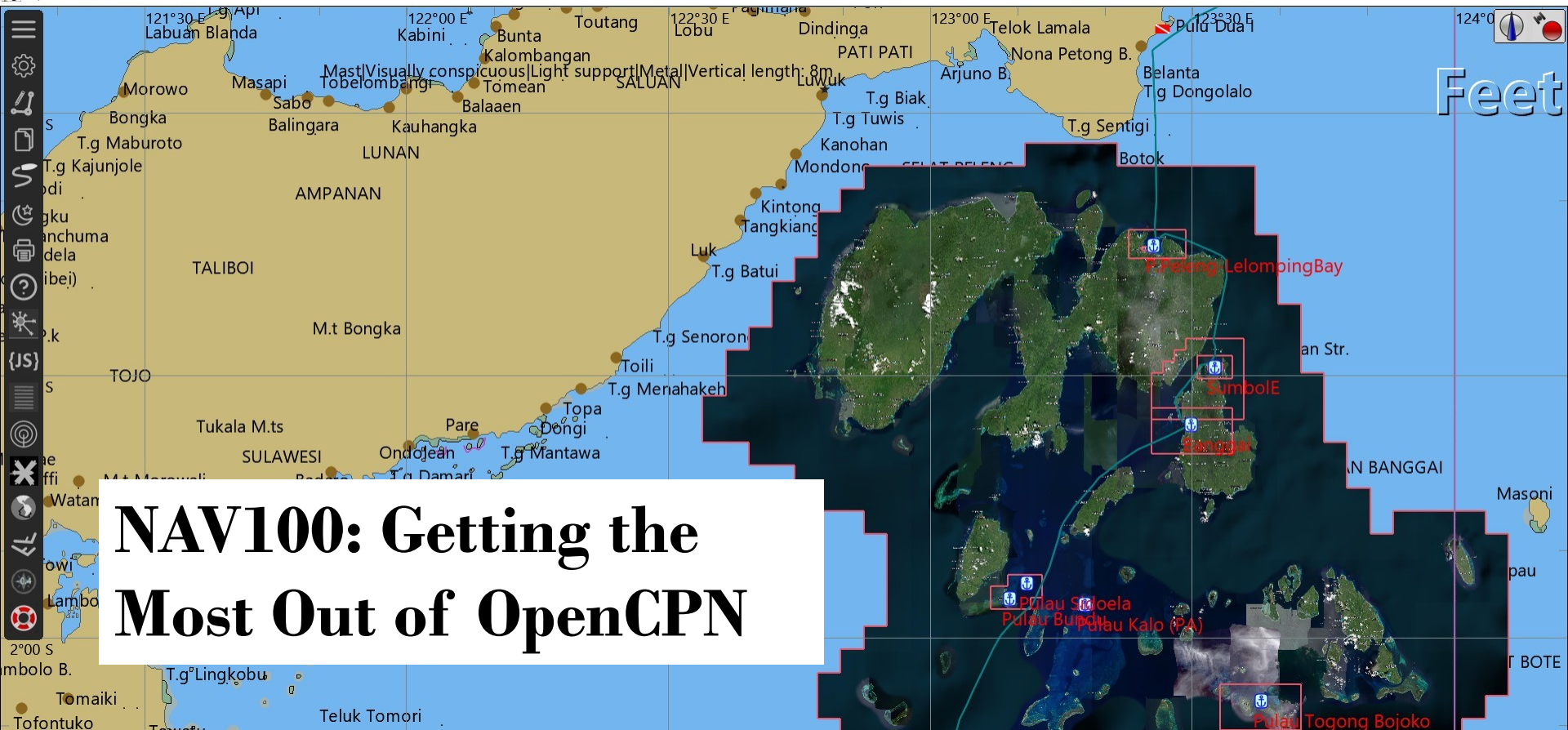




NAV100: Getting the Most Out of OpenCPN

*Presented by Sherry McCampbell
s/v Soggy Paws*



Version 1.9a (June 2026) – With Thanks to Terry Sargent s/v Valhalla

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St Francis 44

<http://svsoggypaws.com>³

Copyright Dave McCampbell



SV Soggy Paws Florida to the Philippines

PACIFIC OCEAN

Philippines

2015-2022

DAVAO

Palau

Yap

F.S.M.

Pohnpei

2014

Marshall Islands

2013

Tarawa

Samoa

Tahiti

Fiji

Tonga

2012

French Polynesia

Tuamotus

Gambiers

Pitcairn Island

Marquesas

Galapagos

2008-09

Panama

Ecuador

2010

Easter Island

Juan Fernandez

SOUTH AMERICA

Colombia

MELBOURNE

2007

Rio Dulce

NORTH AMERICA

ASIA

AUSTRALIA

Across the Pacific

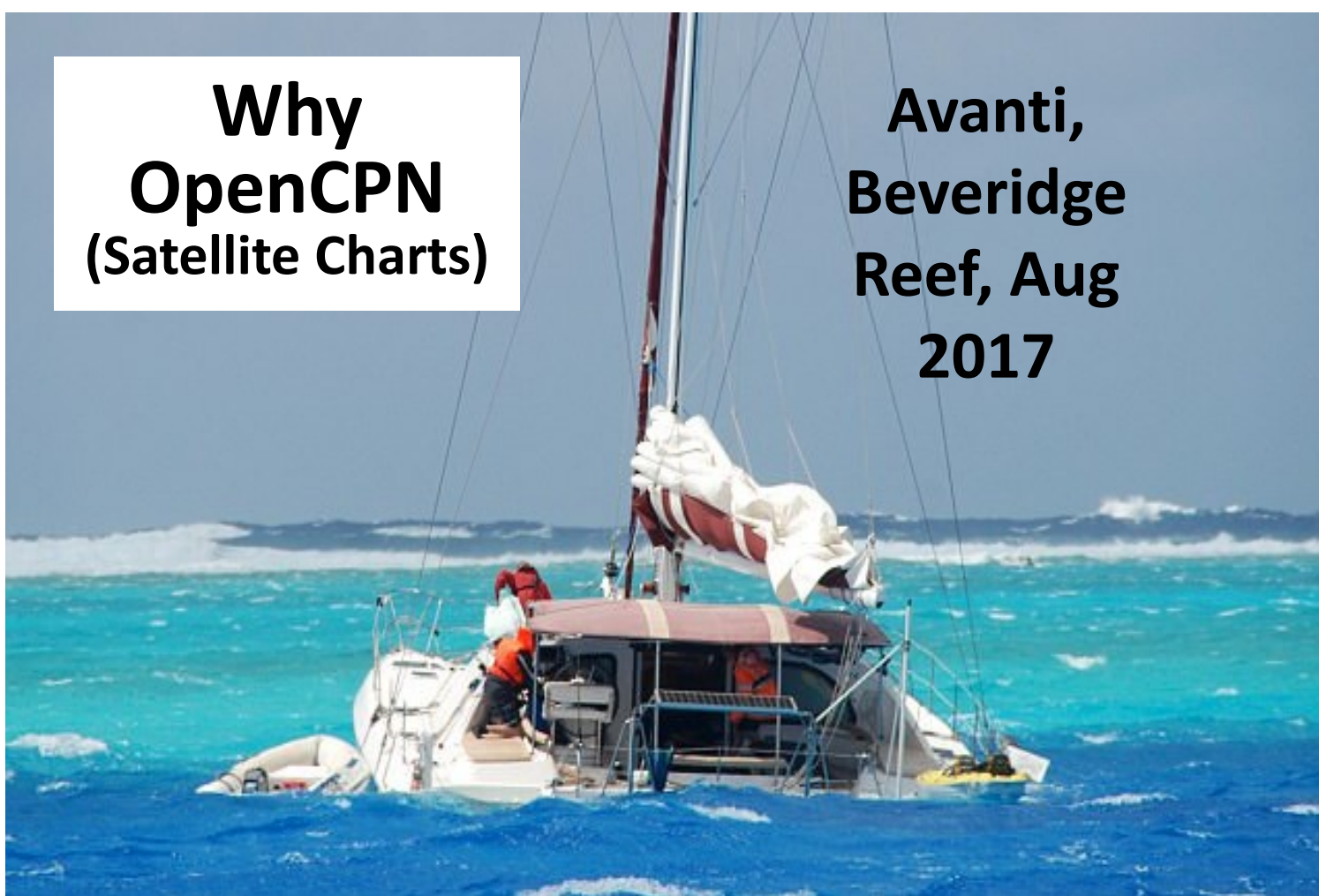
~30,000 nm





Why OpenCPN (Satellite Charts)

**Avanti,
Beveridge
Reef, Aug
2017**



“I had no idea the reef was there. I knew we’d hit something and were taking on water. We were ready to abandon ship.”

Robbie Cooper, s/v Avanti, Beveridge Reef, September 2017

Vestas Wind Cargado Shoals, Indian Ocean 2014



“Team Vestas Wind’s grounding on the Cargados Carajos Shoals comes down to a basic failure in overall passage planning, and an over-reliance on electronic navigation.”

Tanda Malaika
Huahine
2017



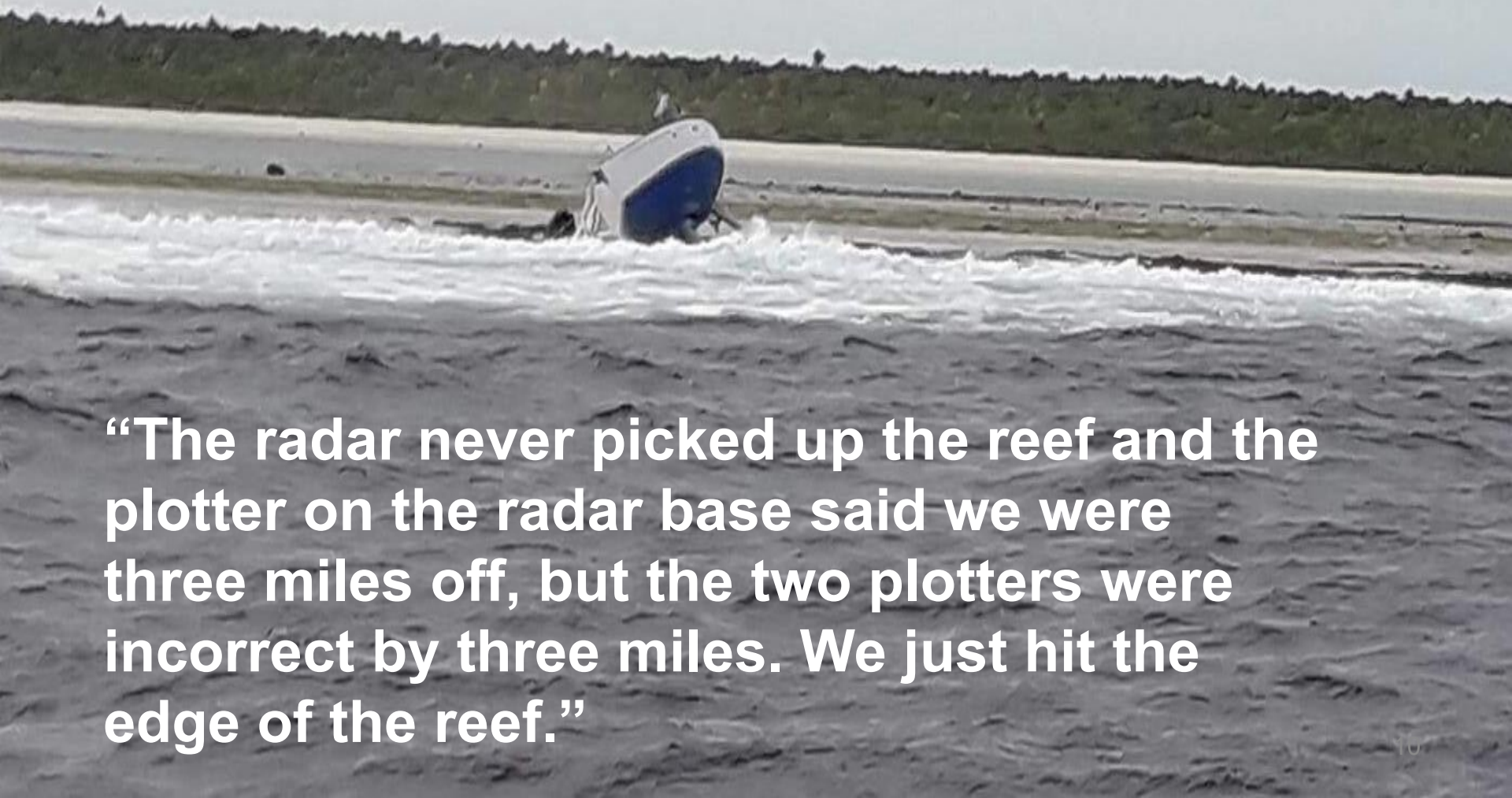
*“When they asked us what happened and we told them that our **chart did not show reef, they asked us if we had been using Navionics charts, and I said yes.** He then shook his head and said that at least five boats end up on those reefs a year who were using Navionics charts.”*



On the rocks, NW Australia, June 2016

Southern Fiji, June 2017

60 ft Oyster with Crew of 4, at night



“The radar never picked up the reef and the plotter on the radar base said we were three miles off, but the two plotters were incorrect by three miles. We just hit the edge of the reef.”

What is OpenCPN?

- An “open source” (**FREE**/ donationware) charting program
- Now runs on Windows 7-11, Mac, Linux, Raspberry Pi, and Android
- Regularly being updated with new features by cruisers for cruisers
- Download **FREE** from <http://opencpn.org>
 - Android Version on Google Play (\$9.99 for supported version with updates)

Download OpenCPN for Free from OpenCPN.org

[News](#)[About](#)[Start](#)[Manuals](#)[Downloads](#)[Resources](#)[Tracker](#)[Team](#)[Gallery](#)

Free Open Source Chartplotter and Marine GPS Navigation Software

To Downloads page

OpenCPN Chart Plotter Navigation

Win Mac Linux Raspberry Pi

Download Directory

CDN for faster and more reliable OpenCPN downloads
generously provided by  **StackPath**

OpenCPN Latest Release

OpenCPN is free, open source software for marine navigation. It is available for Mac OSX, Microsoft Windows, GNU/Linux, BSDs and Solaris.

[\[Current Version\]](#)



**Download and do
normal Windows Install
(accept all the defaults)**

Plugins

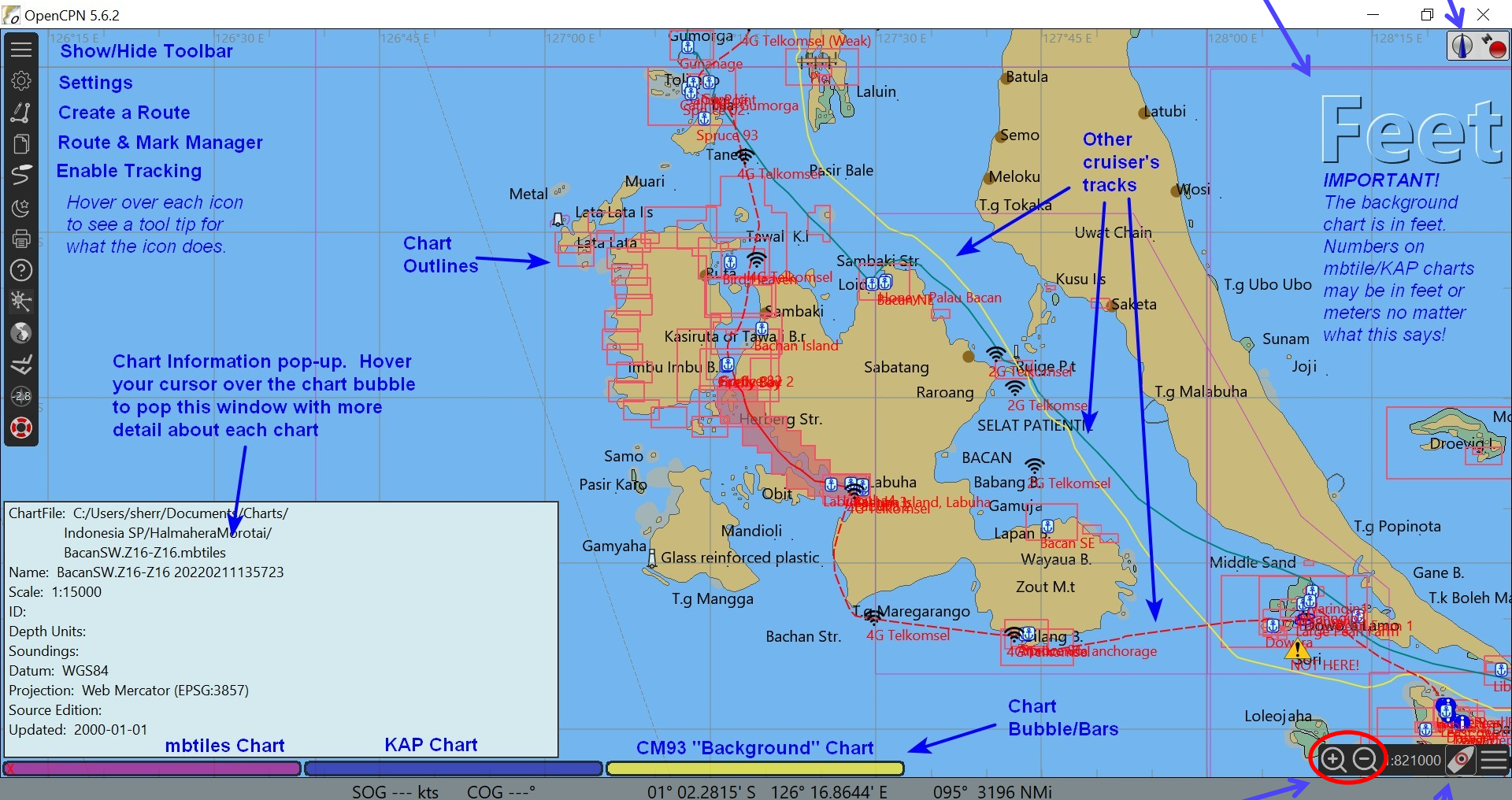
Plugins for OpenCPN are third party feature additions that expand the functionality of OpenCPN into those niche areas. Over 40 plugins available.

[\[Latest Plugins\]](#)



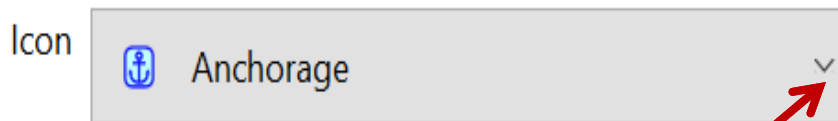
**Come back and explore “Plug-ins”
(extra functions) later**

OpenCPN Quick Overview

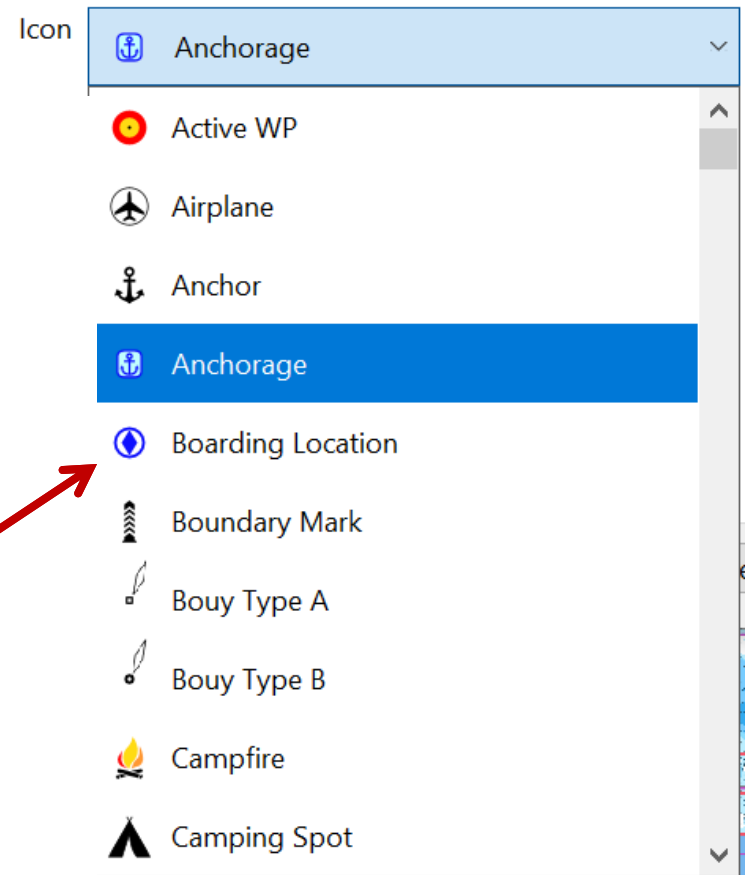


Geek Terminology

Drop-down box

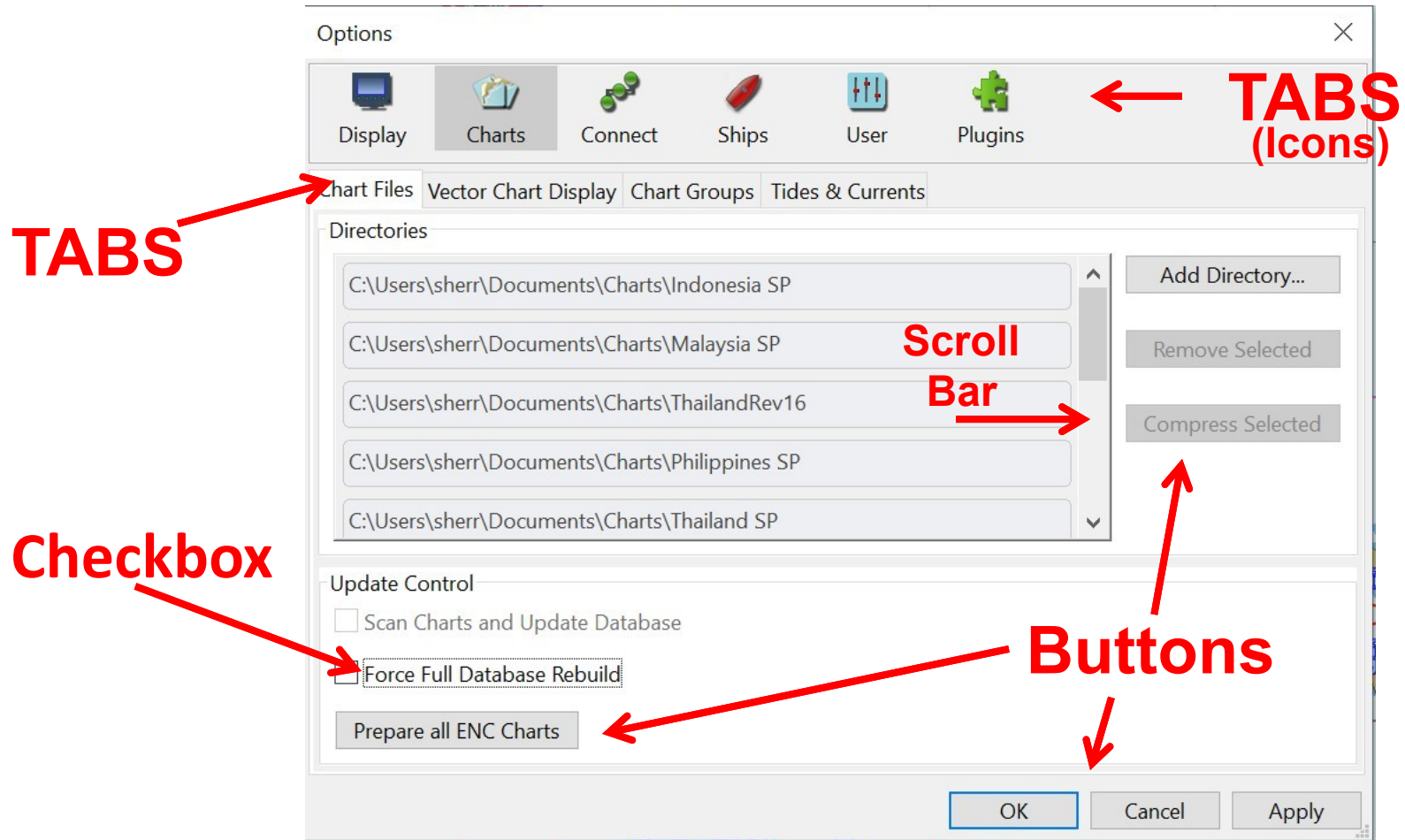


- Click the down arrow
- A selection box opens



Terminology

Tabs, Checkboxes, and Buttons



Explore the Toolbar & Find the Manual



Collapse Tool bar

Options/Settings

Draw a route

Open Route & Mark Manager

Enable/Disable “snail trail”

Change to night mode

Print chart

HELP! / About box

Climatology (Historical weather)

Radar window

Weather Routing

Grib File viewer

MAN OVERBOARD Marker

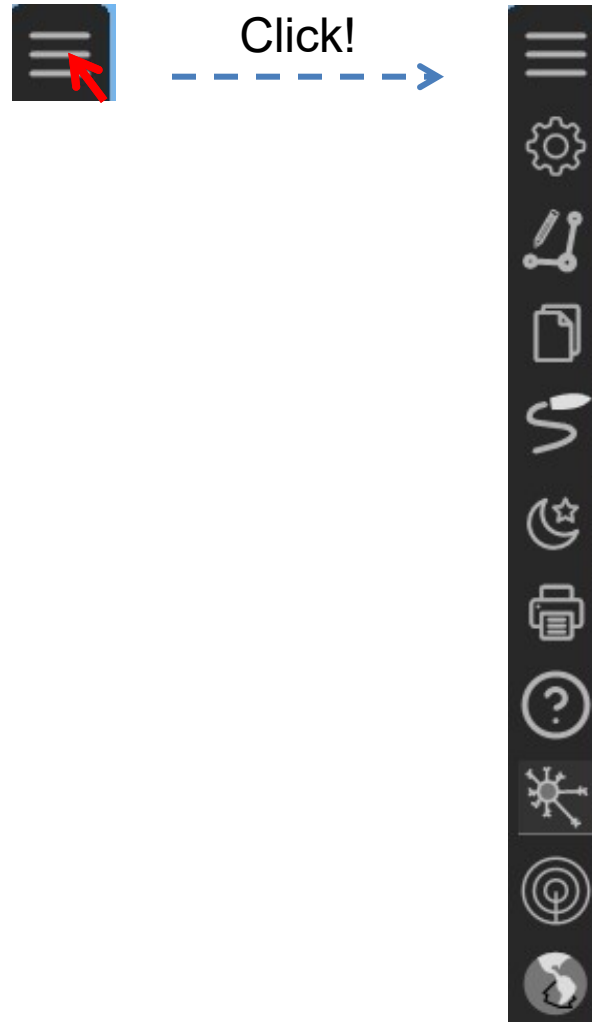
**Hover your mouse
over each icon, and
you will see a “tool
tip”**



Offline manual is here

Terminology

- Hamburger
(usually a menu
drop-down)





Find the manual

About OpenCPN



OpenCPN

5.8.2-0+9f64845

© 2000-2023 [The OpenCPN Authors](#)

OpenCPN is a Free Software project, built by sailors.

It is freely available to download and distribute without charge.

Want to help? [Donate](#) or [get involved!](#)

Logfile: [C:\ProgramData\opencpn\opencpn.log](#)

Config file: [C:\ProgramData\opencpn\opencpn.ini](#)

Plugin API: 118

[OpenCPN Website](#)

[Help](#)

[License](#)

Click on the
Help Link

Find the manual

- The User Manual is installed on your computer when the program installs
- Excellent reference manual
- YOU DO NOT NEED TO BE ONLINE
- Can also be found online at opencpn.org

[Direct Link to Online Manual](#)

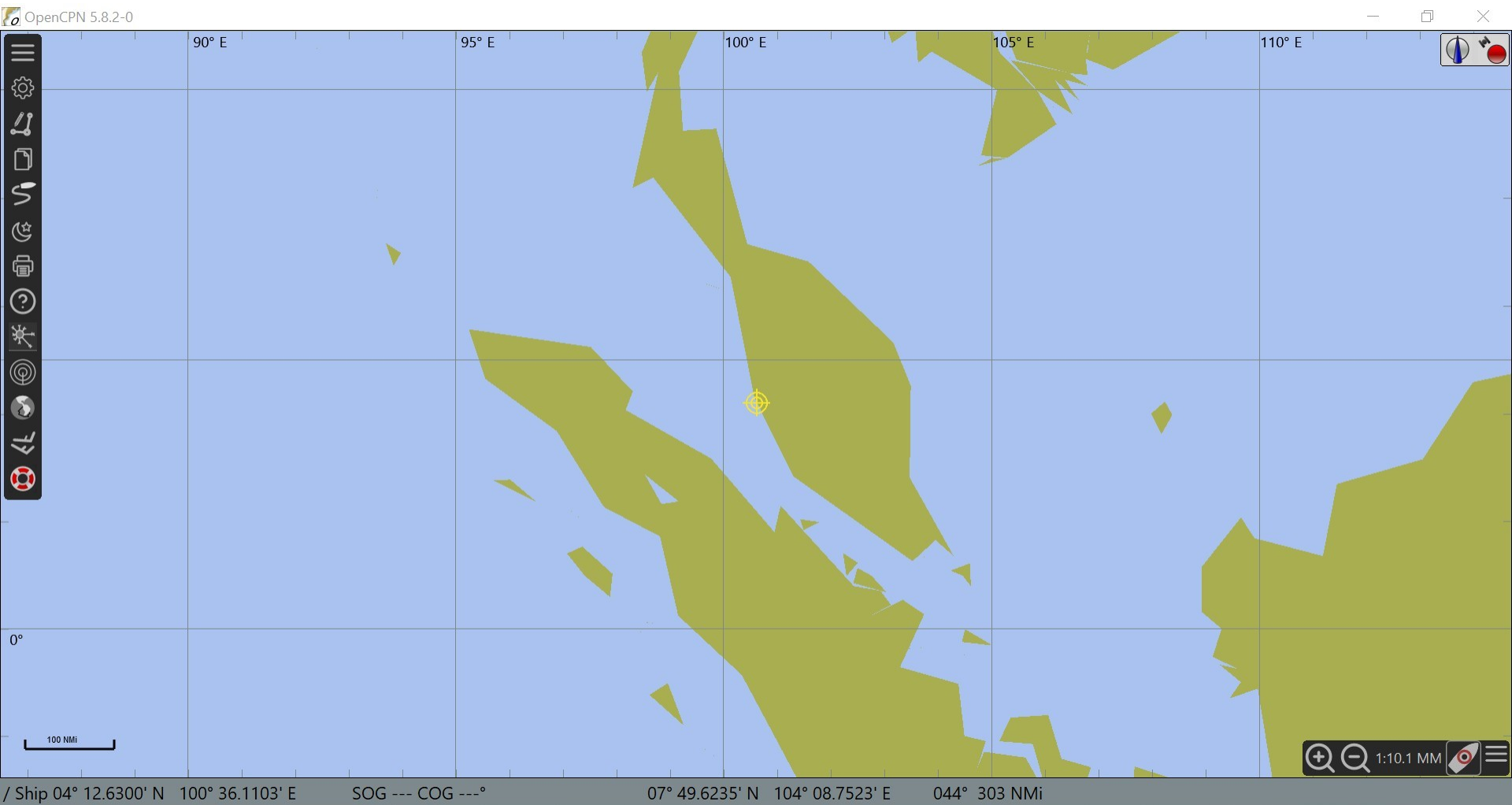
OpenCPN User Manual

[OpenCPN](#) Complete Online User Manual, *Internet access required.*

Local Offline OpenCPN User Manual

- [What's New in OpenCPN version 5.0](#)
- [Getting Started](#)
 - [OpenCPN Installation](#)
 - [Windows](#)
 - [Ubuntu PPA](#)
 - [Linux](#)
 - [Fedora](#)
 - [Mac OS X](#)
 - [Orange Pi](#)
 - [Dedicated Marine OS](#)
 - [Raspberry Pi 2/3](#)
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 - [GPS Setup](#)
 - [Chart Installation](#)
 - [Setting Options](#)
 - [Marks and Routes](#)
 - [Touch Screen Tablets](#)
 - [Help Fix Bugs!](#)
- [Getting Around](#)
 - [GPS Setup & Status](#)

But Wait... Mine Looks Like This!



2026 Update: Major Changes in Recent Versions

- Current version is 5.14.0
- User data is no longer in navobj.xml
- Now use a sqlite database (navobj.db)
- NMEA debug display is no longer on the Connections
 - Menu Tools / Data Monitor (Hot Key E)

Adding Charts

Most people start with a copy of the older CM93 World Chart Set as their “base chart” (download from [Terrys Topics](https://sailingamazinggrace.com/charts/terrrys-topics), or from a friend).
<https://sailingamazinggrace.com/charts/terrrys-topics>

Sources of Additional Charts

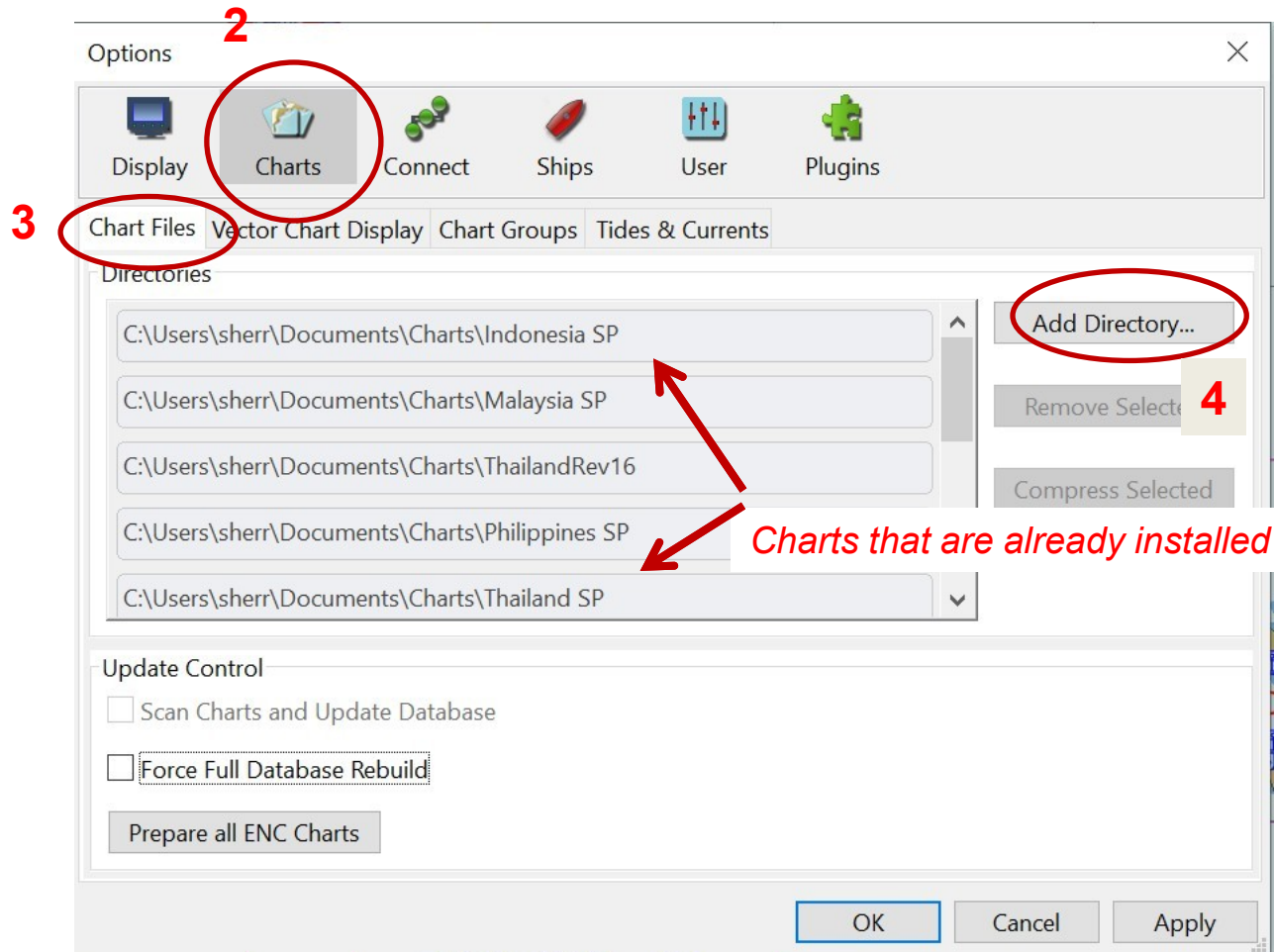
- See long list in Chart Sources section of manual
<https://opencpn.org/OpenCPN/info/chartsources.html>
- Comprehensive list of free/shared charts is here:
<https://svsoggypaws.com/SatCharts/#othersources>
- OpenCPN Chart Downloader
- Cruiser sharing (Legacy Raster and Vector Charts, sat charts)
- Ask around in the marina/anchorage
- **Bottom line: Don't leave home without an external hard drive!**

Adding Charts – Step 1

1 Click on 'Options' (the 'gear')



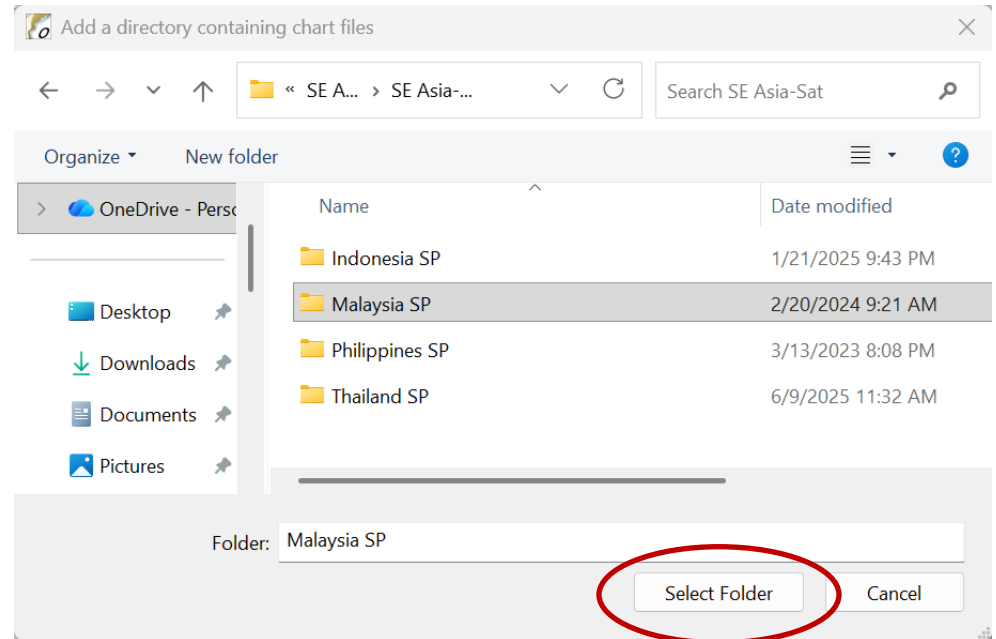
in the Toolbar



Adding Charts – Step 2

- Navigate to chart directory
- Select the charts you want to add
- Click OK
- Adds ALL charts in that folder, including subdirectories
- Repeat as necessary

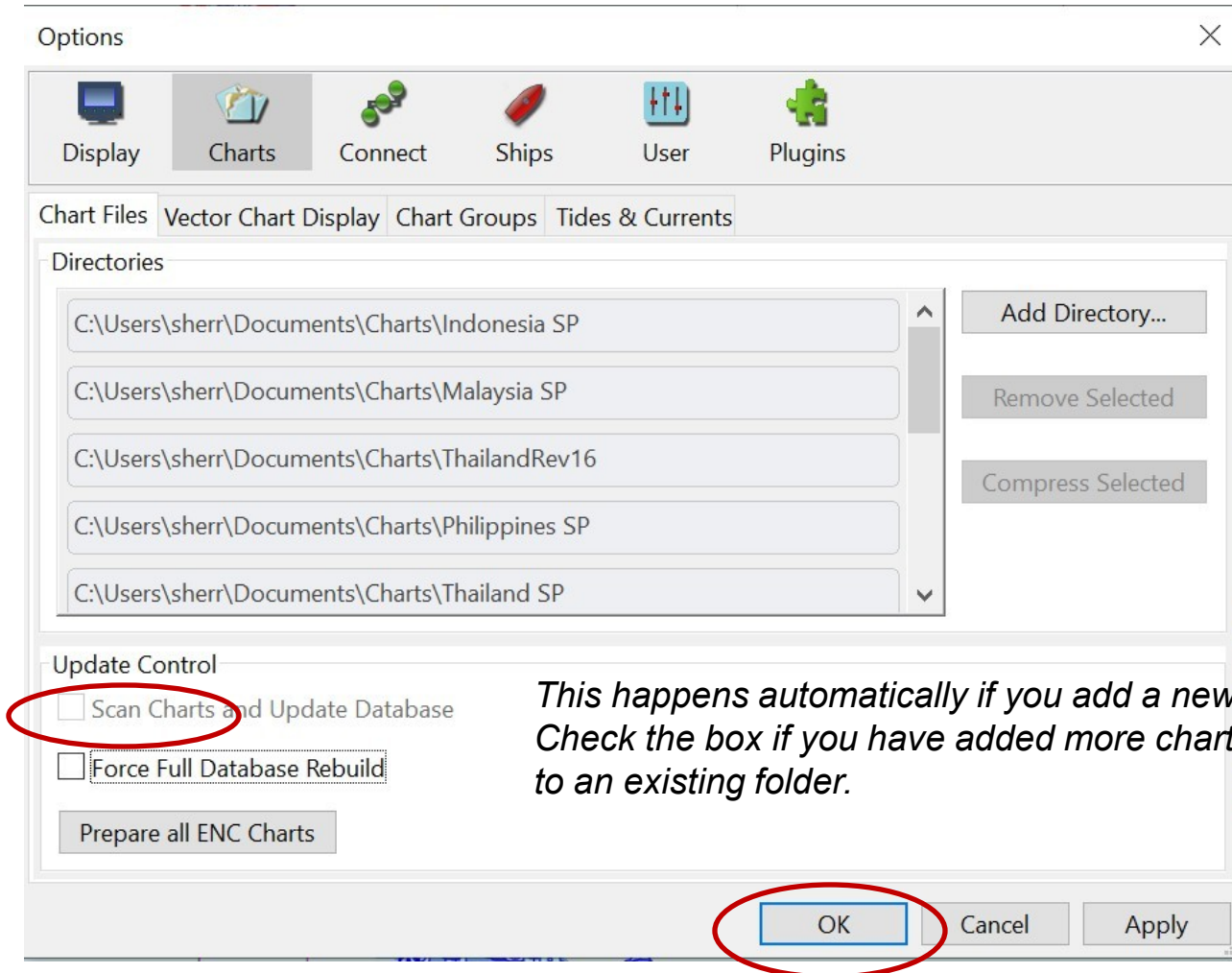
The more charts you load, the more resources OpenCPN takes on your system, so best to not load all the charts for everywhere.



Supported charts: mbtiles, kap, cap, S57 and S63, CM93v2.

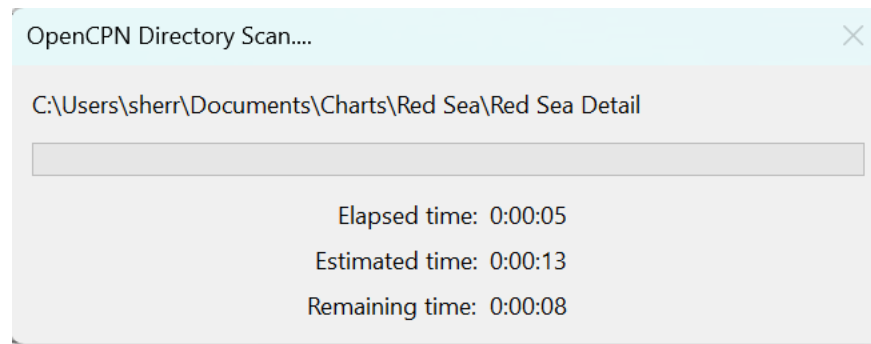
Adding Charts – Step 3

Rebuild your chart database



Rebuilding the Chart Database

Wait while the chart database is updated



OpenCPN will go through all the chart folders you have added, and find all charts (even in folders underneath the folder you added).

Note: If you add charts or sub folders to an existing chart folder, you need to tell OpenCPN to “Scan Charts and Update Database”

Sources of Free Satellite Charts

Location	Coverage
Migration's ChartLocker	Mexico, all the Pacific Islands, the Dominican Republic, Panama, Australia mbtiles 2021/2023
Ocelot's mbtiles Charts	SE Asia, Western Pacific, and Indian Ocean 2021/2022
Zen Again's Charts	Pacific Ocean, SE Asia, Crossing to S Africa, S Atlantic, Brazil
Valhalla's Charts	SE Asia, Indian Ocean, and Western Pacific And CM93 v2 Download for OpenCPN. Downloadable anchorage waypoints in GPX format. Mbtiles
Jacaranda's Charts	French Polynesia
Soggy Paws' Charts	Red Sea (Complete), Philippines (Partial), Papua New Guinea, Solomon Islands, Micronesia, Marshall Islands, Fiji, French Polynesia

Links to all these sources can be found on
<https://svsoggypaws.com/SatCharts/>

Also check the OpenCPN.org Chart Sources Page:
<https://opencpn.org/OpenCPN/info/chartsources.html>

The Chart Downloader

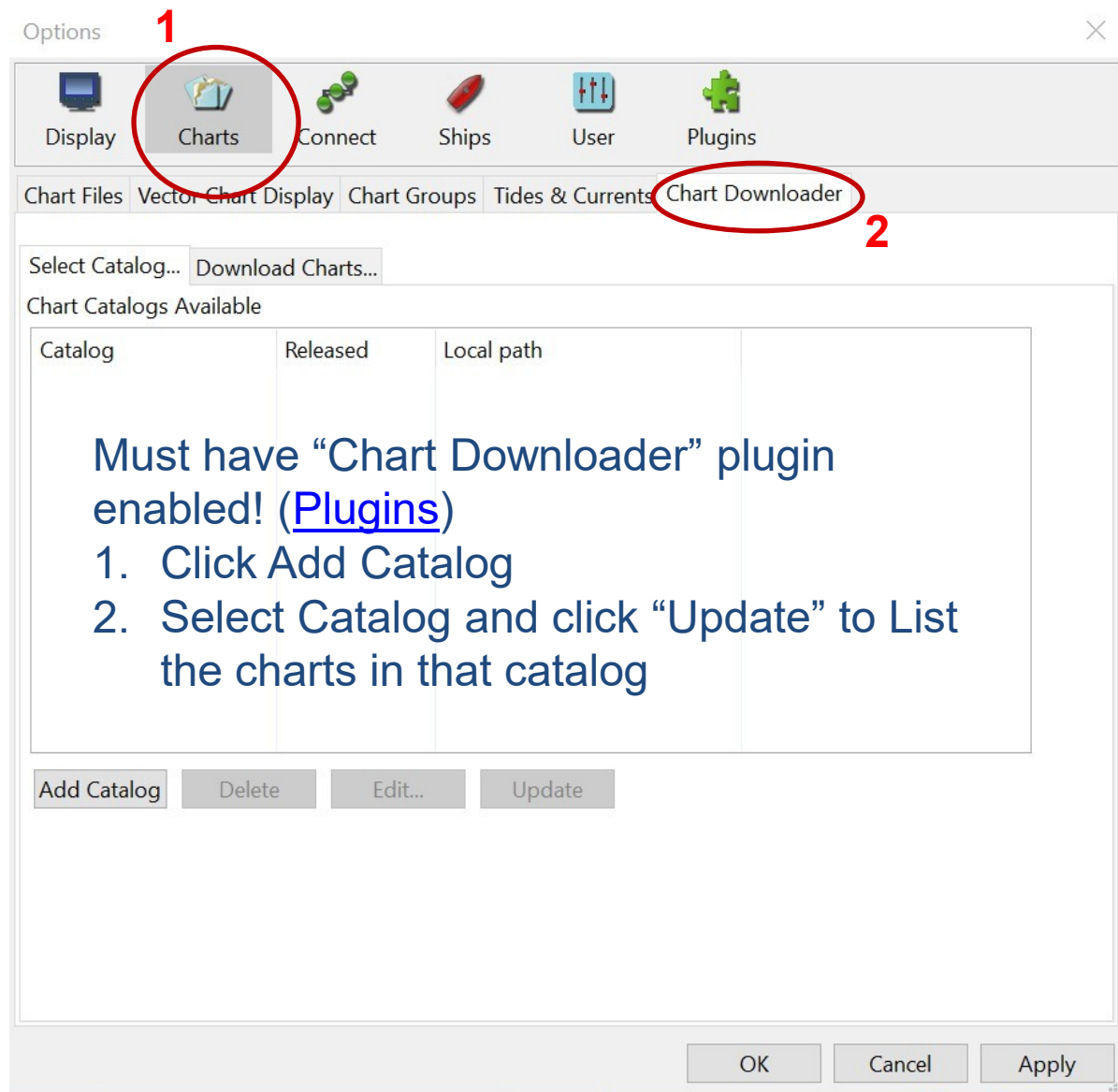


Chart Downloader-Add Catalog

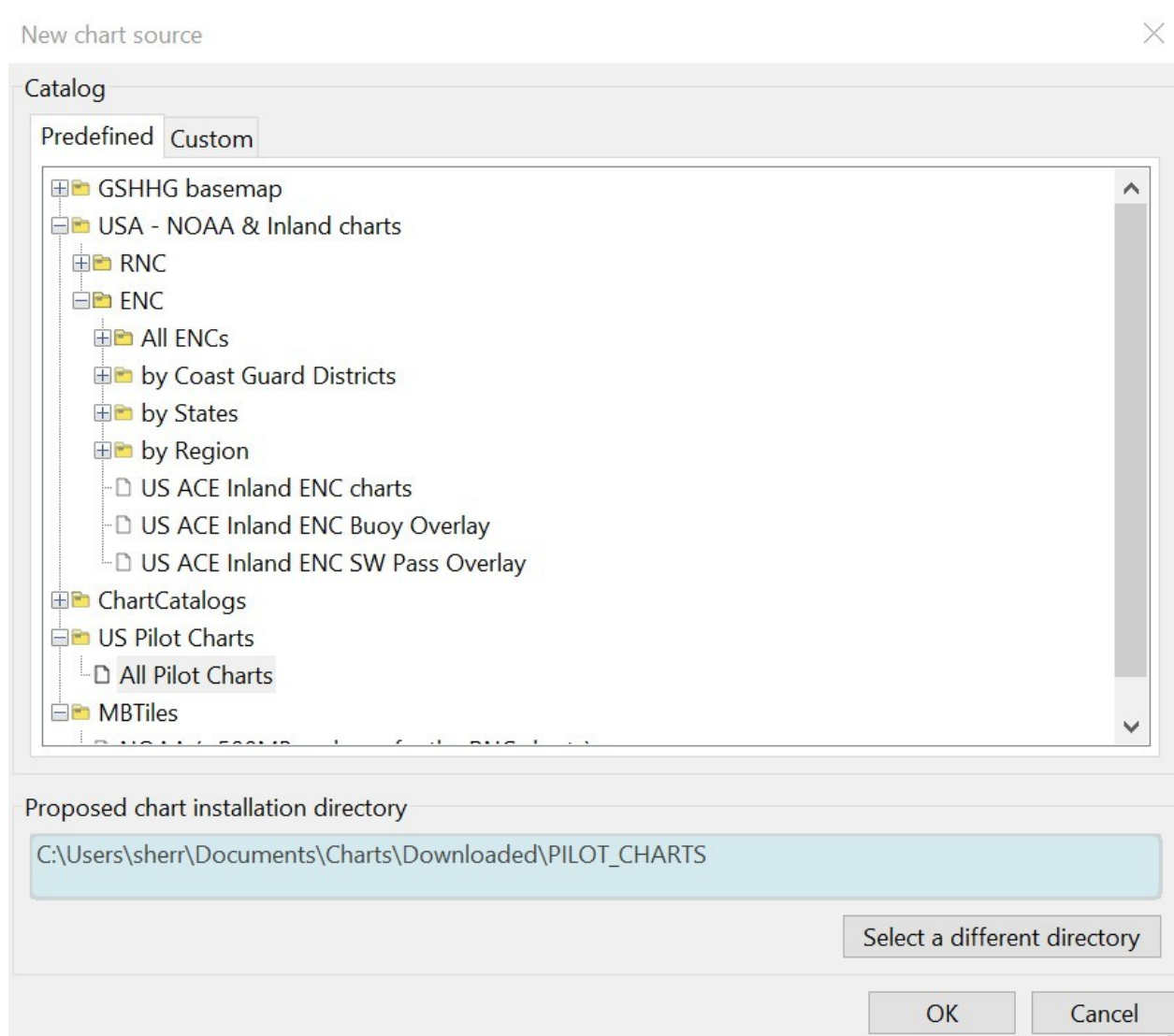
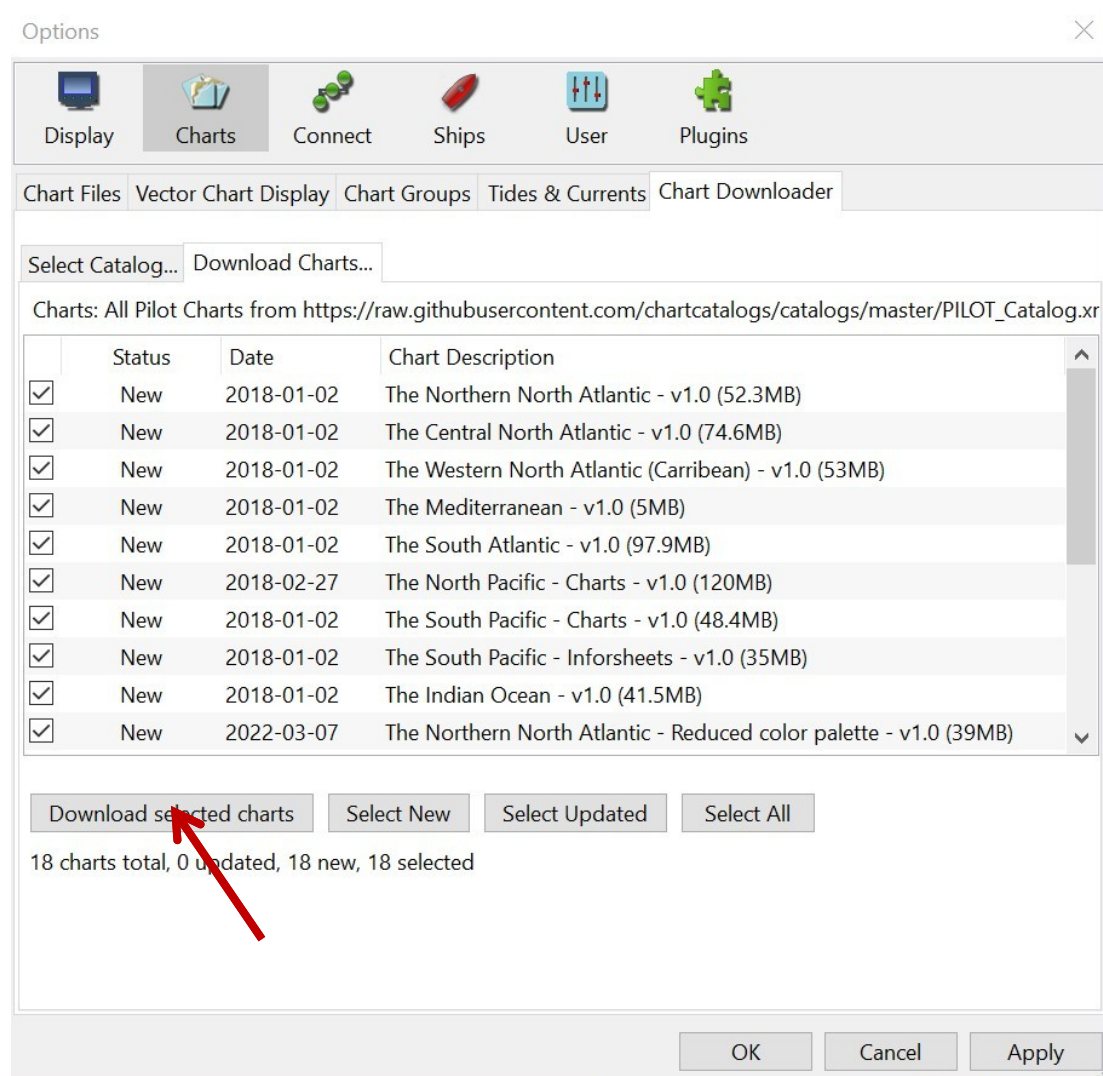


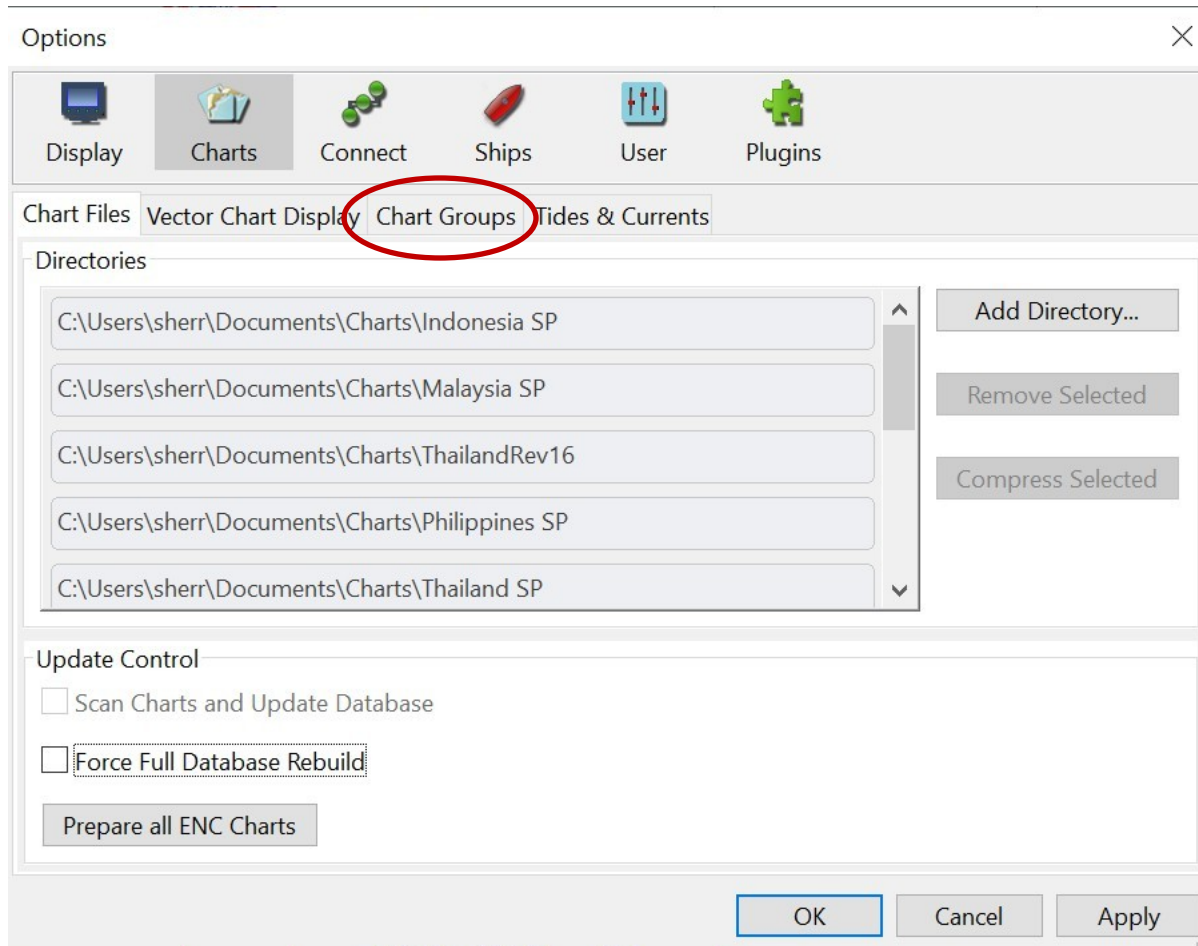
Chart Downloader-Add Charts



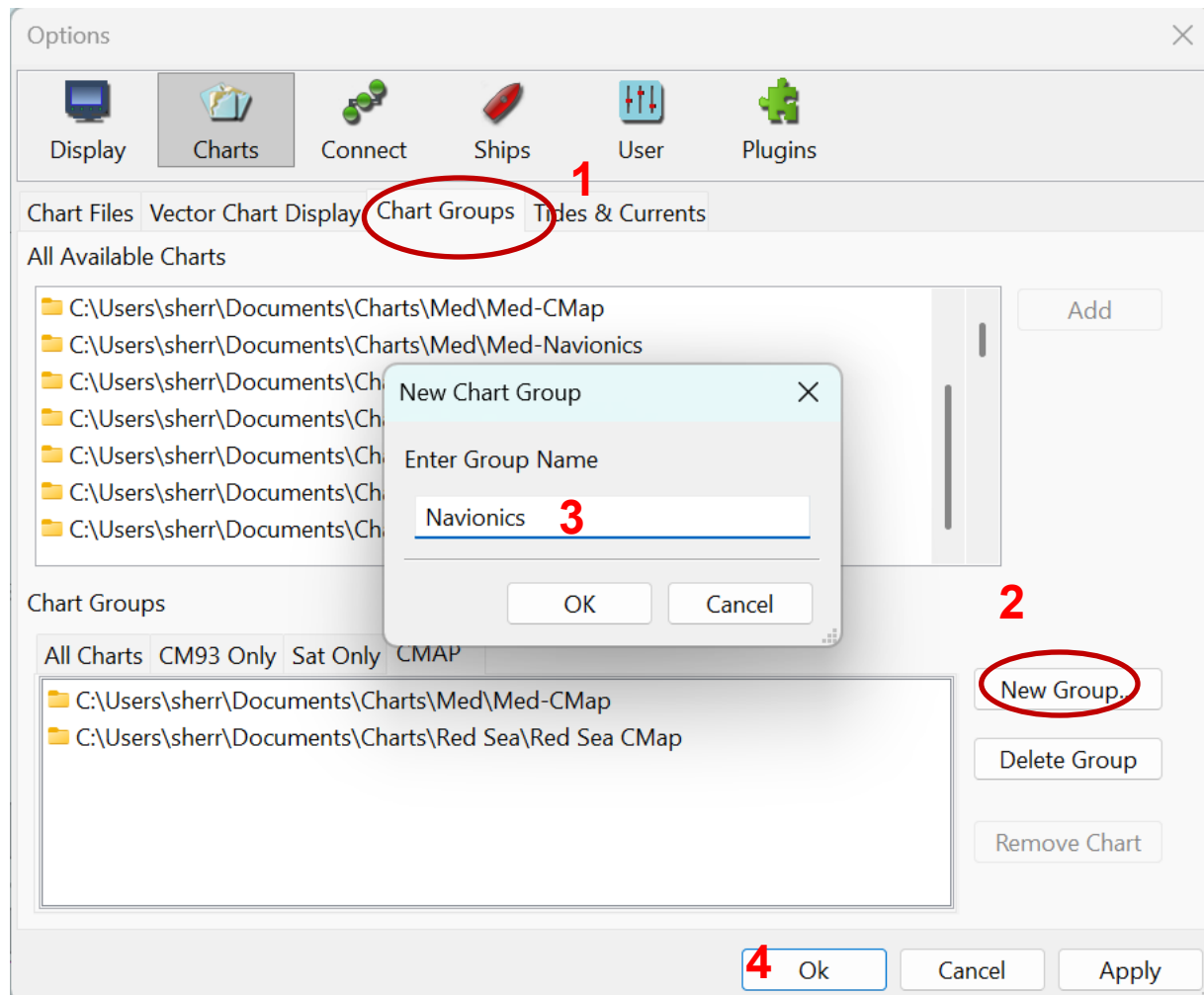
Managing Charts

The more charts you load, the more “chart bubbles” are on your screen in any given location

“Chart Groups” lets you manage groups of charts, to easily select a subset of your charts

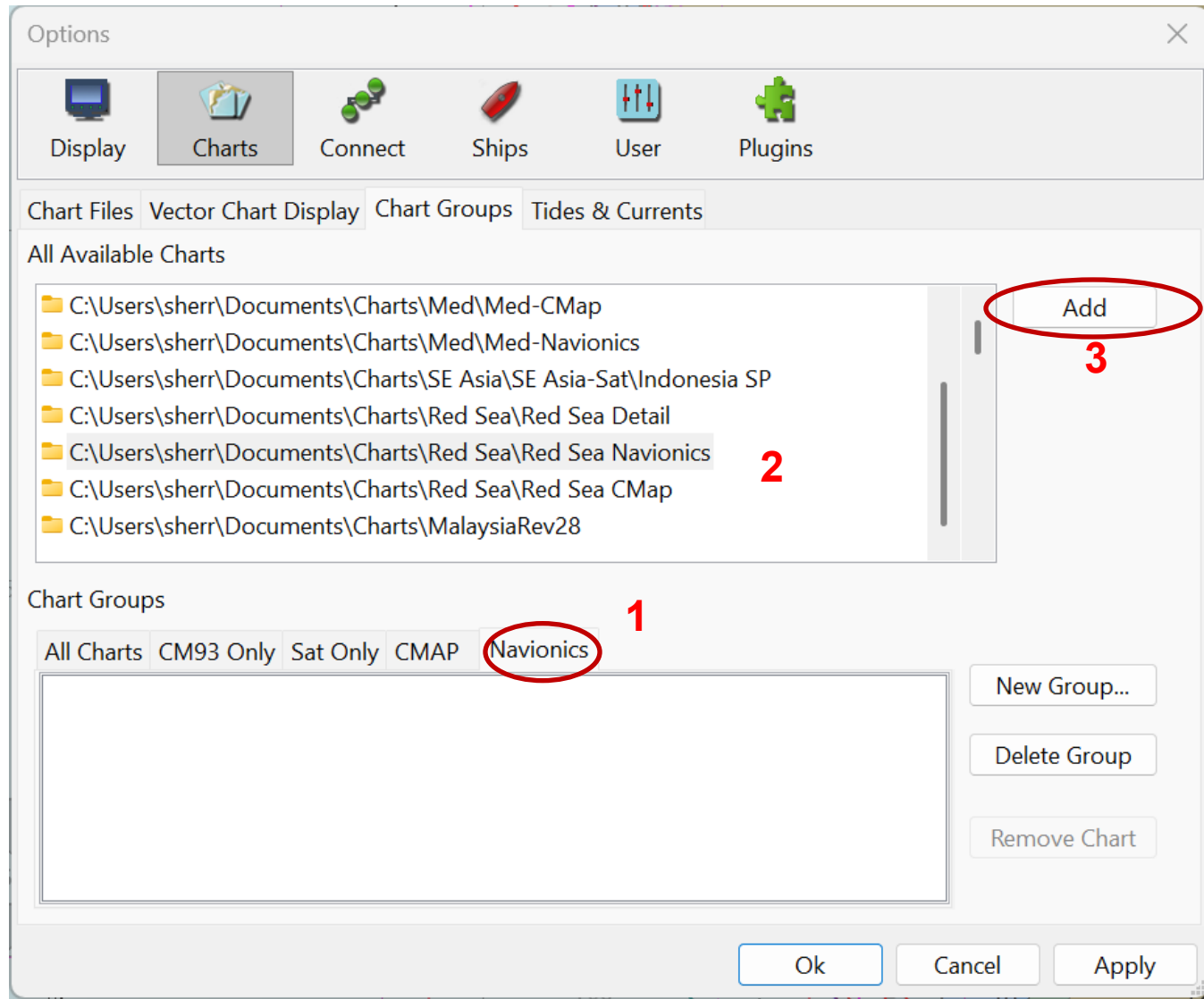


Creating Chart Groups

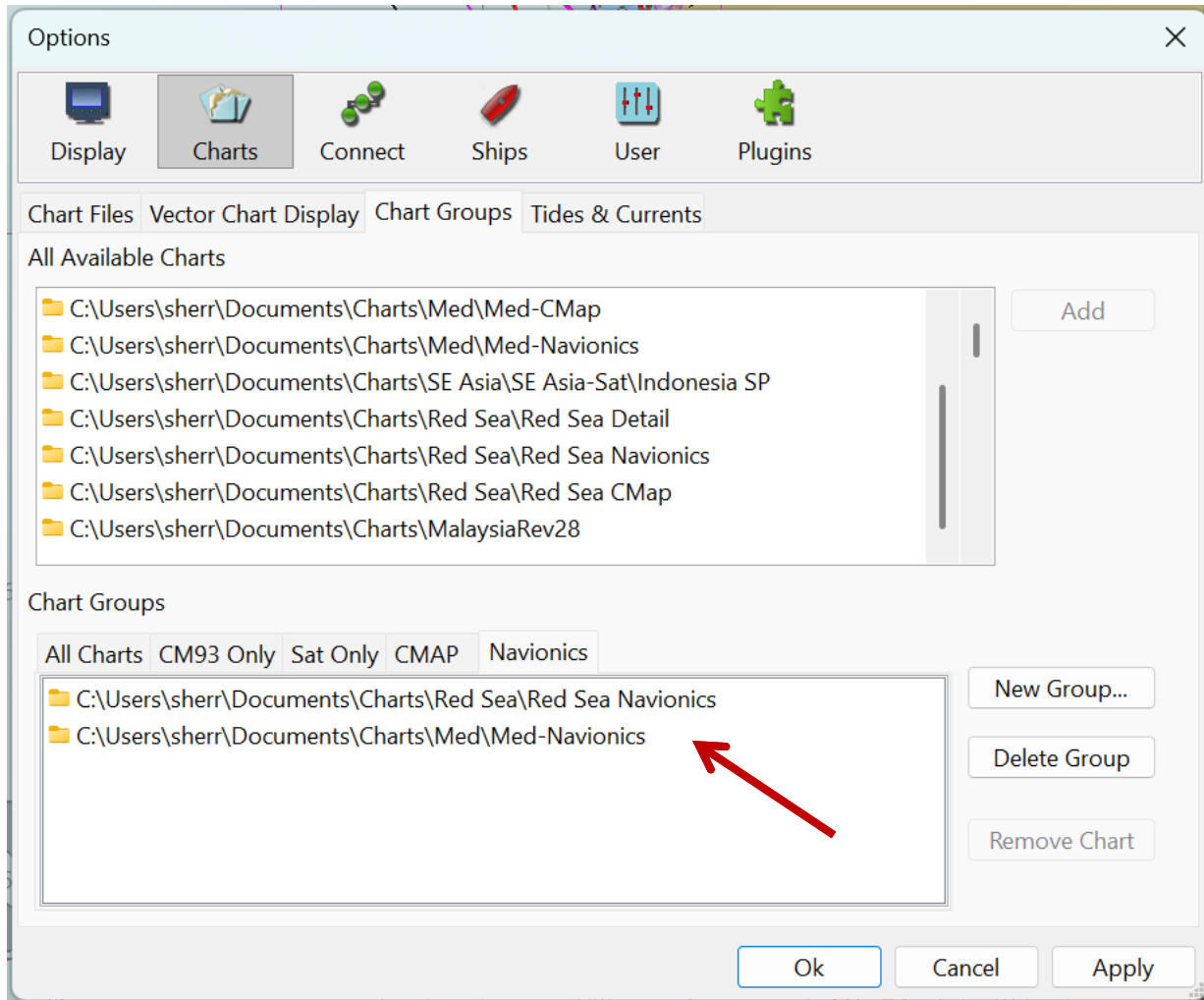


You must do Step 4 before proceeding with adding charts to the group₃₃

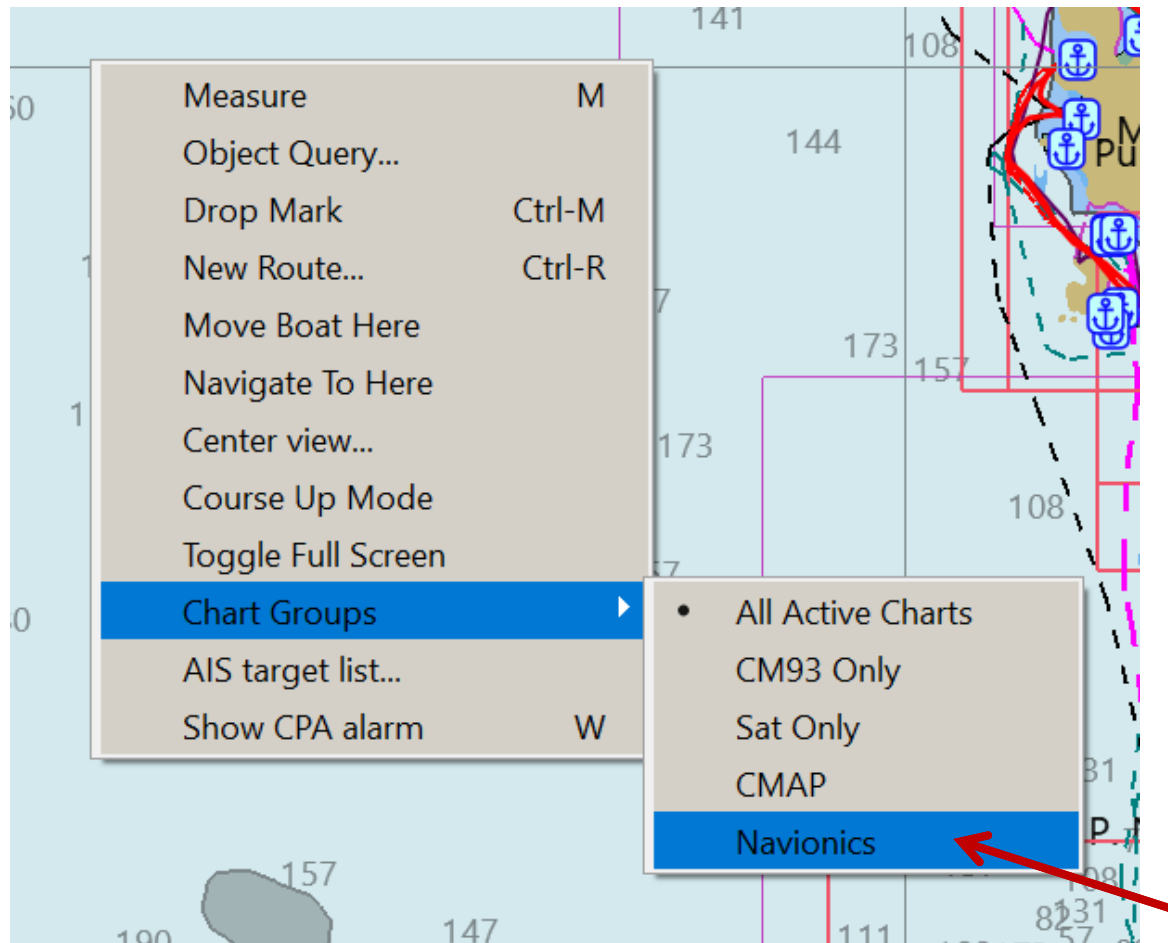
Adding Charts to a Chart Group



Adding Charts to a Chart Group

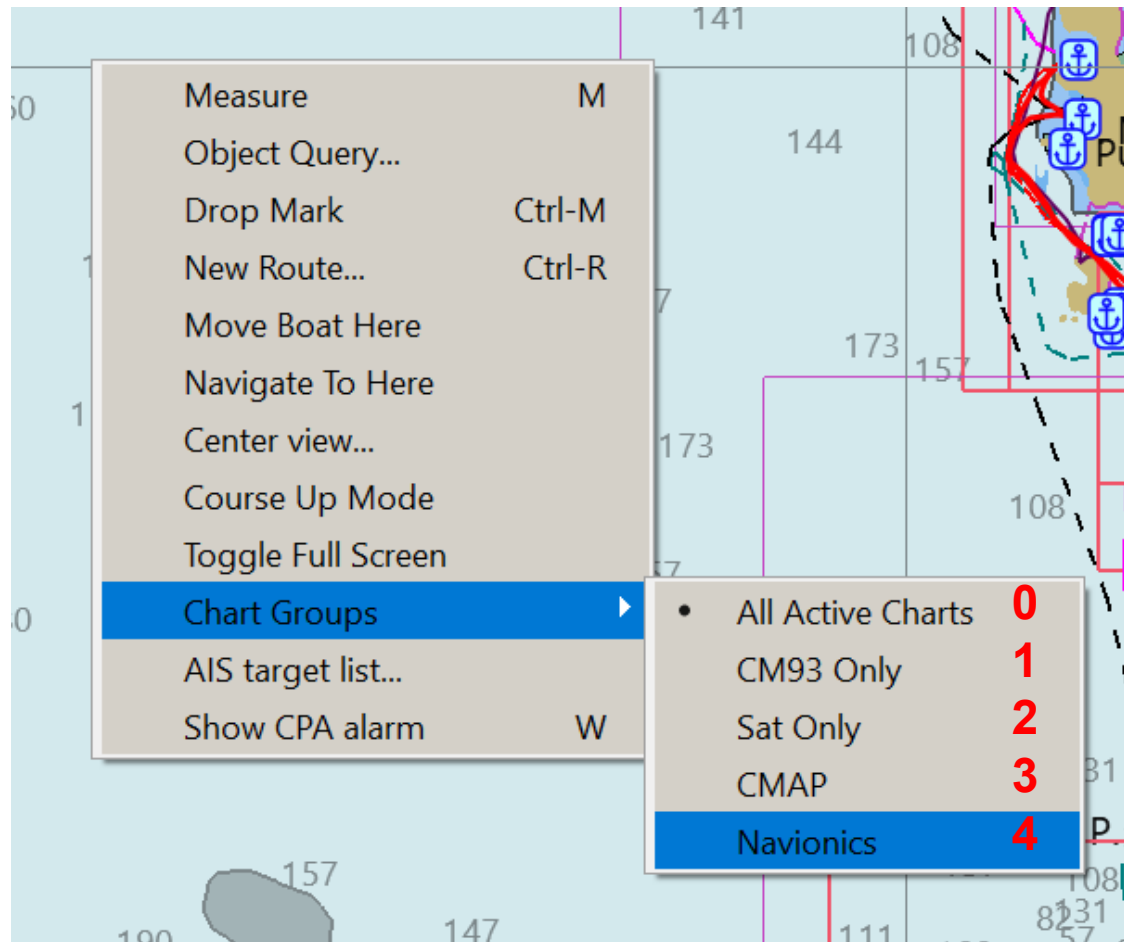


Selecting Chart Groups



Right-click on chart
Select appropriate Group
Only Charts in Group “Navionics” will be visible

Selecting Chart Groups



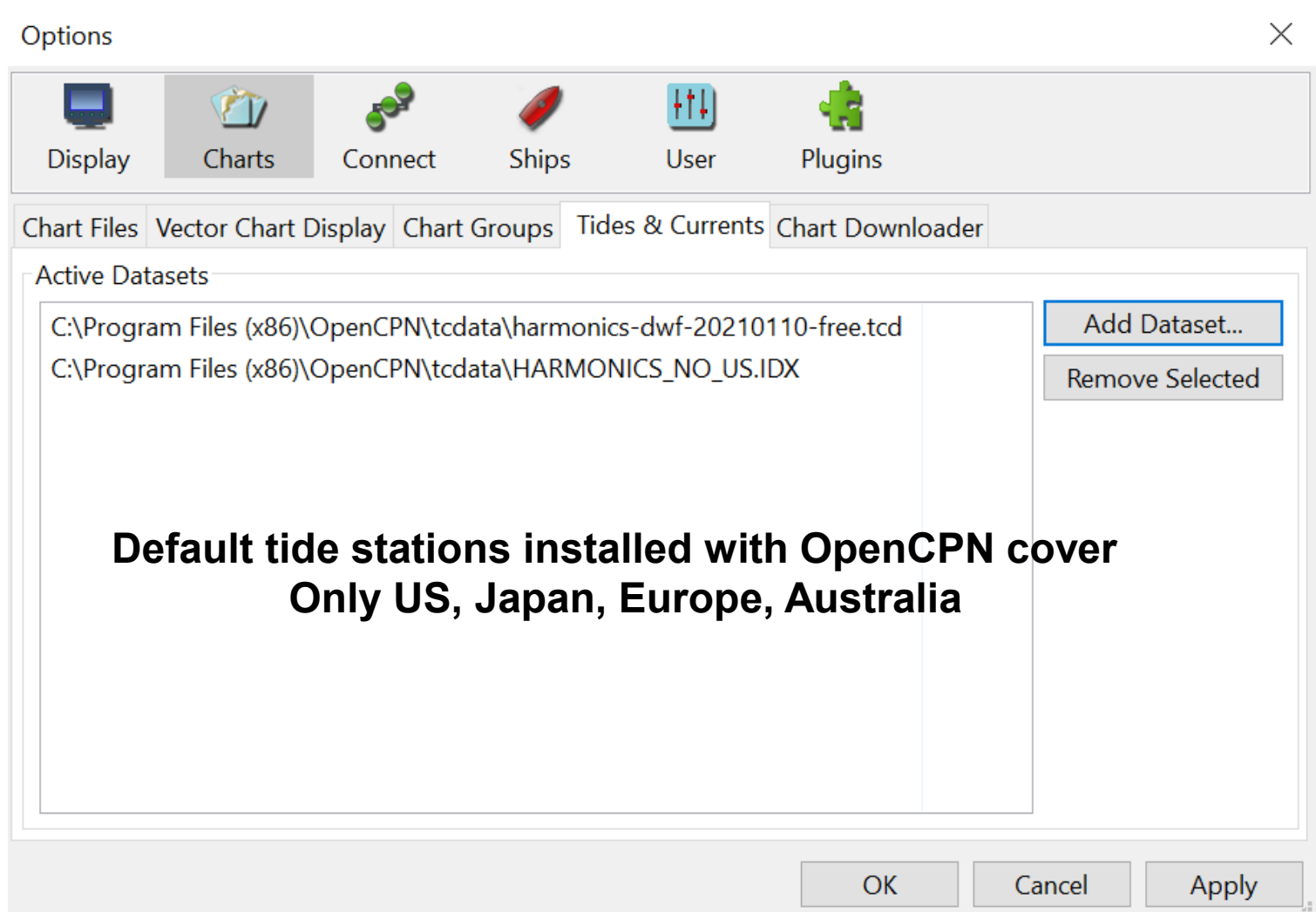
**Or, use the number “Hot Key”
(one keystroke selects option)**

No need to right-click...

Typing “4” on the keyboard selects Navionics, 0=All charts

Tides

Options / Charts / Tides & Currents

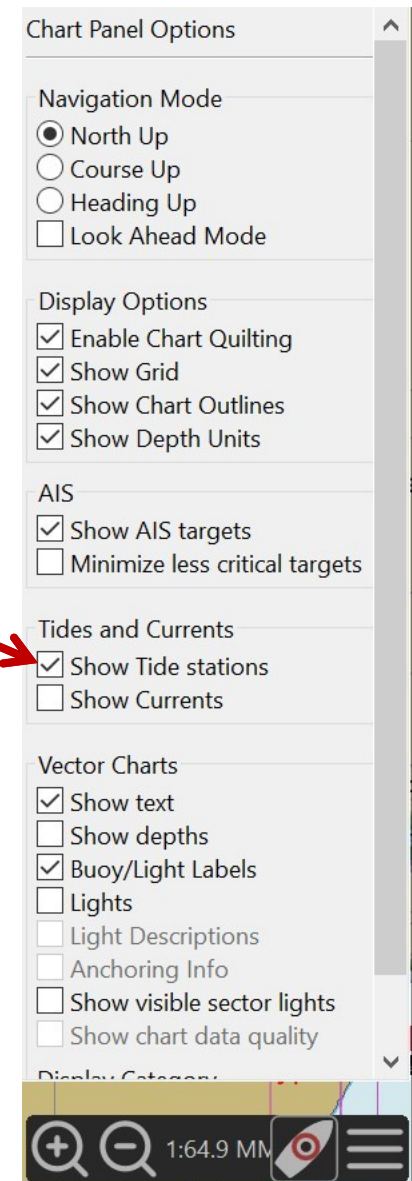


Rest of the World Tides

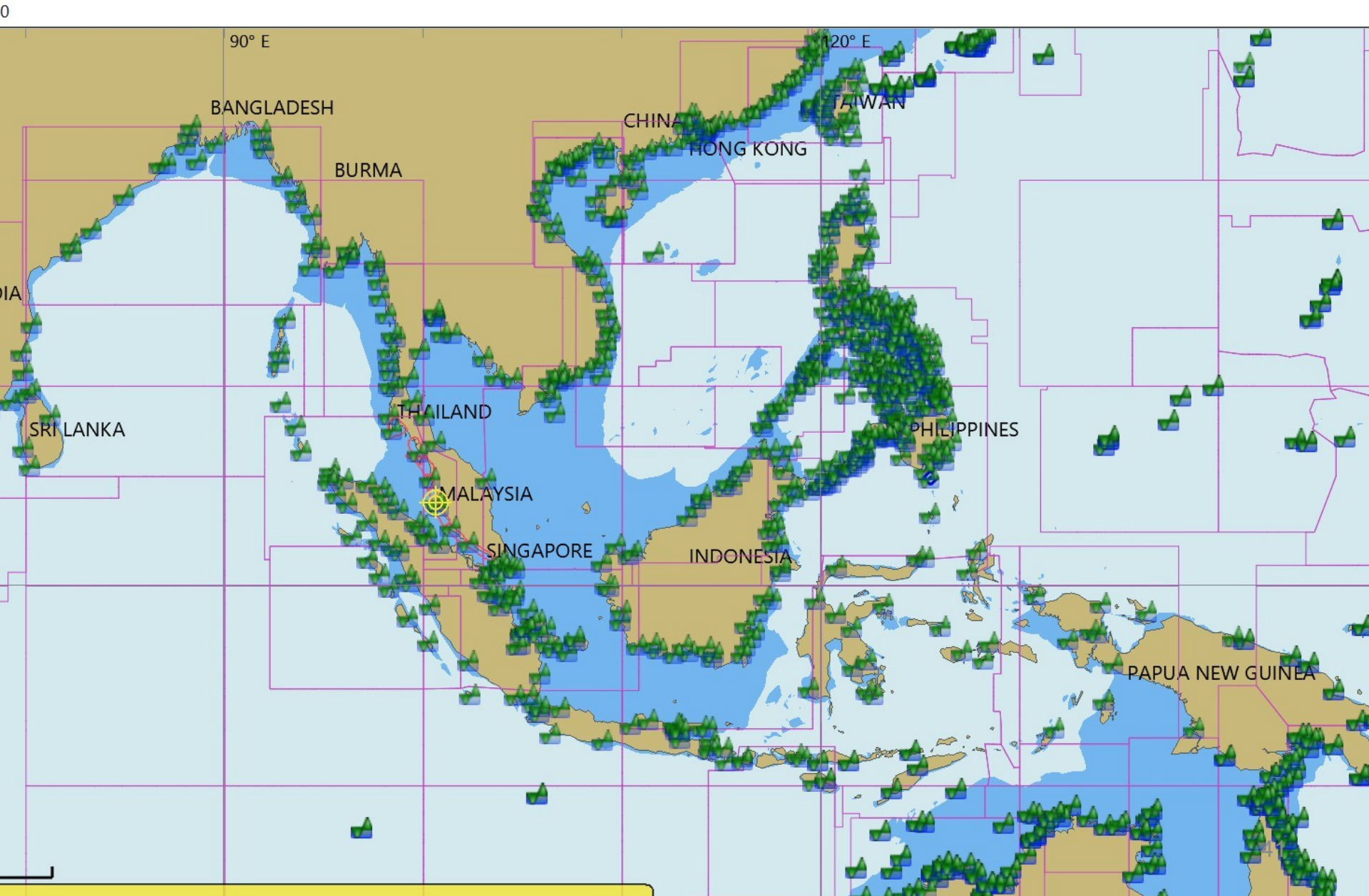
- Download from Terry's Topics [[Link](#)]
(download both Harmonic Files)
- Create a new Tides folder somewhere on your computer (Documents) and put these 2 files there.
- Options / Charts / Tides & Currents
- Add Dataset
- Select HARMONIC.IDX & click apply

To show the tide stations

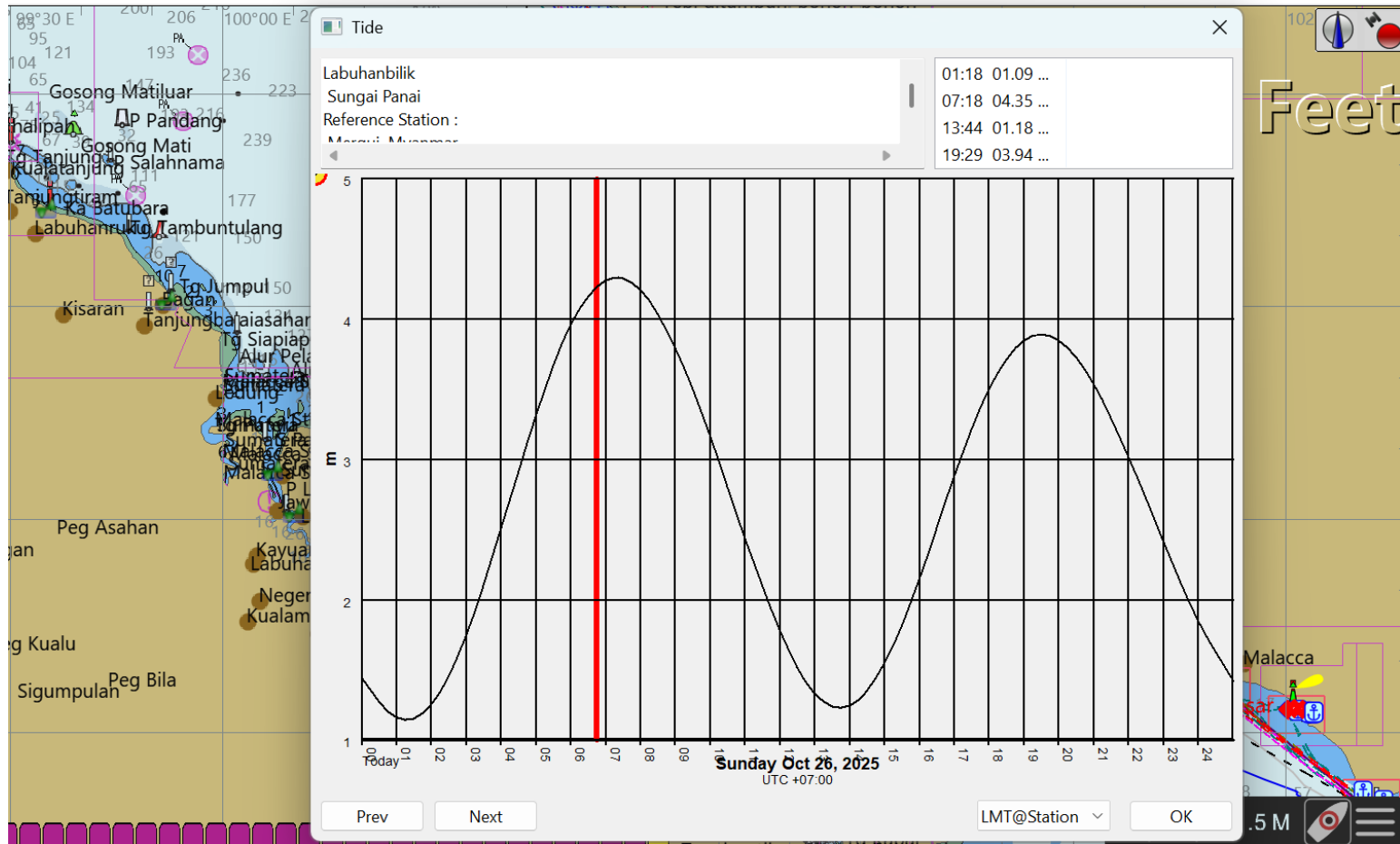
- Click on the “hamburger” in the lower right to show chart options
- Check Show Tide stations



Tide stations all over!

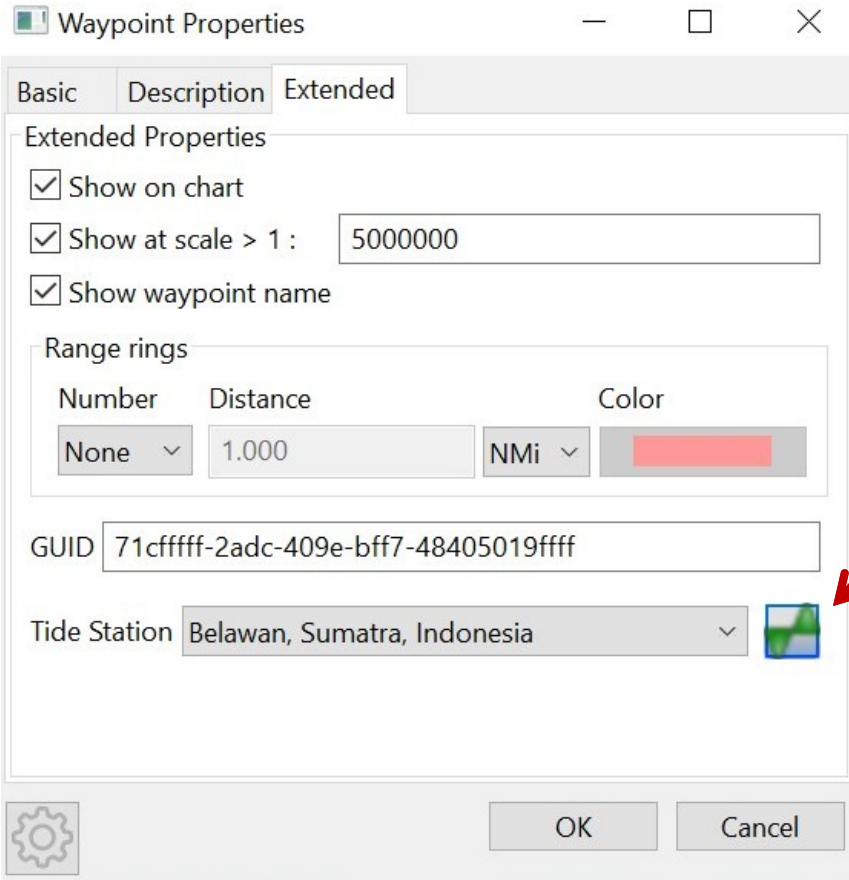


Showing a Tide Station



Right Click on the Green Tide Icon

Showing a Tide Station



The image shows a 'Waypoint Properties' dialog box with three tabs: 'Basic', 'Description', and 'Extended'. The 'Extended' tab is selected. Under 'Extended Properties', there are three checked options: 'Show on chart', 'Show at scale > 1 : 5000000', and 'Show waypoint name'. Below these is a 'Range rings' section with a table-like structure. The first row has 'Number' set to 'None', 'Distance' set to '1.000', and 'Color' set to 'NMI' with a red color swatch. Below this is a 'GUID' field containing '71cffff-2adc-409e-bff7-48405019ffff'. At the bottom is a 'Tide Station' dropdown menu showing 'Belawan, Sumatra, Indonesia' and a small blue and green icon to its right. A red arrow points from the text 'Click on the Tide Icon' to this icon. At the bottom of the dialog are 'OK' and 'Cancel' buttons, and a gear icon on the left.

Number	Distance	Color
None	1.000	NMI

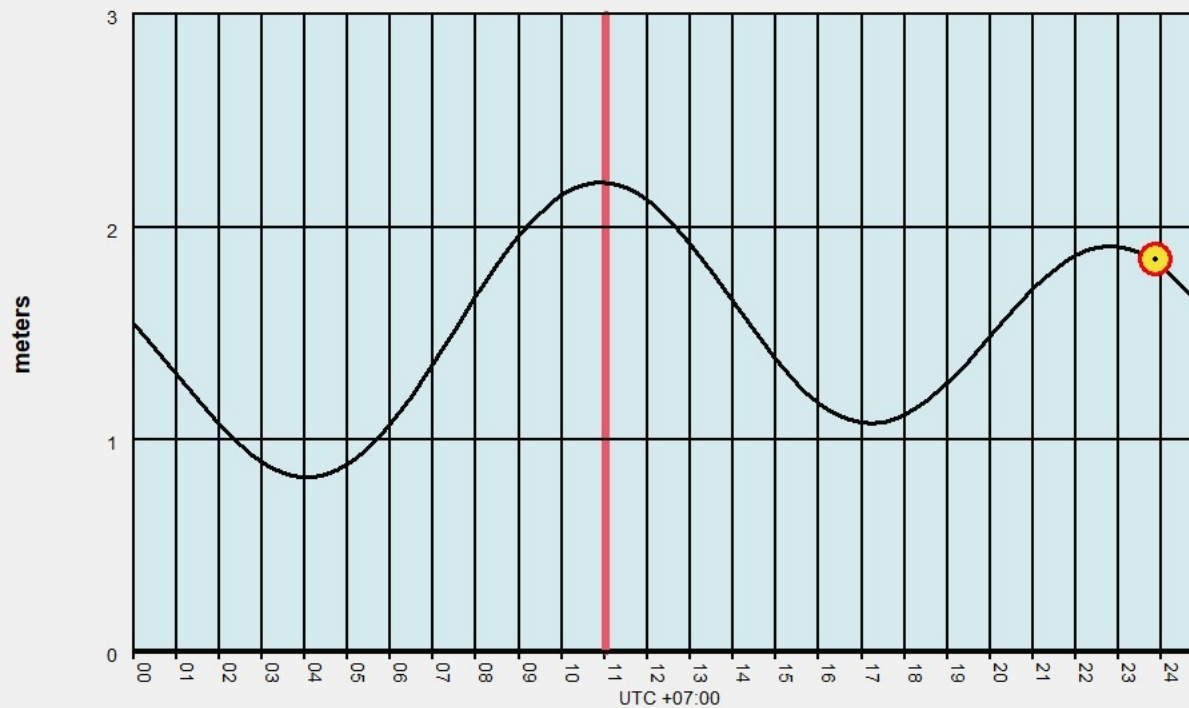
Or,
In Waypoint Properties
Click on the Tide Icon

Tide

Belawan
Sumatra, Indonesia

Data Source :
C:\Users\sherr\Documents\Tides\HARMONIC.IDX

04:04 00.80 m LW
10:55 02.23 m HW
17:13 01.06 m LW
22:49 01.92 m HW



Today

Monday May 15, 2023

Prev

Next

LMT@Station

OK

Setting Up a GPS

- Cheap and easy:
 - GlobalSat BU-353-S4 (or N5) USB GPS Receiver (Amazon.com \$30)
 - Gmouse (Shopee 30RM)
- OpenCPN also “plays well” with Garmin devices
- Any NMEA standard devices, including AIS
- Any on-board wifi NMEA stream (techie)



Today on Shopee



Preferred btsg VK-162 USB GPS Engine Module Laptop Board G-Mouse Receiver G-Mouse Support for Earth with Antenna

5.0 ★★★★★

2 Ratings

68 Sold ?

Report

RM30.90 ~~RM64.08~~

Shop Vouchers

4% OFF

3% OFF

5% OFF

5% OFF

6% OFF

Show All ✓

Bundle Deals

Any 5 enjoy 3% off

Shipping

🚚 Guaranteed to get by 29 Oct - 5 Nov >

Free shipping

Get a RM5.00 voucher if your order arrives late.

Shopping Guarantee

✓ 15-Day Free Returns · Cash on Delivery ✓

Quantity

− 1 +

2 pieces available

🛒 Add To Cart

Buy With Voucher
RM30.90



Share:    

❤ Favorite (3)





Setting Up a GPS

Options

Display Charts **Connections** Ships User Interface Plugins

	Protocol	In/Out	Data port	Status		
☐	nmea0183	Input	COM4	●	⚙	🗑
☐	nmea0183	Input	COM16	●	⚙	🗑
☒	nmea0183	Input	UDP:localhost:10110	!	⚙	🗑

Add new connection...

1

General

Upload Format

- ☒ Generic NMEA 0183
- ☐ Garmin Host mode
- ☐ Furuno GP4X

Adjust Nav data priorities...

Advanced ▶



Setting Up a NMEA GPS (Serial Connection)

Options

Display Charts **Connections** Ships User Interface Plugins

Configure new connection

☒ Serial ☐ Network

Data port:

Baudrate: 4800

Protocol: NMEA 0183

User Comment:

☒ Receive Input on this Port

☐ Output on this port (as autopilot or NMEA repeater)

Advanced:

☐ Use Garmin (GRMN) mode for input

Input filtering

☒ Accept only sentences ☐ Ignore sentences

OK Cancel

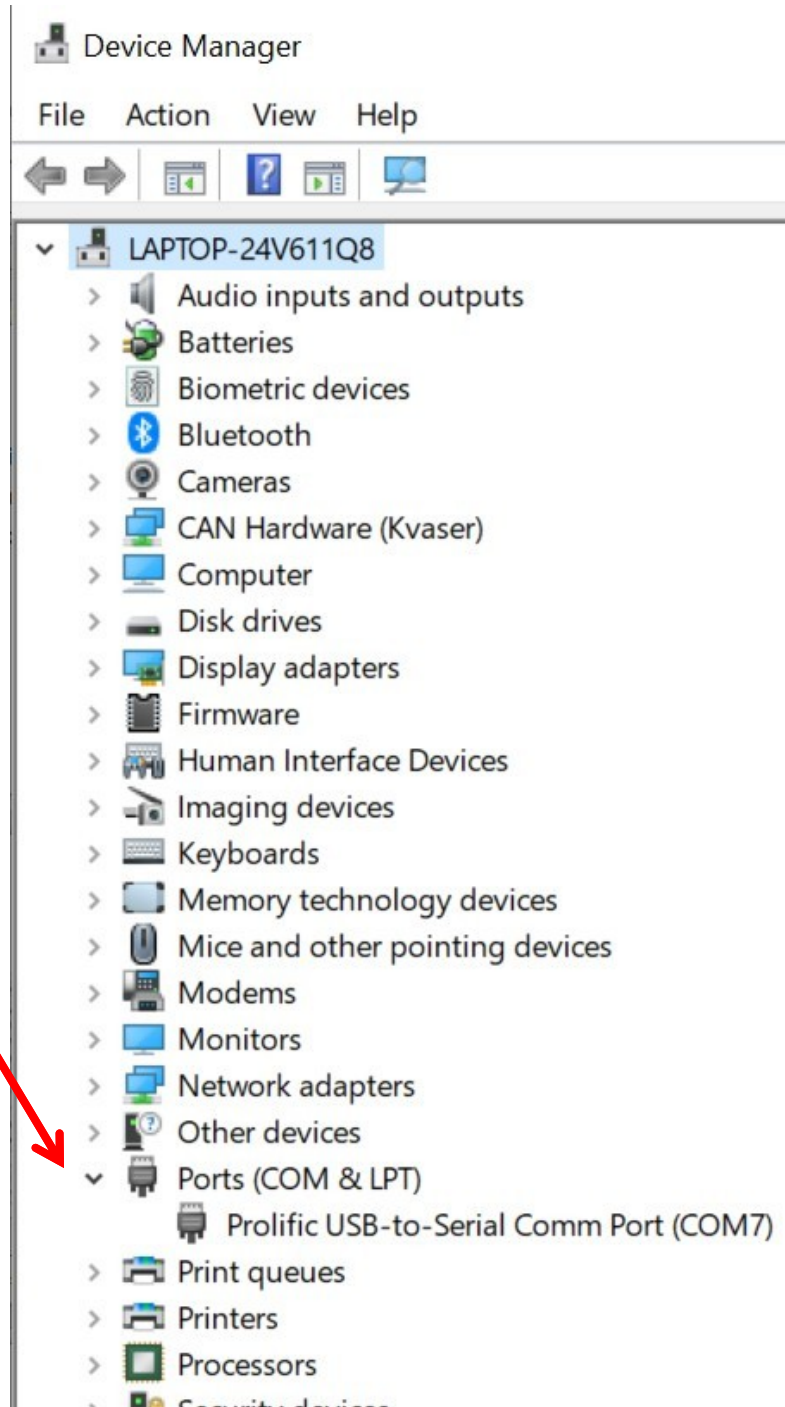
1 Click to show available Com Ports

2 Show NMEA Filtering Options

3 Filtering (optional)

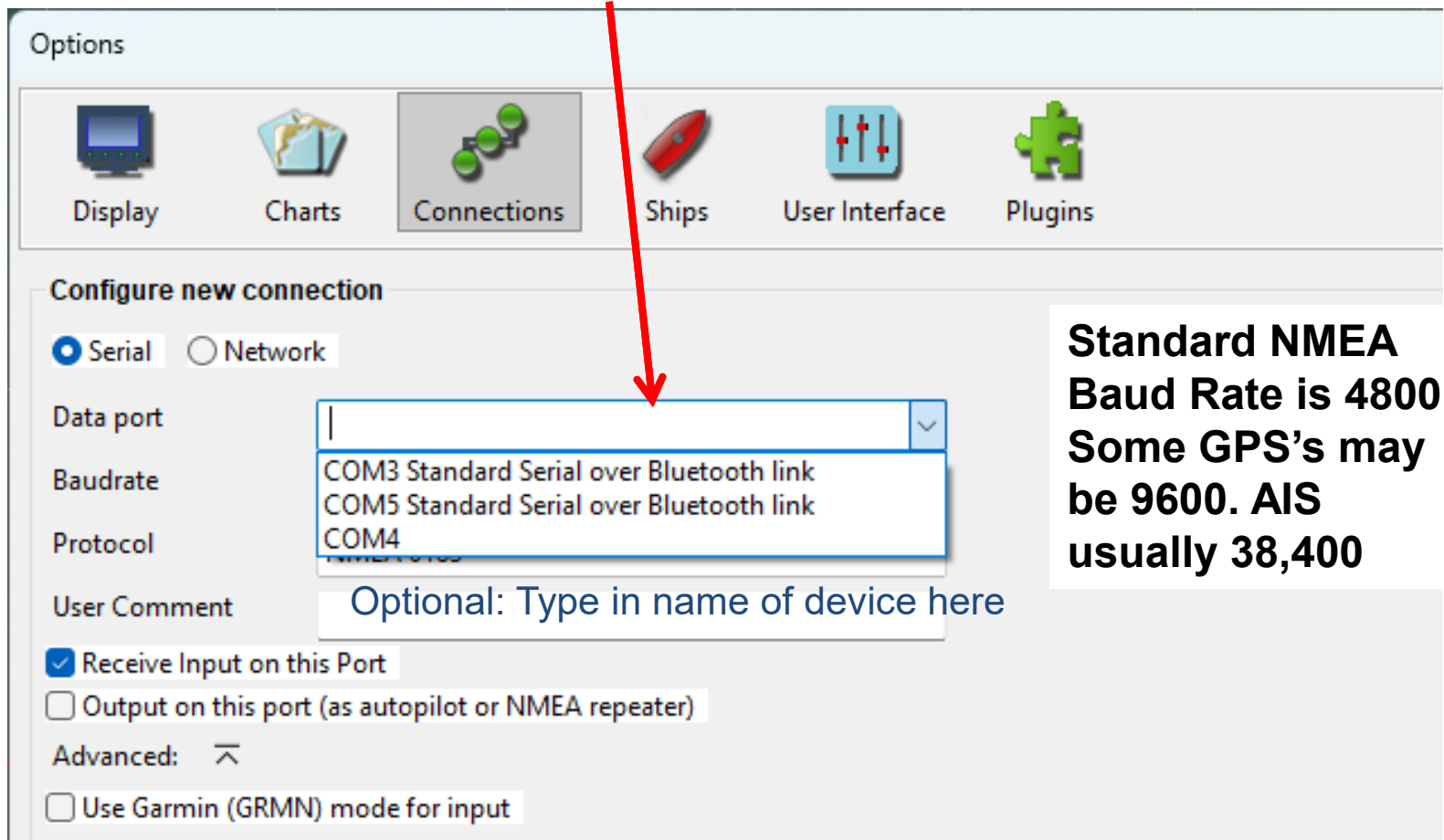
Setting up a GPS USB/Serial Connection

- First, install driver(s)
if necessary
- Plug in GPS
- Check Device Manager
under Ports Heading
- Make sure no errors in
Device Manager



Setting Up a GPS

With your GPS on and plugged in, click this drop-down
OpenCPN will show available com ports

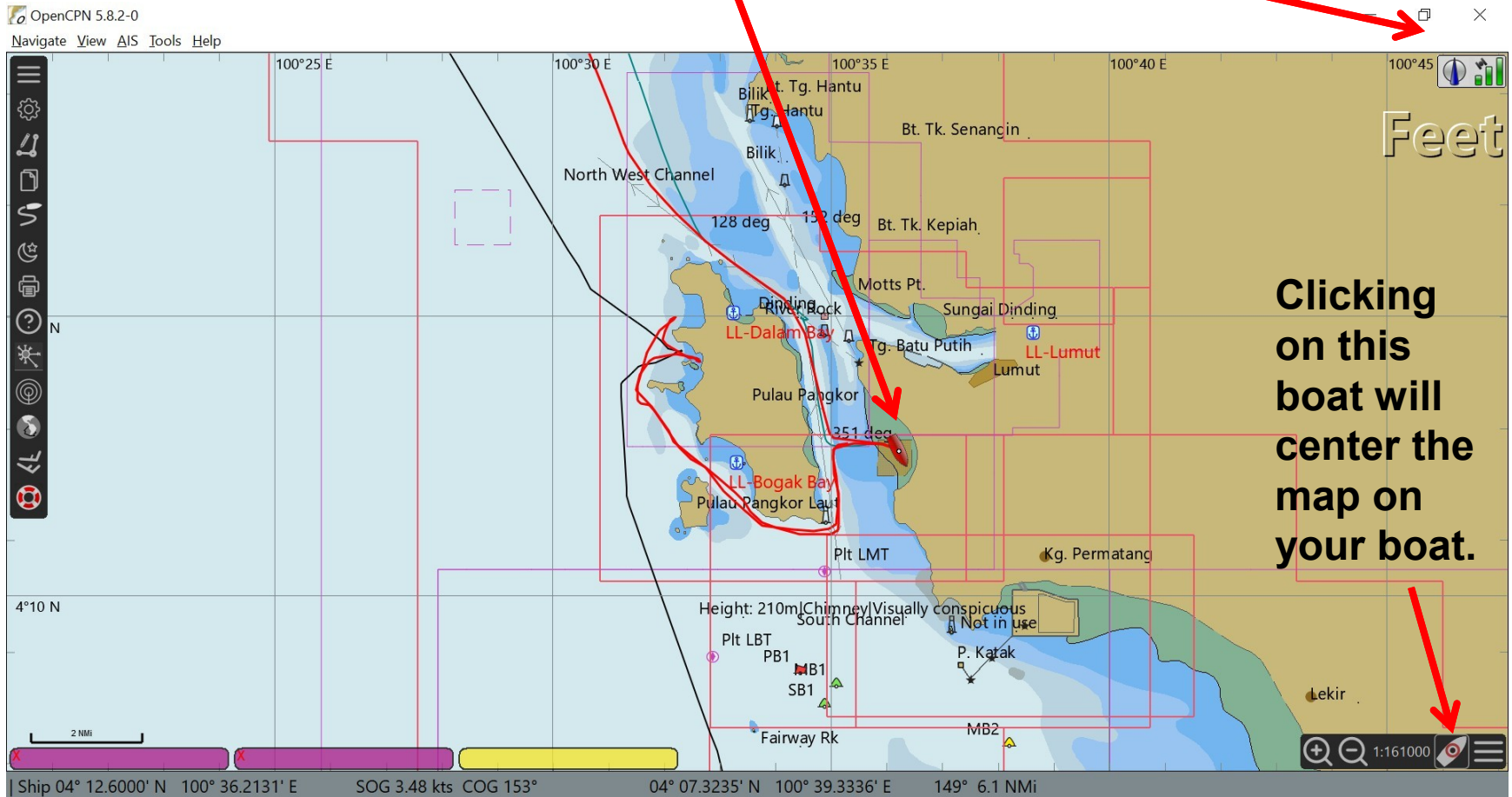


For a simple NMEA GPS for position input, that's all you need to do!

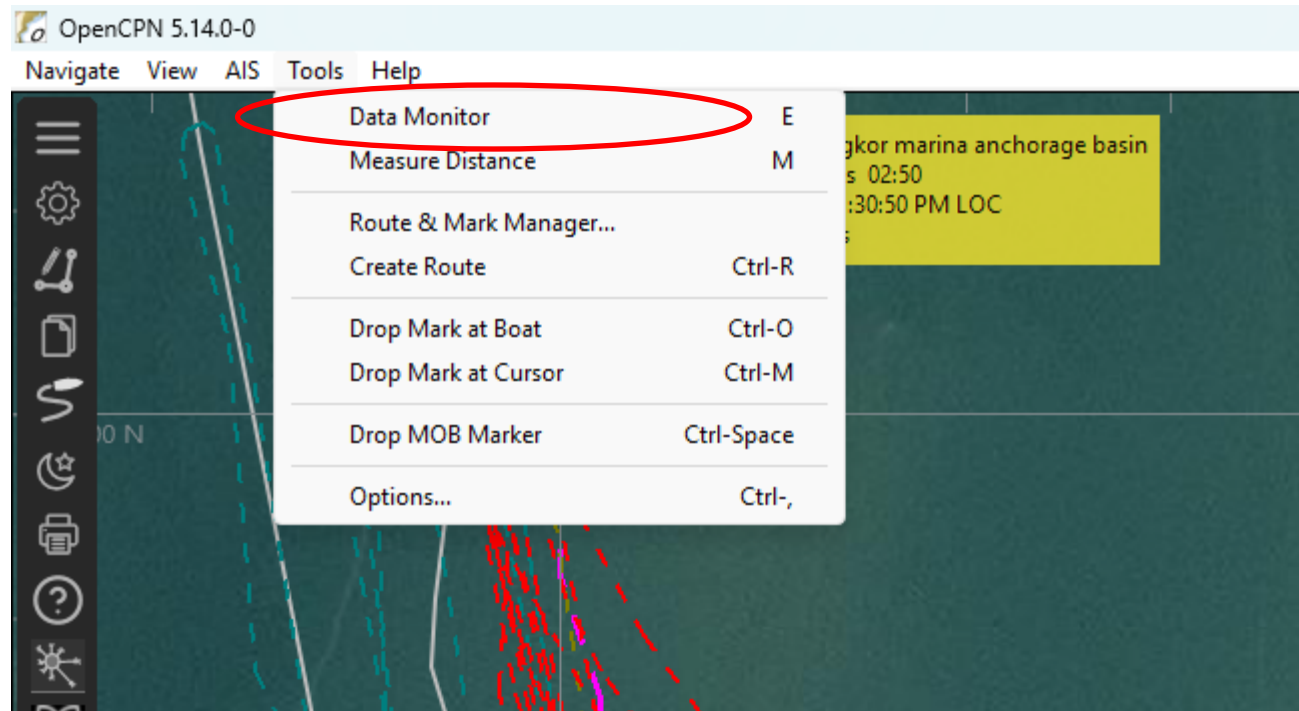
Setting Up a GPS

Once GPS configured

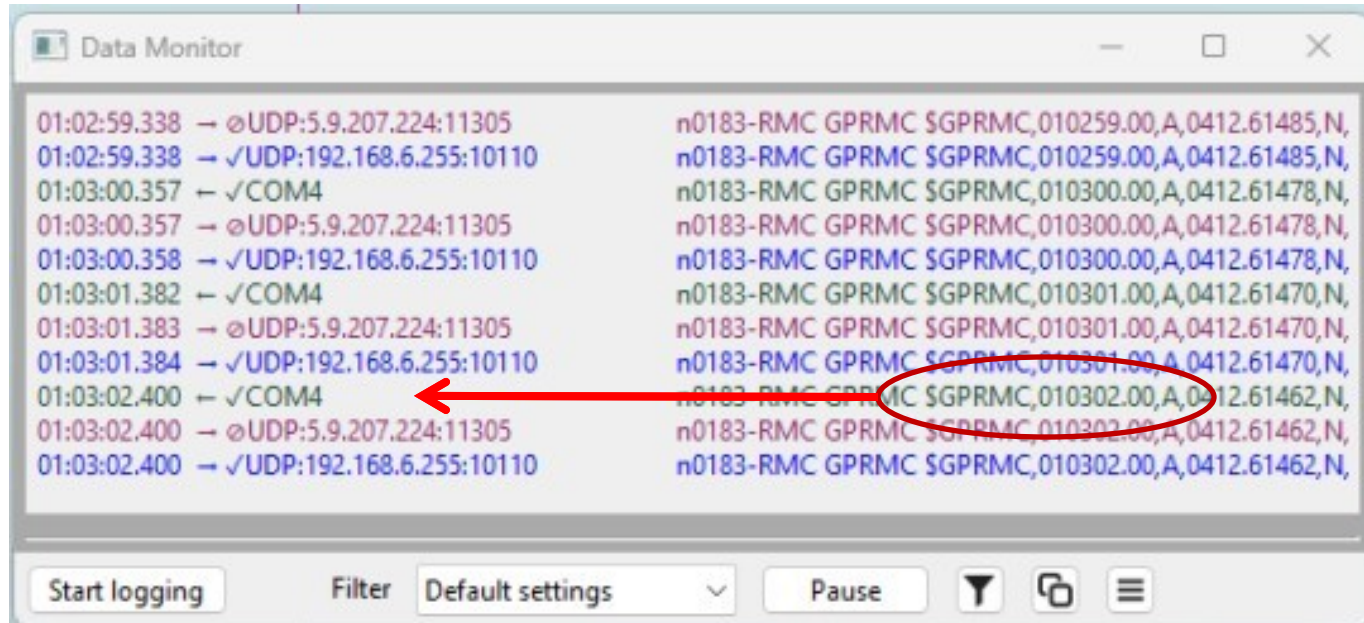
- GPS Status Panel should show Green
- Boat Icon should show Red



Do I Have a Working GPS?



Do I Have a Working GPS?



Do I have a Working GPS?

\$GPRMC,071238.000,A,0412.6012,N,10036.2109,E,0.90,40.20,120523,,,A*55<0x0D><0x0A>

This is a GPS position “sentence”.

- The “A” in the sentence means “thumbs up, we have a position”
- A “V” in the sentence means “thumbs down, no GPS position”

It’s a quick way to tell whether your problem is with the serial port
Or the GPS is not able to obtain a position.

If you see data, but have a V, take your GPS out where it has a clear view of the sky. (put your USB GPS out a hatch/porthole)

Most modern GPS’s will get position data fairly quickly, older ones may take a few minutes.

Getting Your AIS into OpenCPN (NMEA183)

- Plug AIS into your computer



- Usually a USB connection, using manufacturer-supplied cables and drivers

- Setup / Connections / Add Connection just like GPS
- Select the appropriate Com port
- Set Baud Rate to 38400 (usual default rate for AIS)
- Some AIS's ALSO send Position. You only want ONE position indicator into OpenCPN. Use accept/reject settings to filter unwanted position information out.

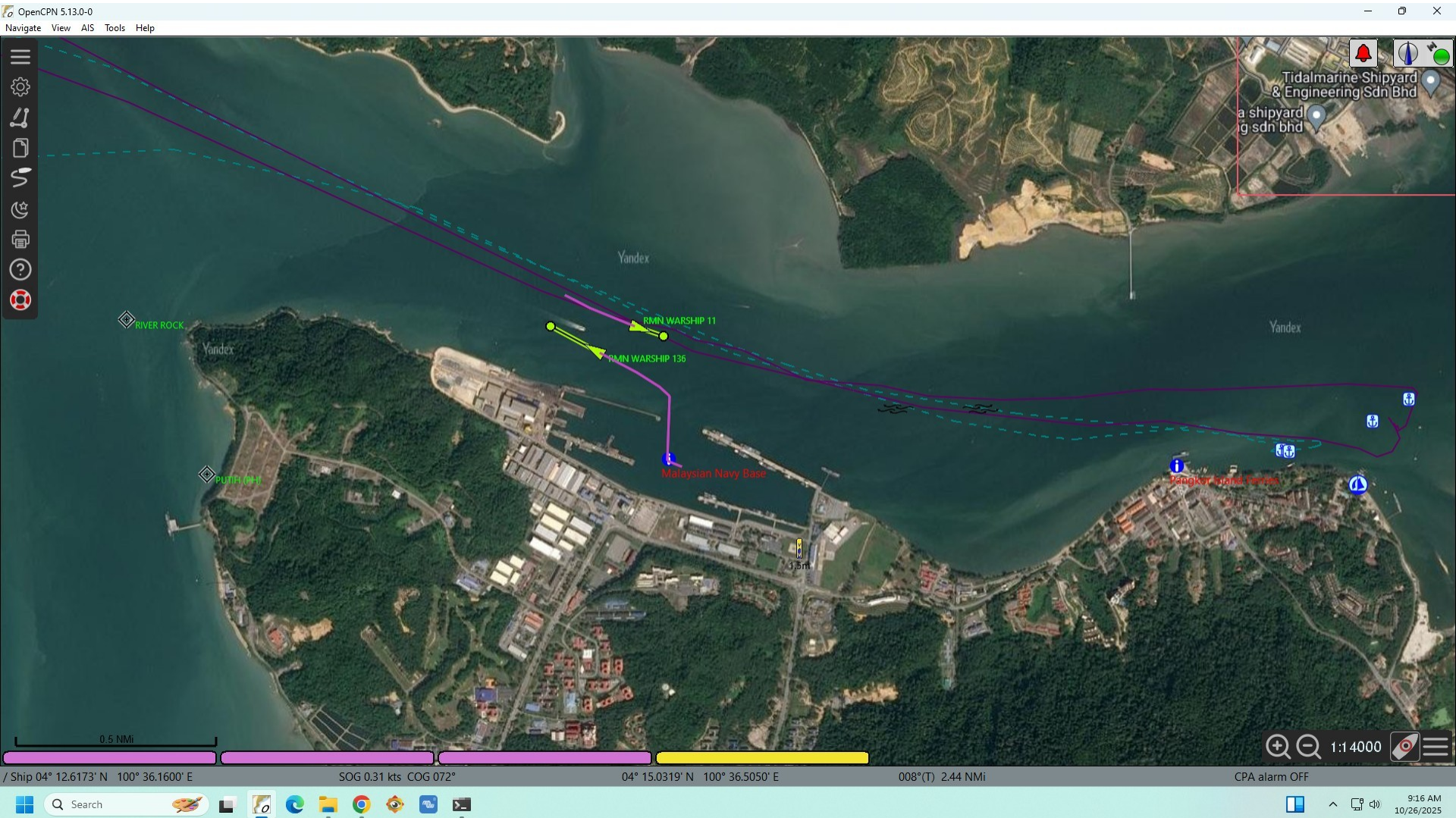
Newer AIS's may supply AIS (and maybe position) by Wifi
OpenCPN can do this by adding the connection as a Network connection.

- Consult your Mfg's manual, and the OpenCPN manual, as this varies by device.

Sorry, no NMEA2000 on Soggy Paws, no idea how to set up

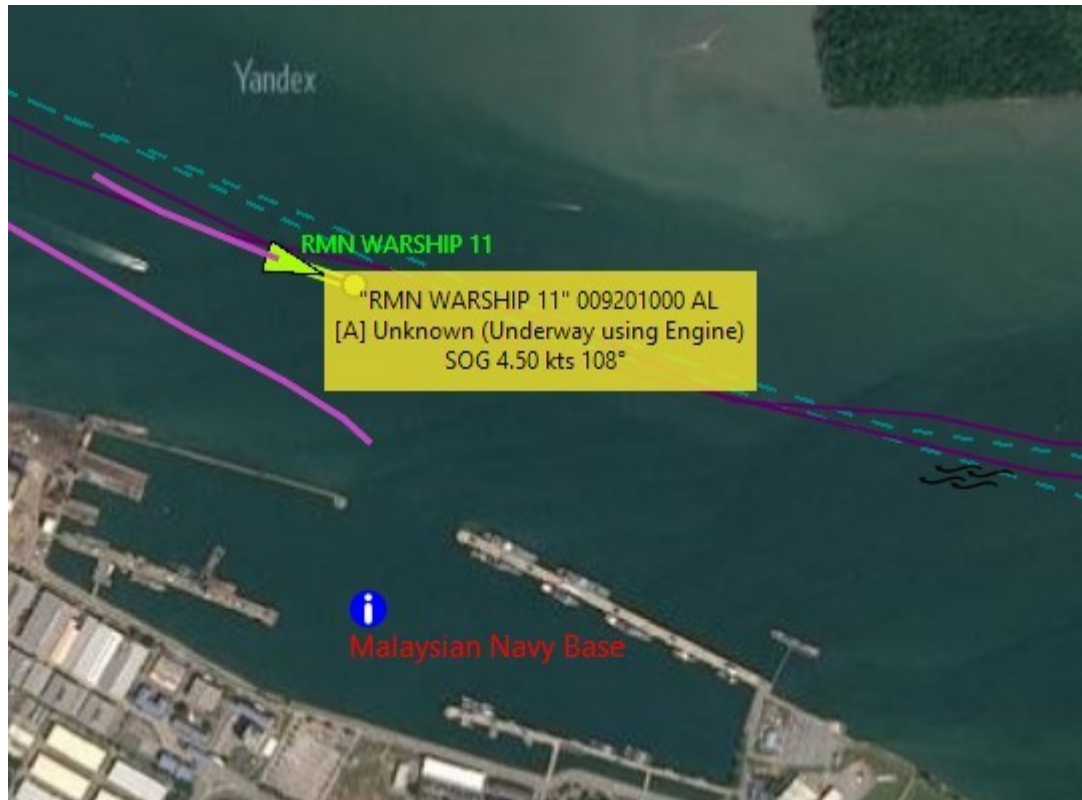
Working with AIS in OpenCPN

Once installed and configured – Ships with AIS on your chart!



Working with AIS in OpenCPN

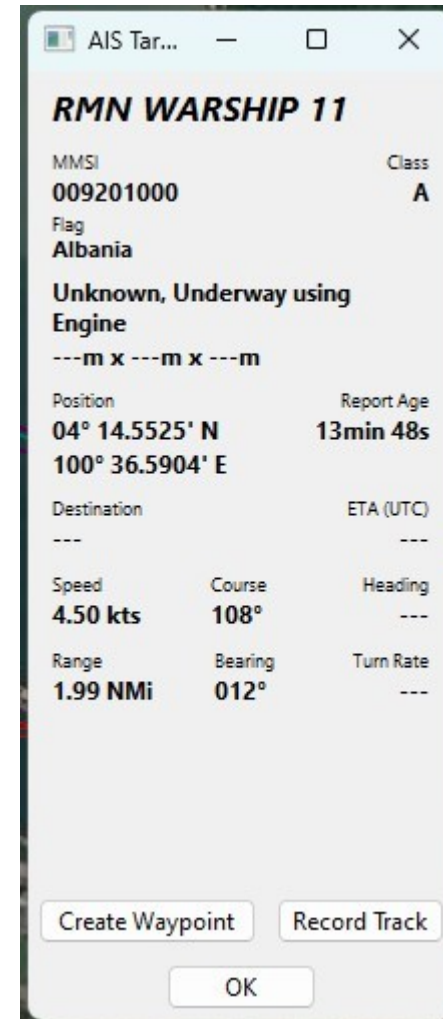
Placing your cursor on a ship gives a pop-up information box



Working with AIS in OpenCPN

Right click on target to show
AIS Target Data and CPA

See
OpenCPN
Manual for
LOTS more
on AIS in
OpenCPN



Working with AIS in OpenCPN

Right-click anywhere on chart to pop up the AIS Target List

AIS target list															
Trk	Name	Call	MMSI	Class	Type ▲	Flag	Nav...	Brg	Ran...	CoG	SoG	CPA	TCPA		
'	FUJIHIME	DYFP	548857000	A	Cargo S...	Philippines	At ...	228	7.39	272	0.0	-	-		
'	SH2515NGWRQM		533342515	B	Fishing ...	Malaysia	-	287	1.65	166	0.0	-	-		
'	RMN WARSHIP ...	9MOJ	533140146	A	Law Enf...	Malaysia	Un...	321	2.46	172	9.8	1.33	13		
'	GRIPHEN	SUP-...	265102538	B	Law Enf...	Sweden	-	280	1.53	029	0.0	-	-		
·	BATU GAJAH		995331081	AtoN	Light	Malaysia	-	331	0.81	-	-	-	-		
·	MUROH		995331080	AtoN	Light	Malaysia	-	304	1.28	-	-	-	-		
·	DINDING FRONT		995331084	AtoN	Light w/...	Malaysia	-	328	2.44	-	-	-	-		
'	SERENITY	DD7...	211563450	B	Pleasure ...	Germany	-	285	0.13	-	0.0	-	-		
'	AZUL V	9M2...	533131151	A	Pleasure ...	Malaysia	Mo...	302	0.13	321	0.1	-	-		
·	SELAT 2R		995331297	AtoN	Port Han...	Malaysia	-	330	2.90	-	-	-	-		
·	SELAT 2G		995331296	AtoN	Preferre...	Malaysia	-	329	2.79	-	-	-	-		
'	PHILIOSOPHY	WDF...	367466080	B	Sailing V...	United Stat...	-	322	0.09	-	0.0	-	-		
'	AVIATOR	2AES5	235059045	B	Sailing V...	Great Britain	-	308	0.08	000	0.0	-	-		
'	SV BINDY TOO		503055520	B	Sailing V...	Australia	-	323	0.06	120	0.0	-	-		
·	EAST BANK		995331298	AtoN	Starboar...	Malaysia	-	266	1.07	-	-	-	-		
'	PAN SILVER 3		533131128	B	Unknown	Malaysia	-	301	0.27	081	7.9	0.18	2		
·	-		005330175	Base	-	Malaysia	-	182	3.26	-	-	-	-		

Target info

Center view

Center-Info-Close

Create WPT

Hide All Tracks

Show All Tracks

Toggle track

Copy MMSI

Find target name

☒ AutoSort

Limit range: NM

50

Target Count

17

Close

Working with AIS in OpenCPN

Options/Ships/
AIS Targets
To display
optional settings
For AIS

For more help, see the
OpenCPN manual!

The screenshot shows the 'Options' dialog box in OpenCPN, with the 'Ships' tab selected. Within the 'Ships' tab, the 'AIS Targets' sub-tab is highlighted with a red circle. The dialog is organized into several sections:

- Own ship**: This section is currently active.
- CPA Calculation**:
 - ☒ No (T)CPA Alerts if target range is greater than (NMI): 20.0
 - ☒ Warn if CPA less than (NMI): 2.0
 - ☐ ...and TCPA is less than (min): 30
- Lost Targets**:
 - ☒ Mark targets as lost after (min): 8
 - ☒ Remove lost targets after (min): 10
- Display**:
 - ☒ Show target COG predictor arrow, length (min): 6
 - ☐ Sync AIS arrow length with own ship's COG predictor
 - ☐ Show target tracks, length (min): 20
 - ☐ Suppress anchored/moored targets, speed max (kn): 0.2
 - ☐ Draw AIS realtime prediction, target speed min (kn): 0.7
 - ☐ Allow attenuation of less critical targets if more than ... targets: 10
 - ☐ Show area notices (from AIS binary messages)
 - ☐ Show AIS targets real size
 - ☐ Show names with AIS targets at scale greater than 1: 250000
 - ☒ Use WPL position messages. Action when received: APRS position report
- Rollover**:
 - ☒ Enable route/AIS info block

At the bottom of the dialog are buttons for 'Ok', 'Cancel', and 'Apply'.

Broadcast to Boat Network

- 1. Use CMD line and put in cmd "IPConfig". Look for this set of info. That shows the network address for your network. In my case my Gateway is 192.168.100.1 so my broadcast address to put in to OpenCPN Connections dialog would be 192.168.100.255

```
Wireless LAN adapter Wi-Fi:
```

```
Connection-specific DNS Suffix  . :  
IPv4 Address. . . . . : 192.168.100.100  
Subnet Mask . . . . . : 255.255.255.0  
Default Gateway . . . . . : 192.168.100.1
```

Broadcast to Boat Network

Add a new
"Output
Network"
connection.

Options

Display Charts **Connect** Ships User Plugins

Configure new connection

☐ Serial ☒ Network

Network Protocol ☐ TCP ☒ UDP ☐ GPRS ☐ Signal K

Data Protocol NMEA 0183

Address 192.168.100.255

DataPort 10110

Description Local Network Broadcast

☐ Receive Input on this Port

☒ Output on this port (as autopilot or NMEA repeater)

Advanced: ^

APB bearing precision x.xxx

Output filtering

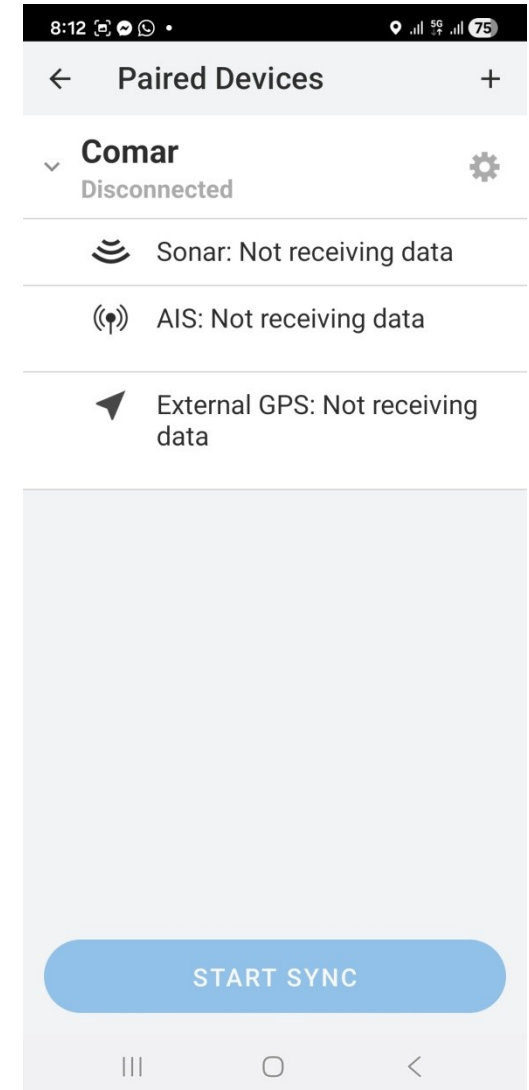
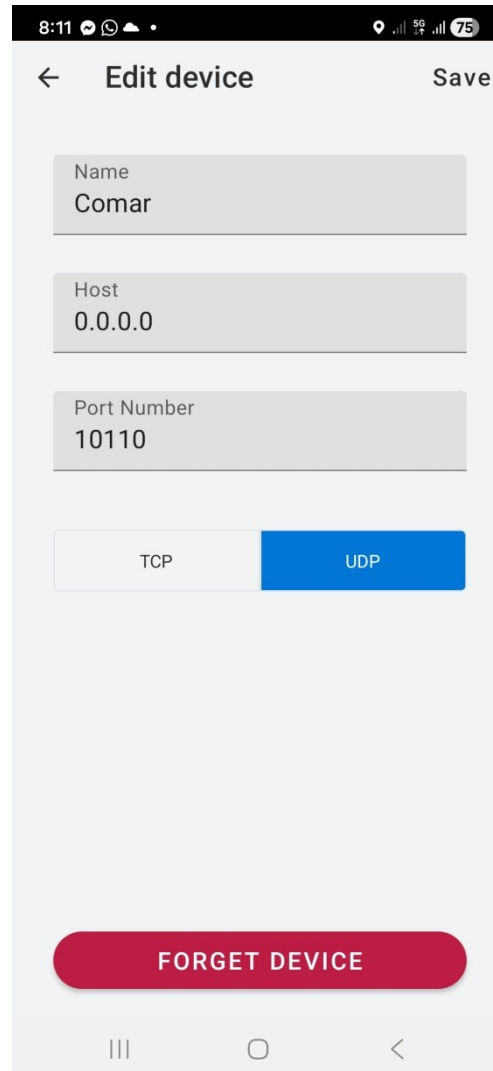
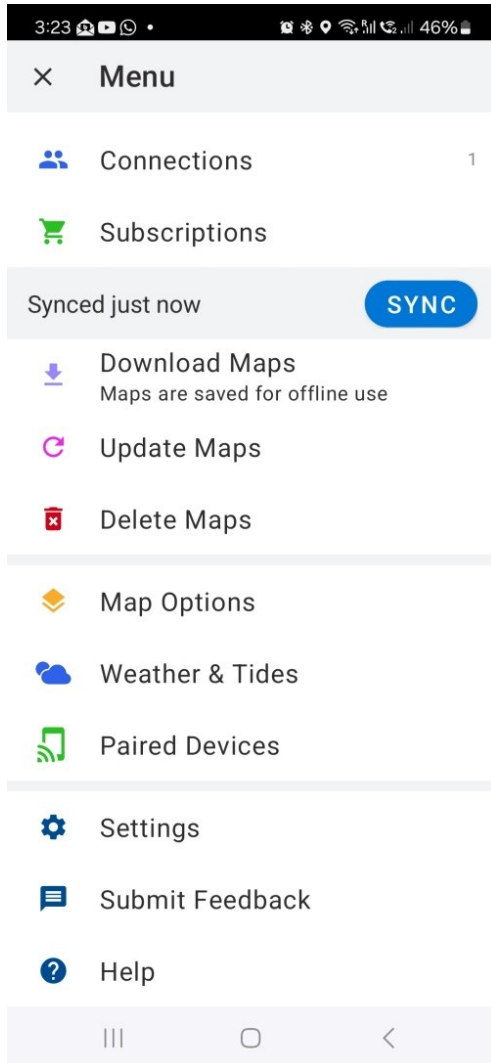
☒ Transmit sentences ☐ Drop sentences

OK Cancel

Broadcast to Boat Network

- On any other OpenCPN on the same network
 - Settings / Connections and
 - add a new **Input** Network connection.
 - Use 0.0.0.0 and port 10110
- On Navionics Boating App add the connection to the Navionics device.
 - Menu / Paired Devices
 - Select the default Comar setting.
 - Host 0.0.0.0 and Port Number 10110.

Receive data on Navionics Boating App on Phone or Tablet



Notes on Com Ports

- (If you're not sure which Com port is which, unplug one and see which one goes away), then label in OpenCPN, and tape a label on the USB cord.
- Also label the exact USB port you plug it into on your computer. (some devices will give a different com port number if plugged into a different port)
- Plugging in a new device, especially with other devices unplugged, may change your com ports!

What we do on Soggy Paws

- All connections go into the Nav Computer on Nav Station
- Backup devices are configured but disabled (eg. USB GPS)
- OpenCPN has an “output” capability that broadcasts info over the boat wifi network.
- Tablets and mobile phones can receive position, instrument data, and AIS over the boat wifi.
- OpenCPN and Navionics on mobile devices and laptops can receive the same data simultaneously
- Imagine watching your depth sounder numbers while standing on the bow looking for coral heads!
- A bit tricky to set up initially—once working, back it up and write it down!!!

Options

Display
 Charts
 Connections
 Ships
 User Interface
 Plugins

General

☒ **Filter NMEA Course and Speed data** Filter period (sec)

☐ Show NMEA Debug Window
 ☐ Format uploads for Furuno GP3X
 ☐ Use Garmin GRMN (Host) mode for uploads
 ☐ Use magnetic bearings in output sentence APB
 NMEA0183 Talker ID

Data Connections

Enable	Type	Direction	Protocol	Serial Port	Baudrate	
☒	Serial	Input	NMEA 0183	COM4	38400	AIS
Comment: Watchmate AIS						

Enable	Type	Direction	Protocol	Serial Port	Baudrate	
☐	Serial	Input	NMEA 0183	Garmin-USB	4800	Garmin Hand Held (Backup)
Comment: Garmin USB Spanner Mode						

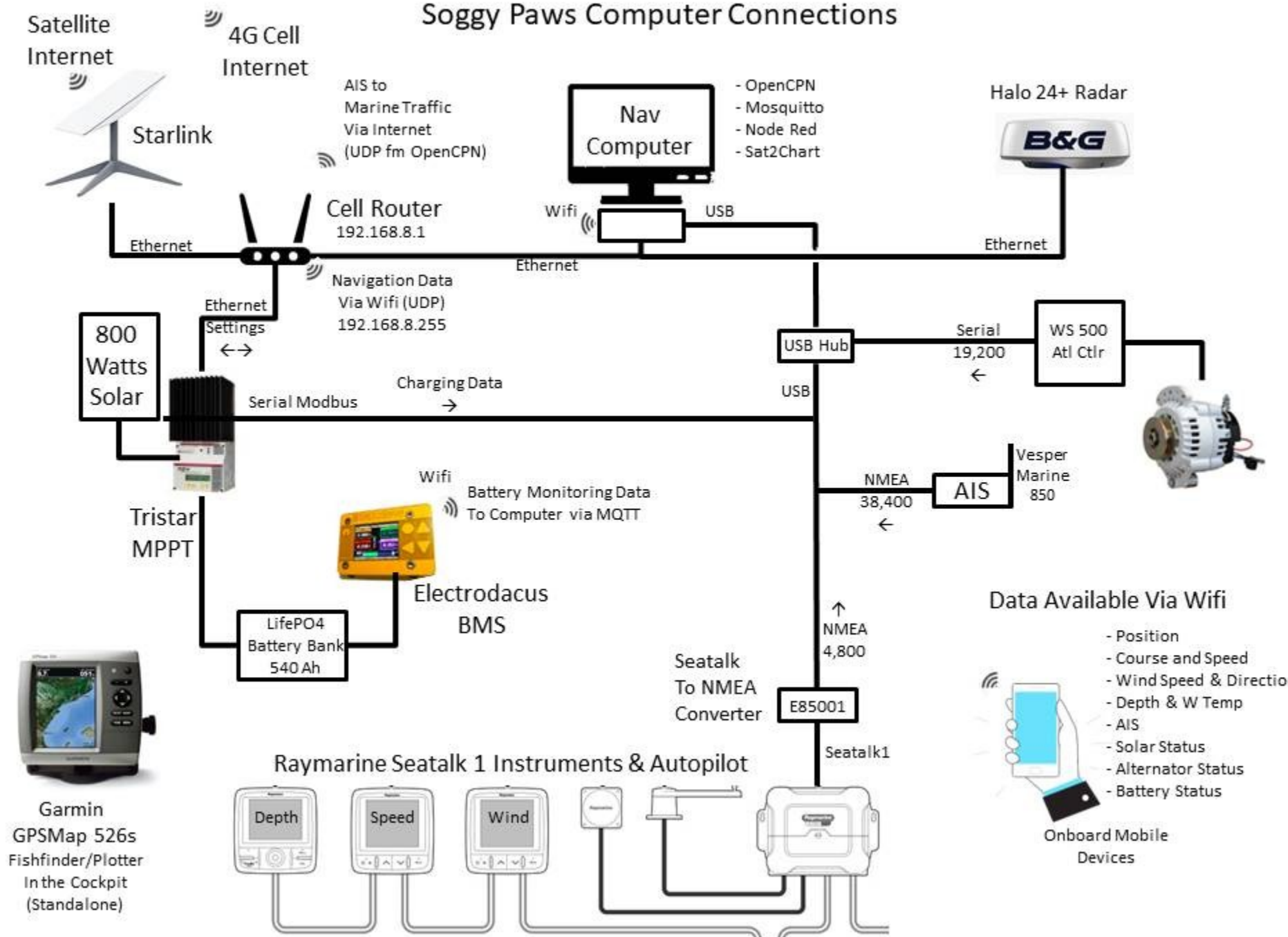
Enable	Type	Direction	Protocol	Serial Port	Baudrate	
☒	Serial	Input	NMEA 0183	COM3	4800	Raymarine Instruments
Comment: NMEA Instruments						

Enable	Type	Direction	Protocol	Network Address	Network Port	
☒	Network	Output	UDP N0183	5.9.207.224	11305	AIS to Marine Traffic
Comment: Marine Traffic Broadcast						

Enable	Type	Direction	Protocol	Network Address	Network Port	
☒	Network	Output	UDP N0183	192.168.6.255	10110	Everything to Local Network
Comment: Local NMEA Broadcast						

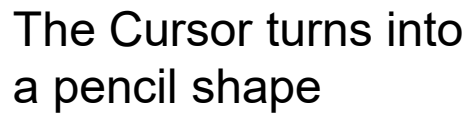
Enable	Type	Direction	Protocol	Network Address	Network Port	
☐	Network	Input	UDP N0183	0.0.0.0	10110	Get data from Another computer
Comment: Receive data via network						

Soggy Paws Computer Connections



Create a Route

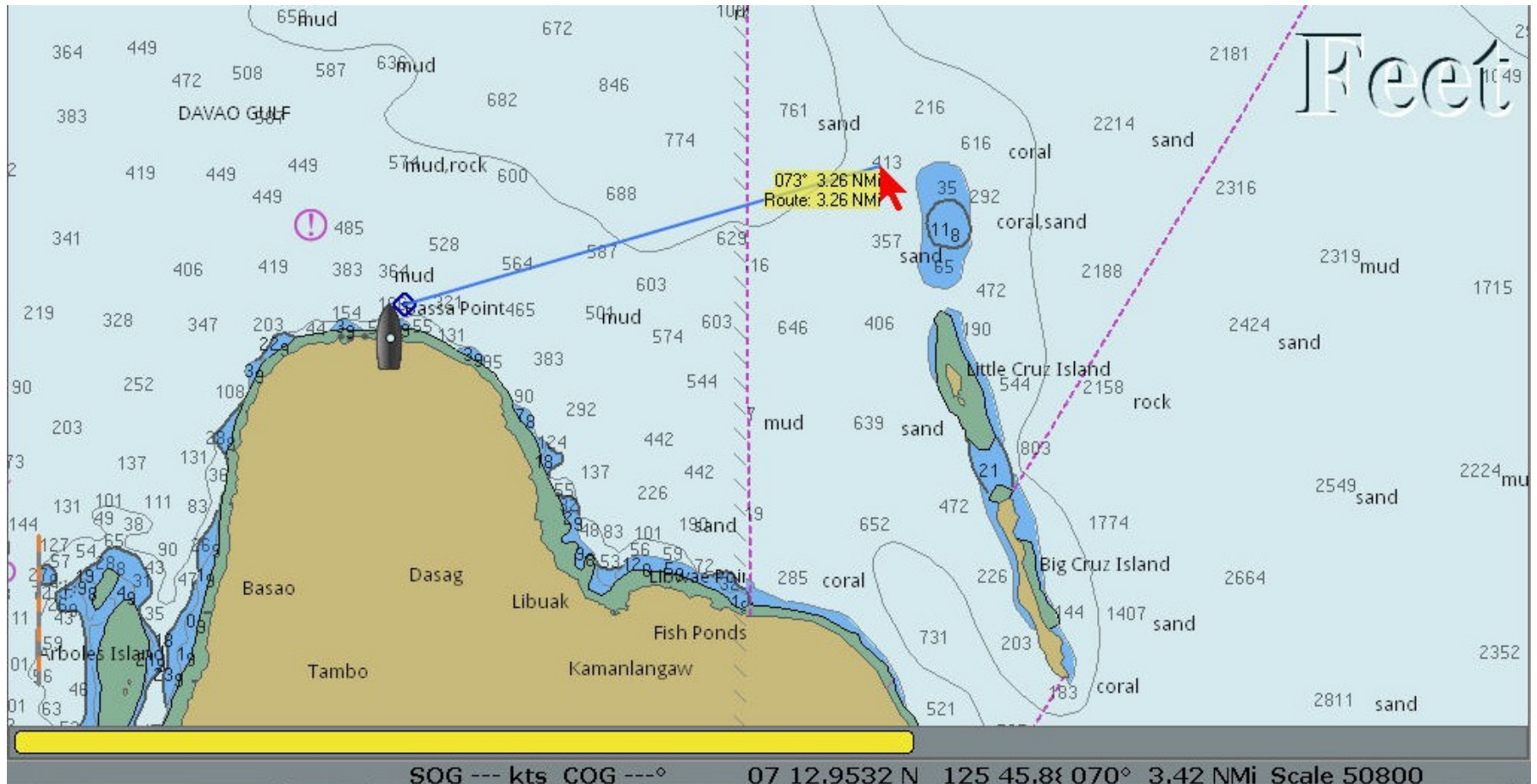
Select “Create Route”



Routes

Create a Route

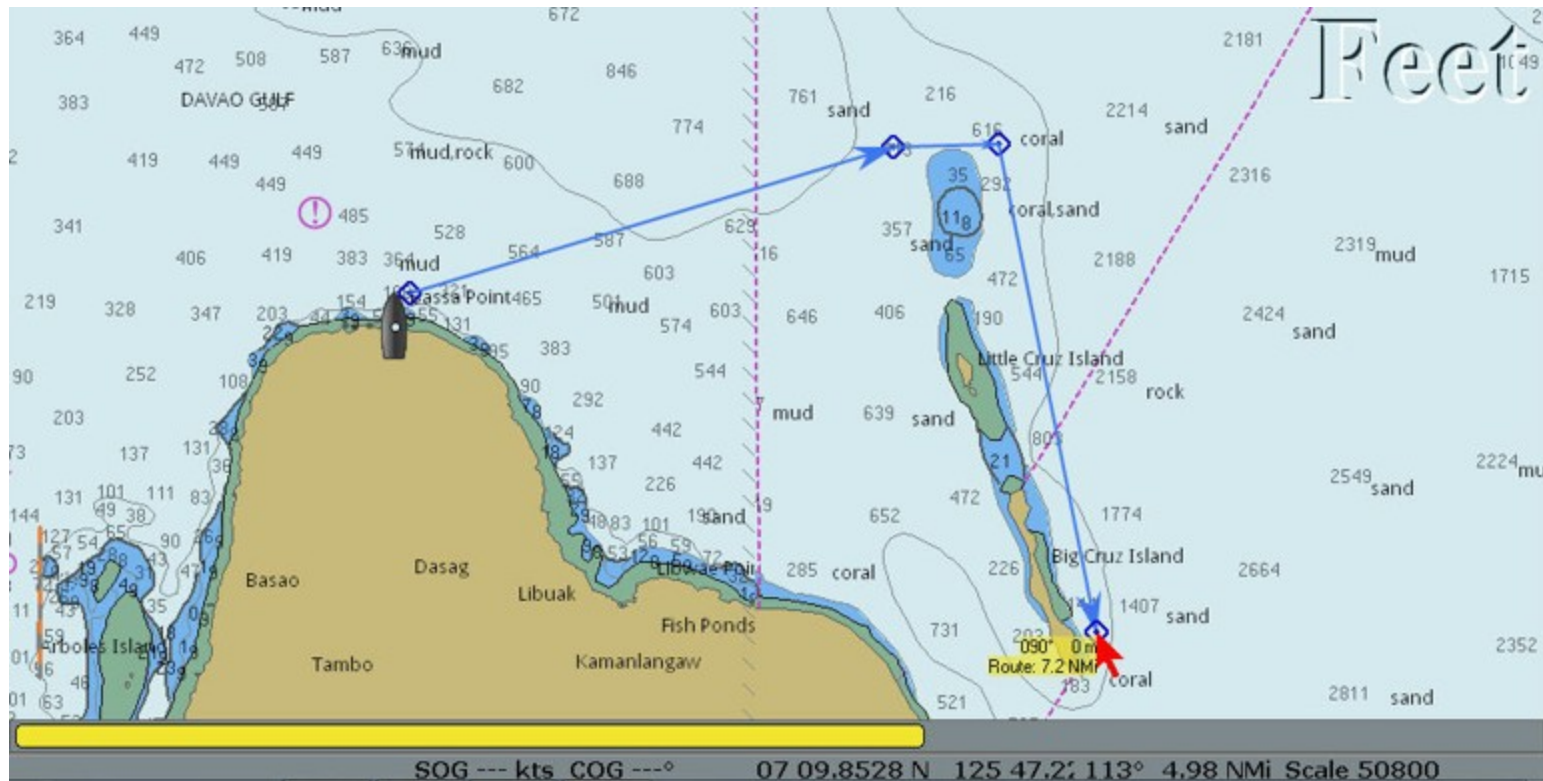
Click the pencil pointer at the desired location to describe a route



Routes

Create a Route

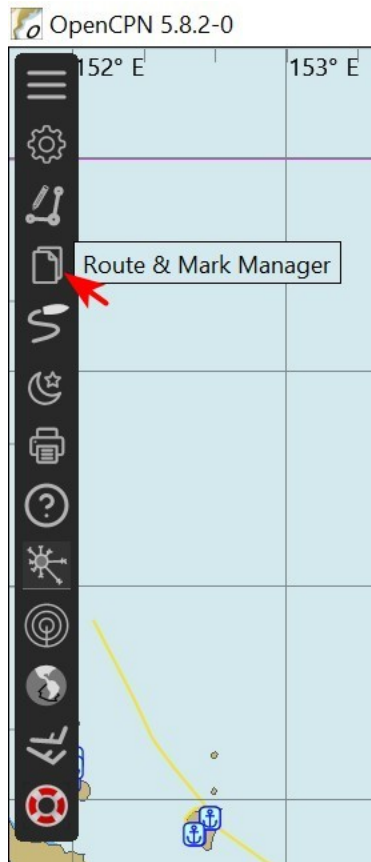
- Continue dropping waypoints (with a click) until you are finished.
- Press the ESC key to stop



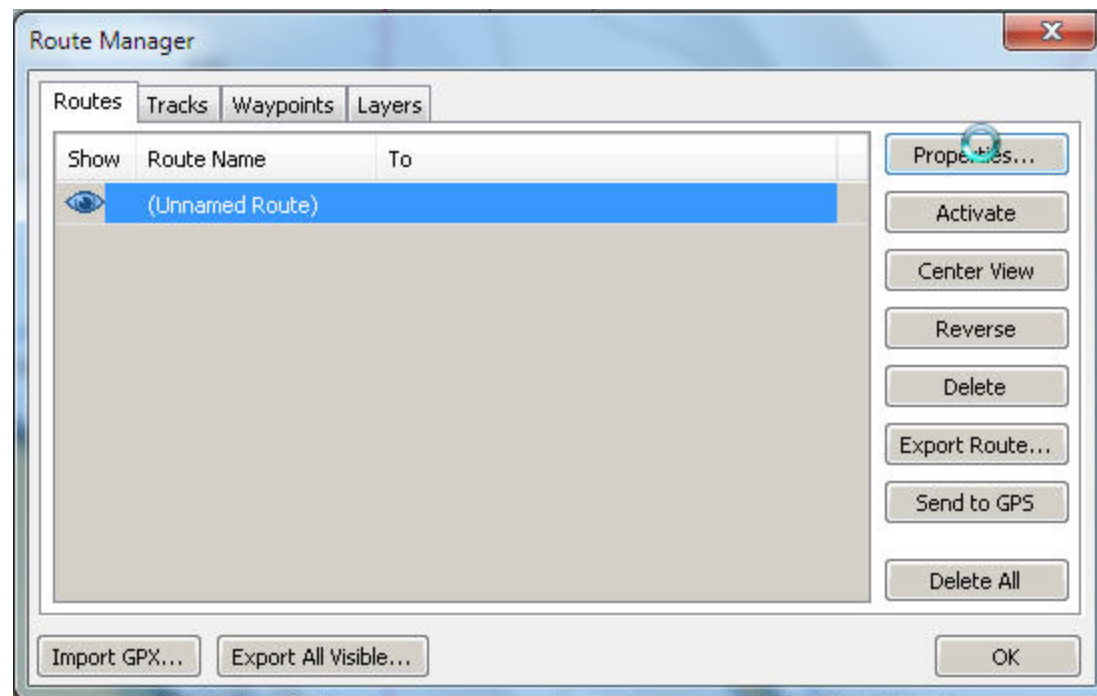
Routes

Editing/Viewing a Route

**Open the Route Manager
from the toolbar**



**On the Routes tab,
select the new route
and click Properties**



Routes

Editing/Viewing a Route

- Name the route (for future reference)
- Check distances and estimate ETA's

Route Properties

Basic Advanced

Name

From To

Distance Plan speed Enroute Departure Time Color Style Width

0.6 NMi 6 6M 4S 5/12/2023 4:58:52 PM Local@PC Default color Default Default

L...	To way...	Dista...	Bear...	Total Dist...	Latitude	Longitu...	ETE	ETA	Spe...	Next tide ...	Description	Course	ETD
---	FEND1	1684....	288 °T	0.0 NMi	22° 53.4'...	036° 18....	11d 16...	Start: 5/12/2...	6			248 °T	
1	FEND2	0.4 N...	248 °T	0.4 NMi	22° 53.3'...	036° 18....	3M 58S	5/12/2023 1...	6			334 °T	
2	Sha'ab ...	0.2 N...	334 °T	0.6 NMi	22° 53.5'...	036° 18....	2M 5S	5/12/2023 1...	6	HW: 5/12...	degrees and h	Arrived	

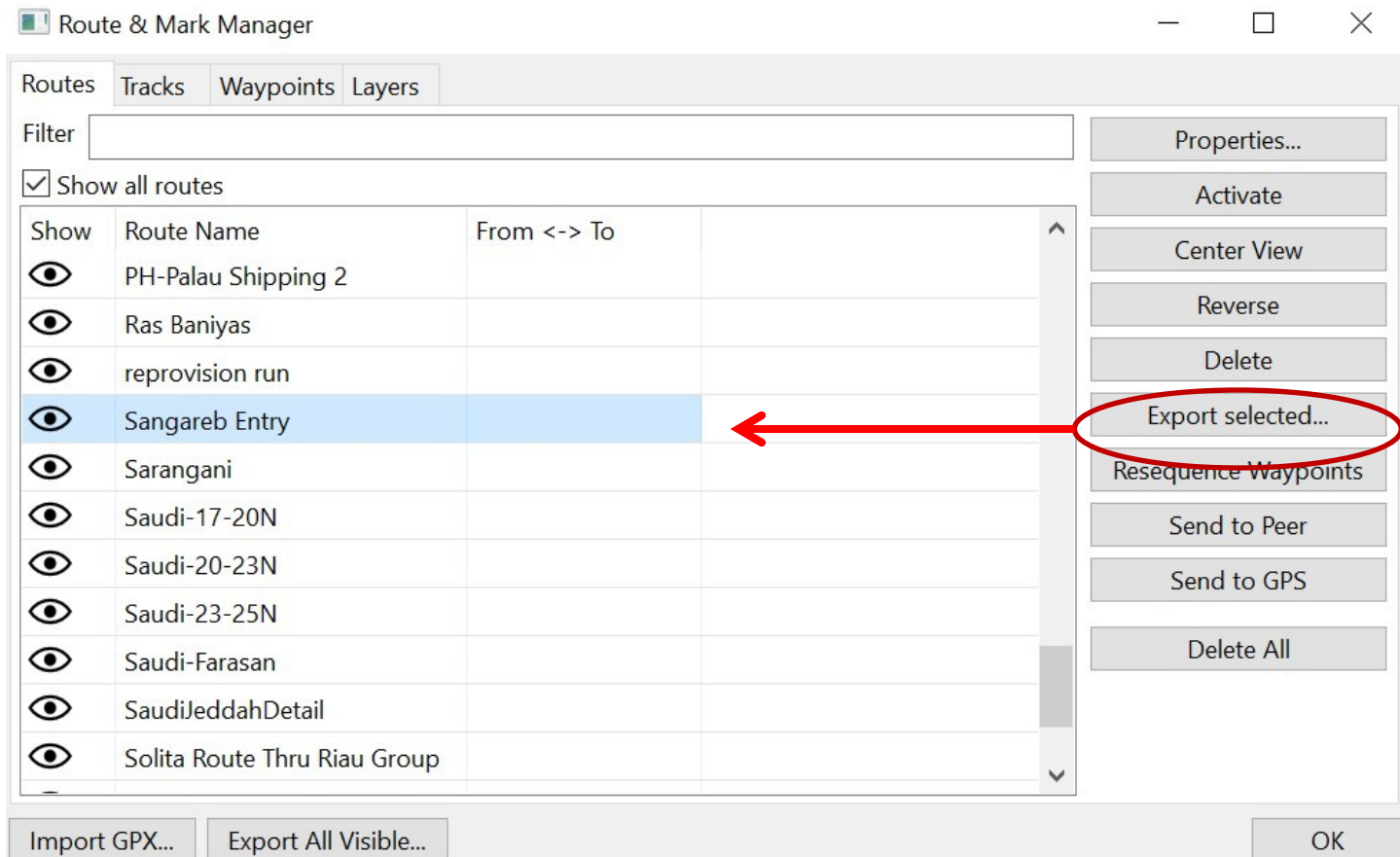
< >

Print Extend Split OK Cancel

Routes

Save/Export a Route

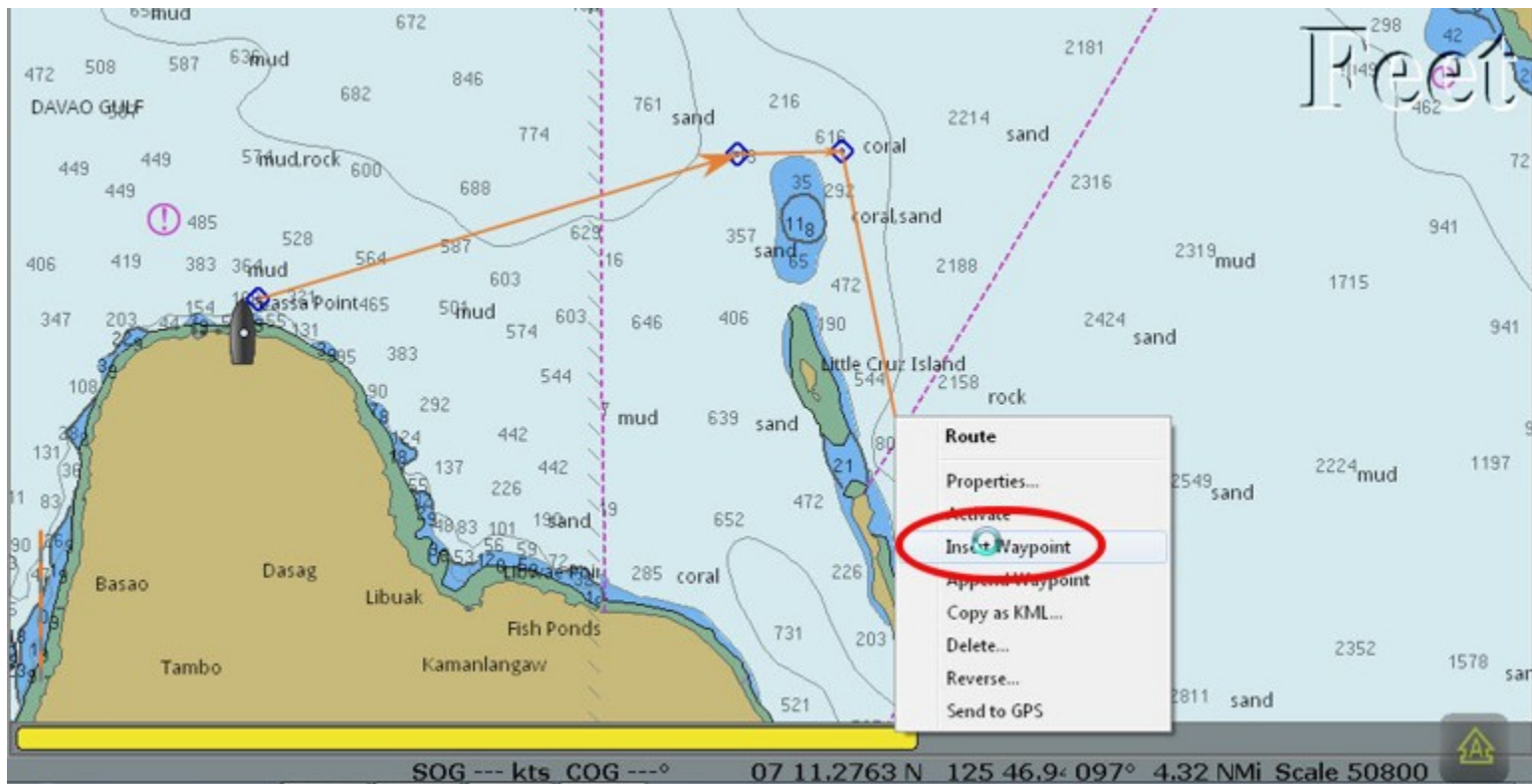
- To save a route outside of OpenCPN (for backup, to share with others)
 - Highlight route
 - Click **Export Selected** and Save as a file



Routes

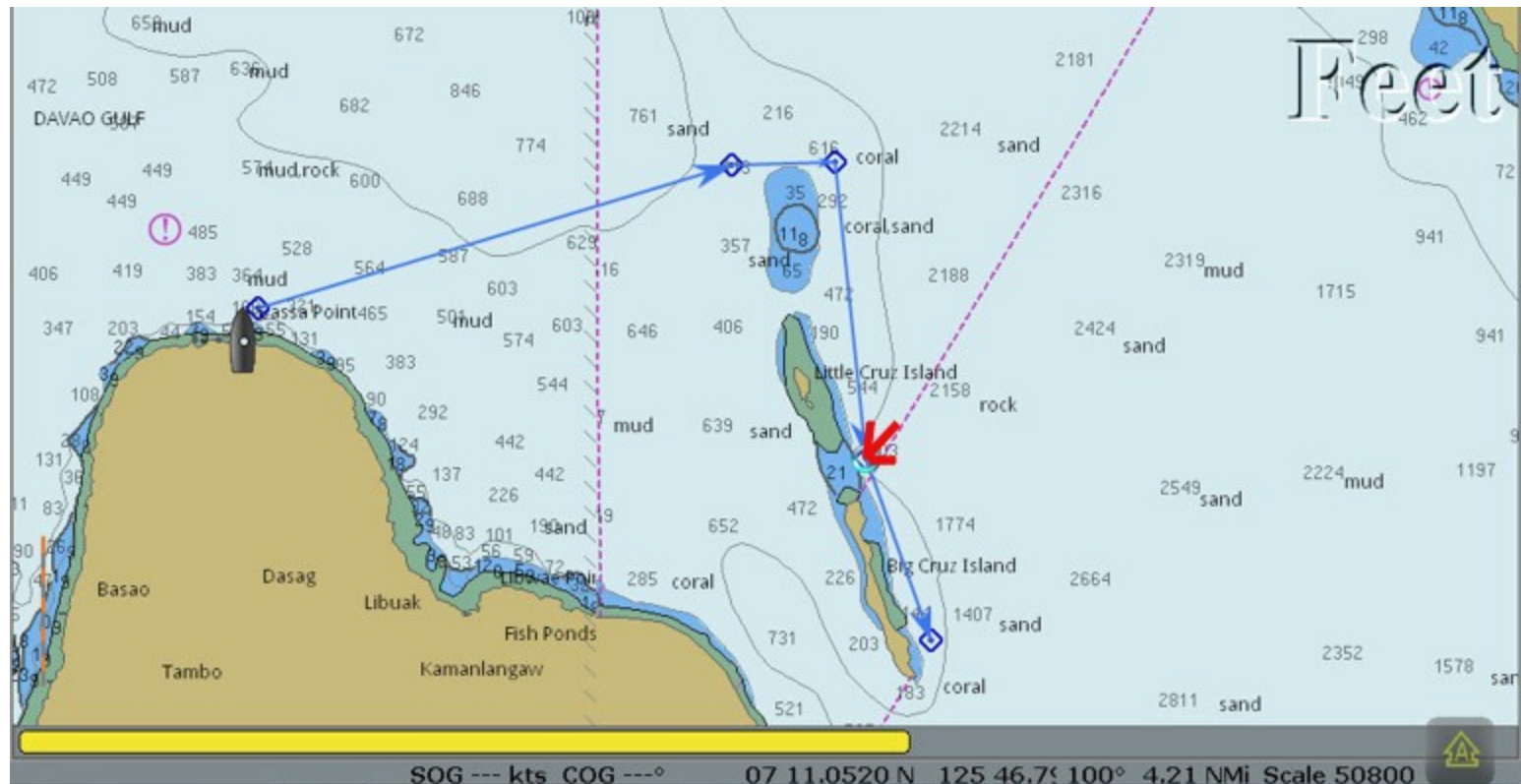
Change a Route

- **To change a route**
 - Right click on a point on the route
 - Select “Insert Waypoint”



Change a Route

Place cursor on new waypoint, and drag it where it should be



Routes

Change a Route

**If you
can't
drag a
waypoint
, check
settings**

Options

Display Charts Connect **Ships** User Plugins

Own ship AIS Targets MMSI Properties **Routes/Points**

New Routes

Waypoint default icon Diamond

Waypoint Arrival Circle Radius (NMi) 0.050

☐ Advance route waypoint on arrival only

New Waypoints

Waypoint default icon Anchorage

☒ Show waypoints only at a chartscale greater than 1 : 5000000

☐ Override the settings for chartscale based visibility and show always

Waypoint range rings None

Control Options

☐ Lock Waypoints (Unless waypoint property dialog visible)

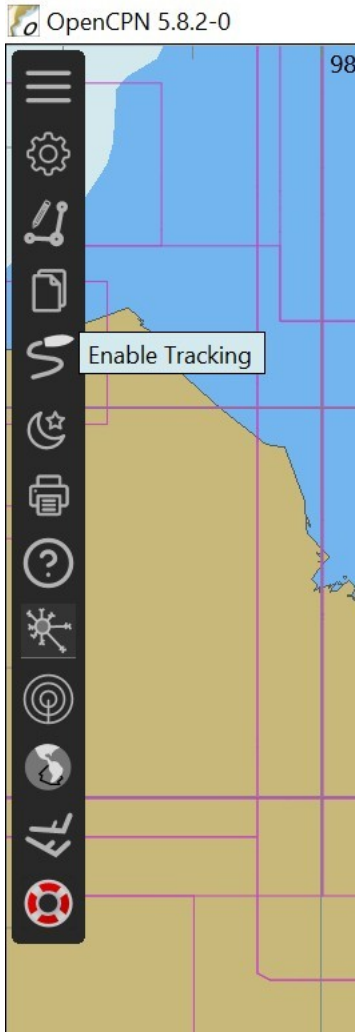
☒ Confirm deletion of tracks and routes

OK Cancel Apply

Tracks

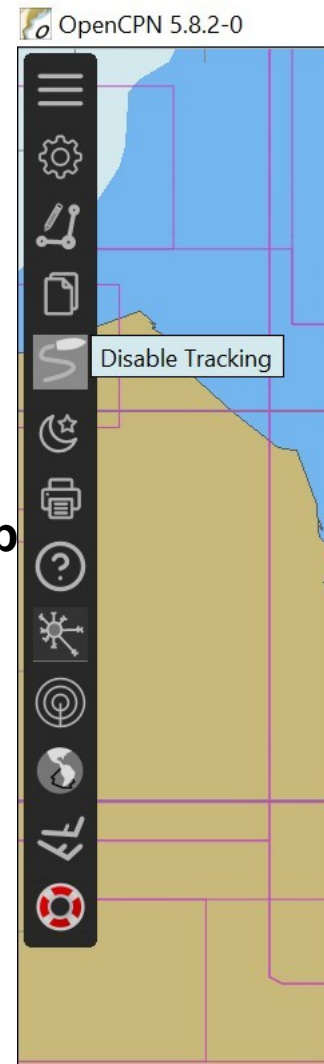
**Click on the Tracking
Icon to activate tracking**

Creating a Track



**Now it is highlighted
Click again to Disable**

**Tracking precision
Is set in
Options/Ships/Own Ship
- Medium is good**



Tracks

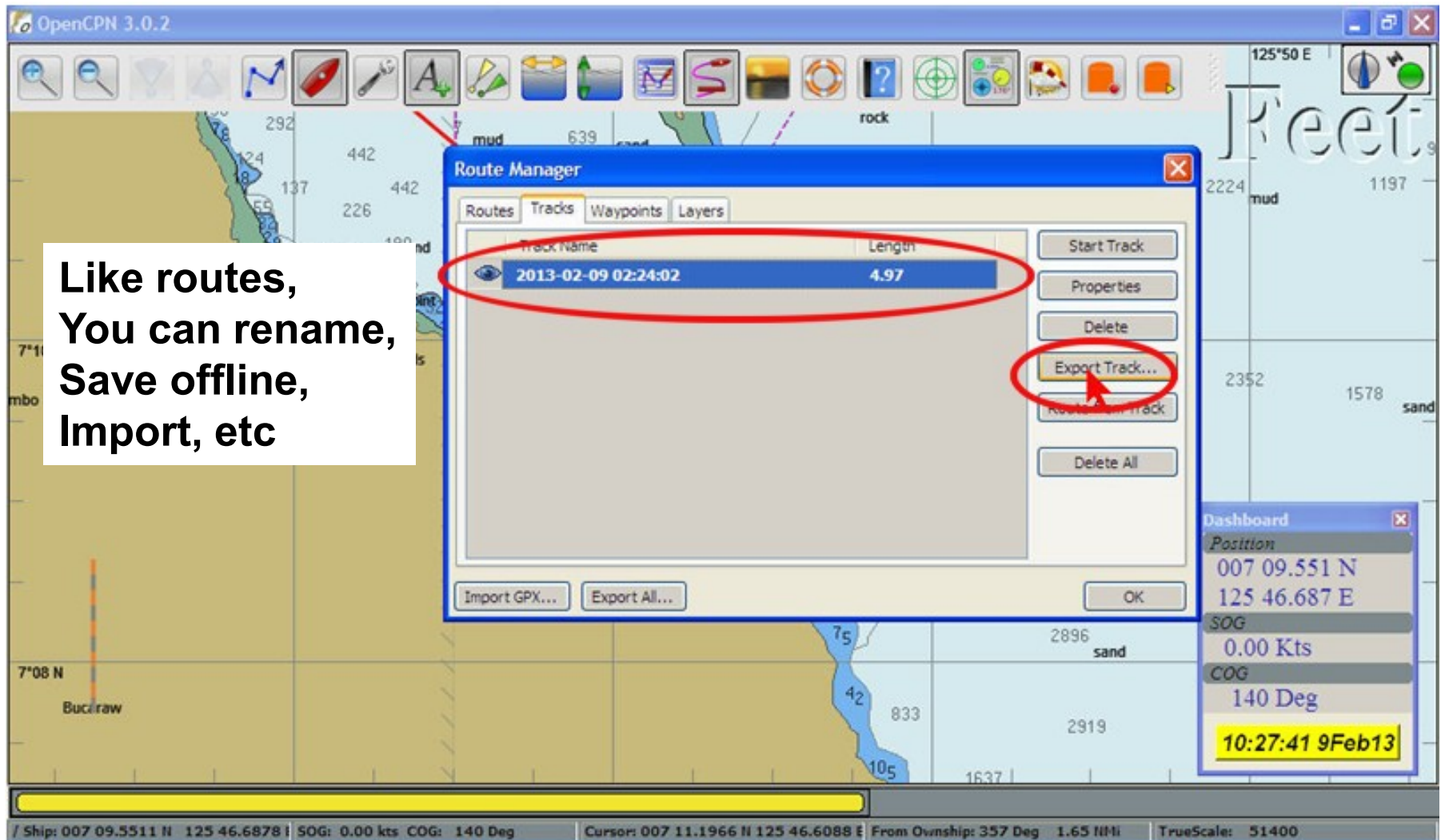
Creating a Track



Tracks

Saving Tracks

Like routes,
You can rename,
Save offline,
Import, etc

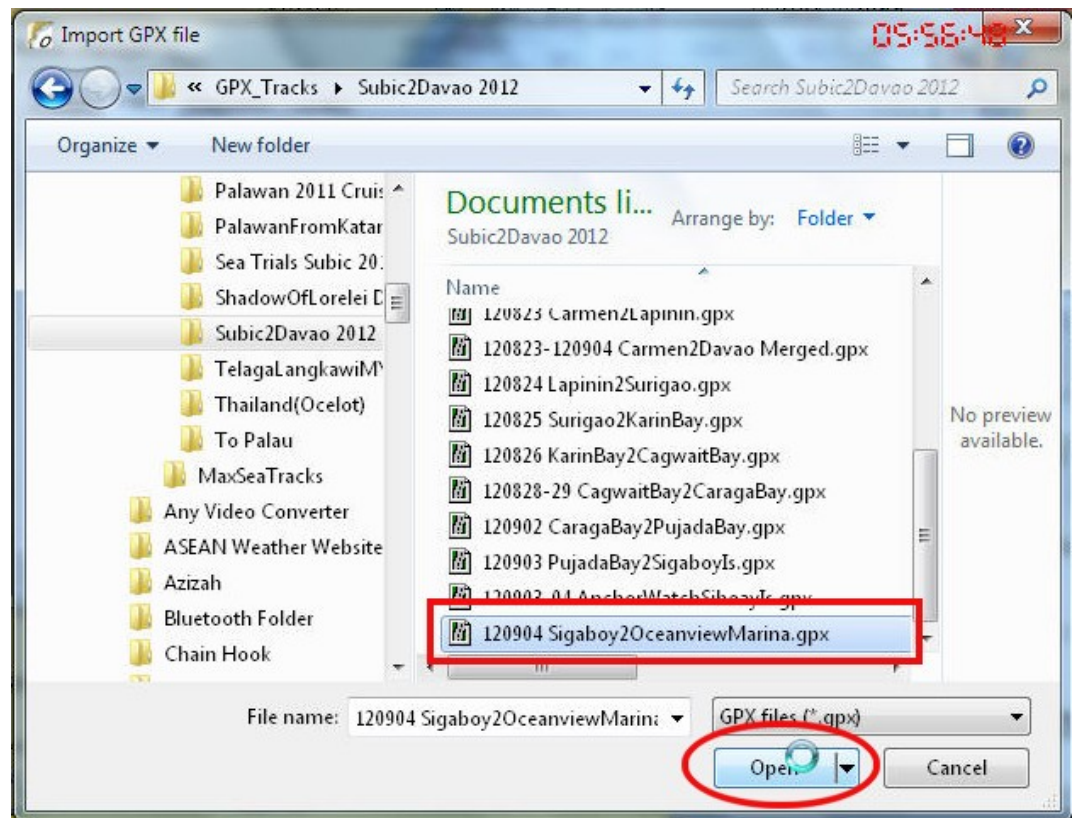
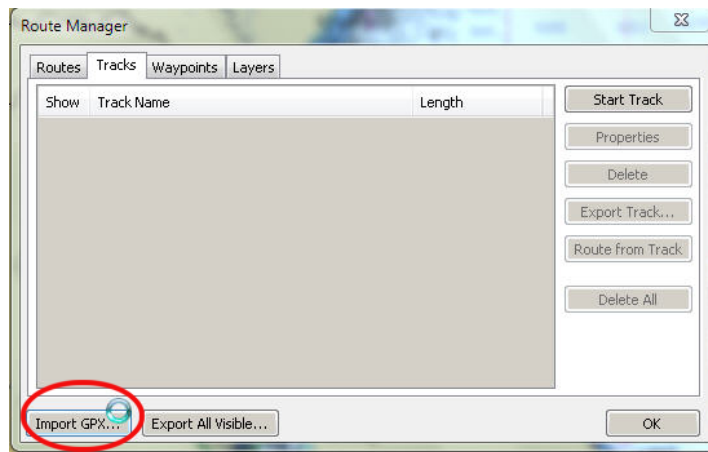


Importing Tracks

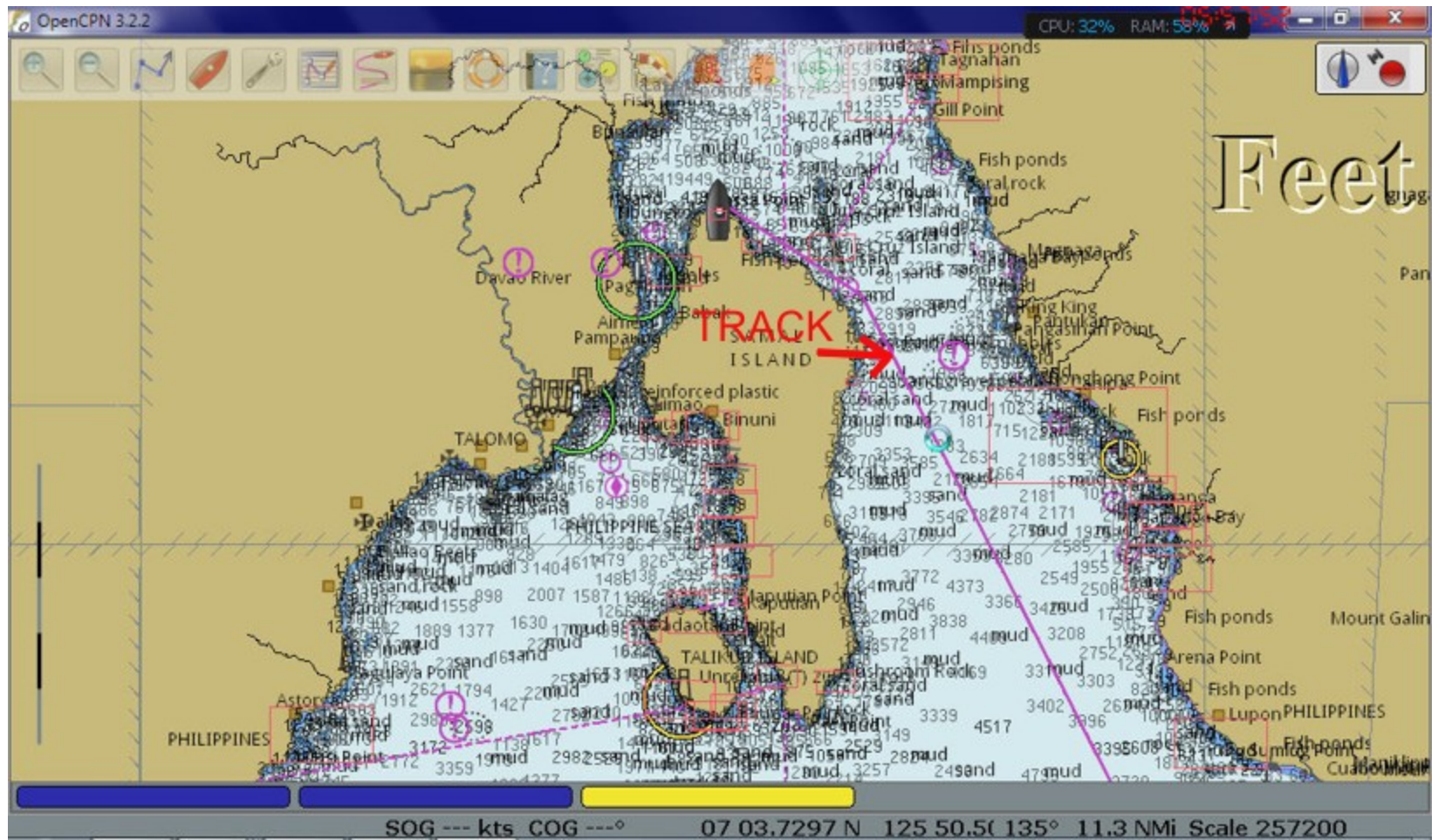
Route Manager

- Select Tracks tab
- Click on Import

Navigate to saved tracks location
Click Open

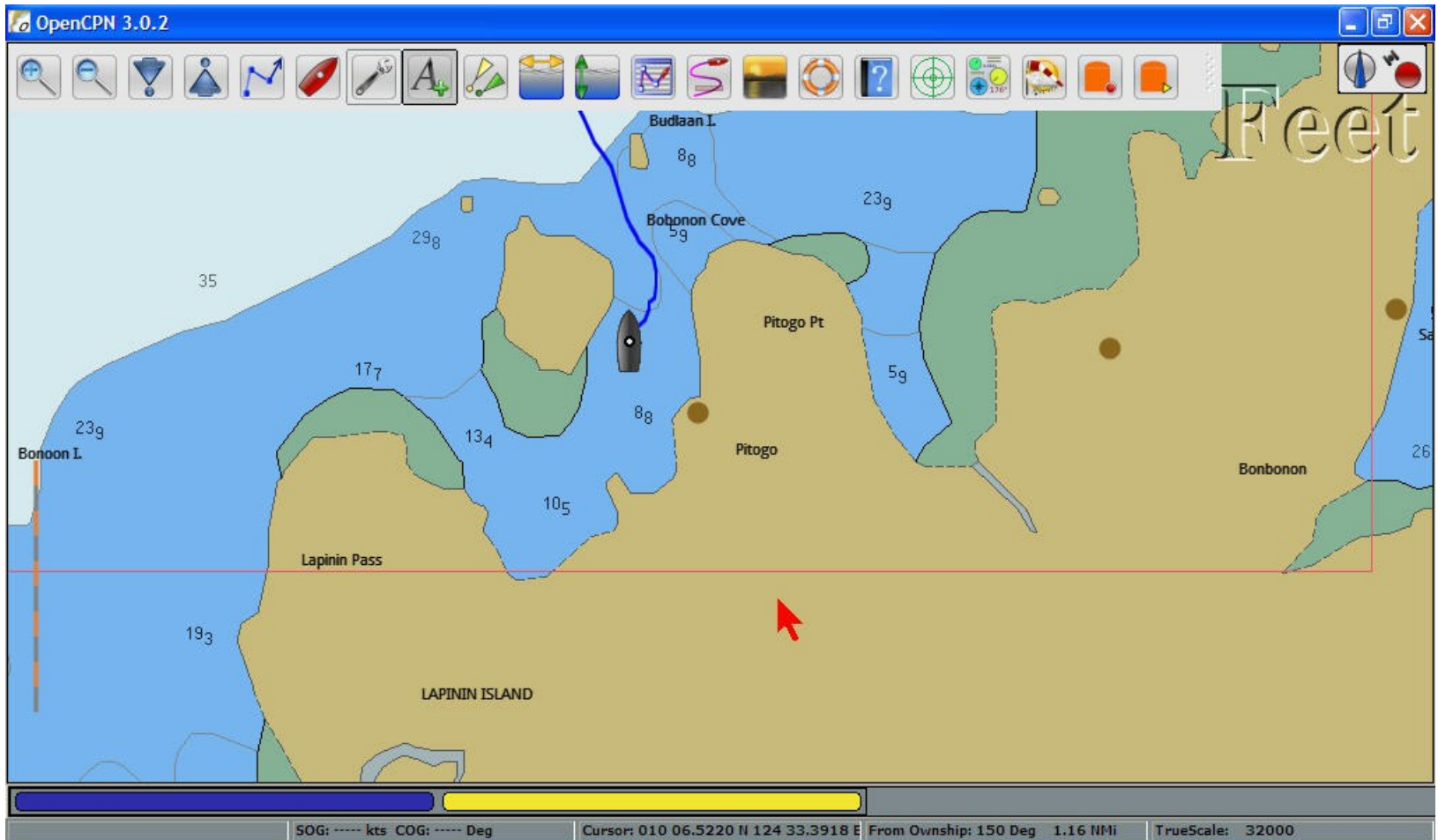


Importing Tracks



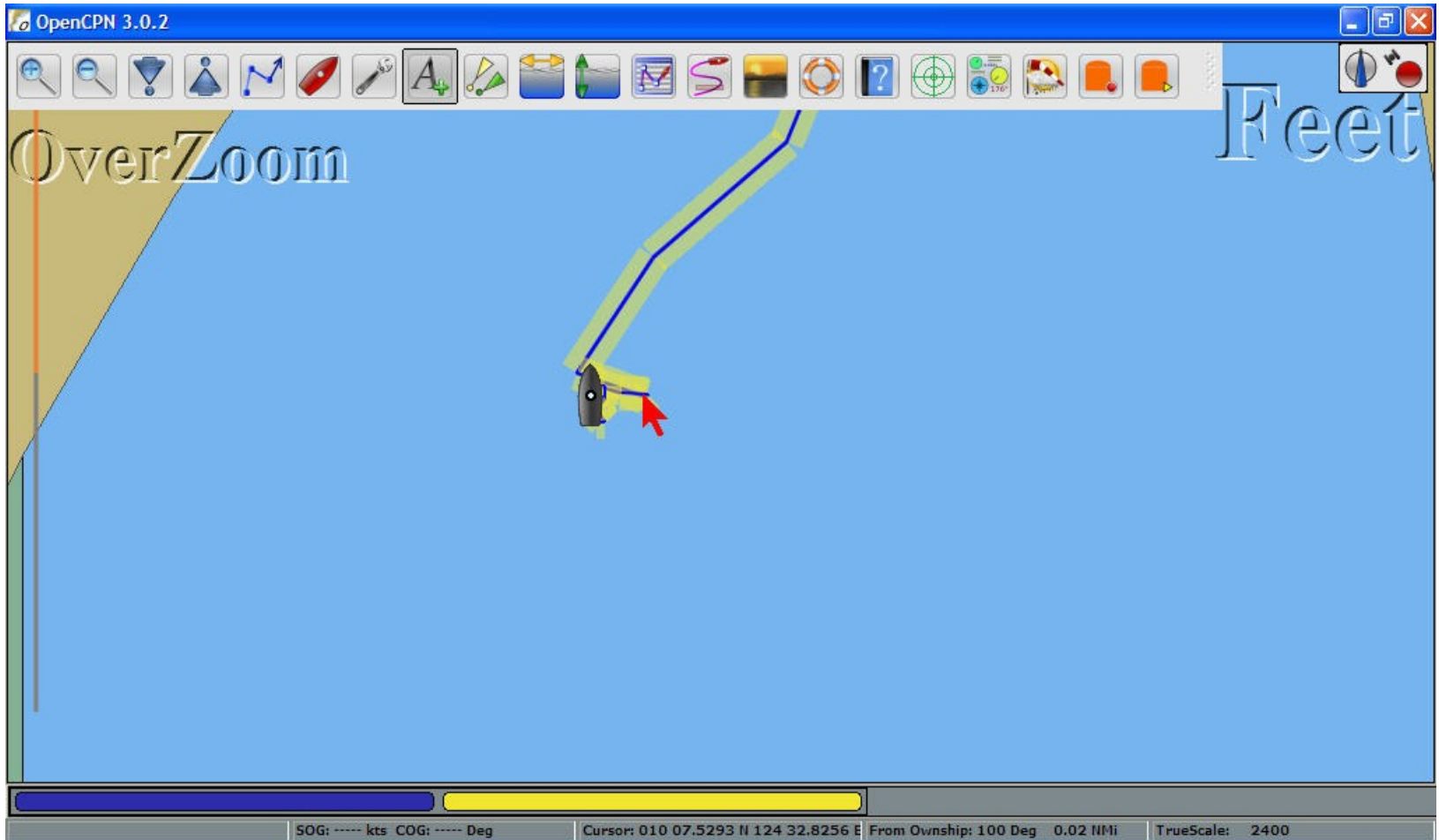
Saving Waypoints (Marks)

Shown below is the arrival at an anchorage



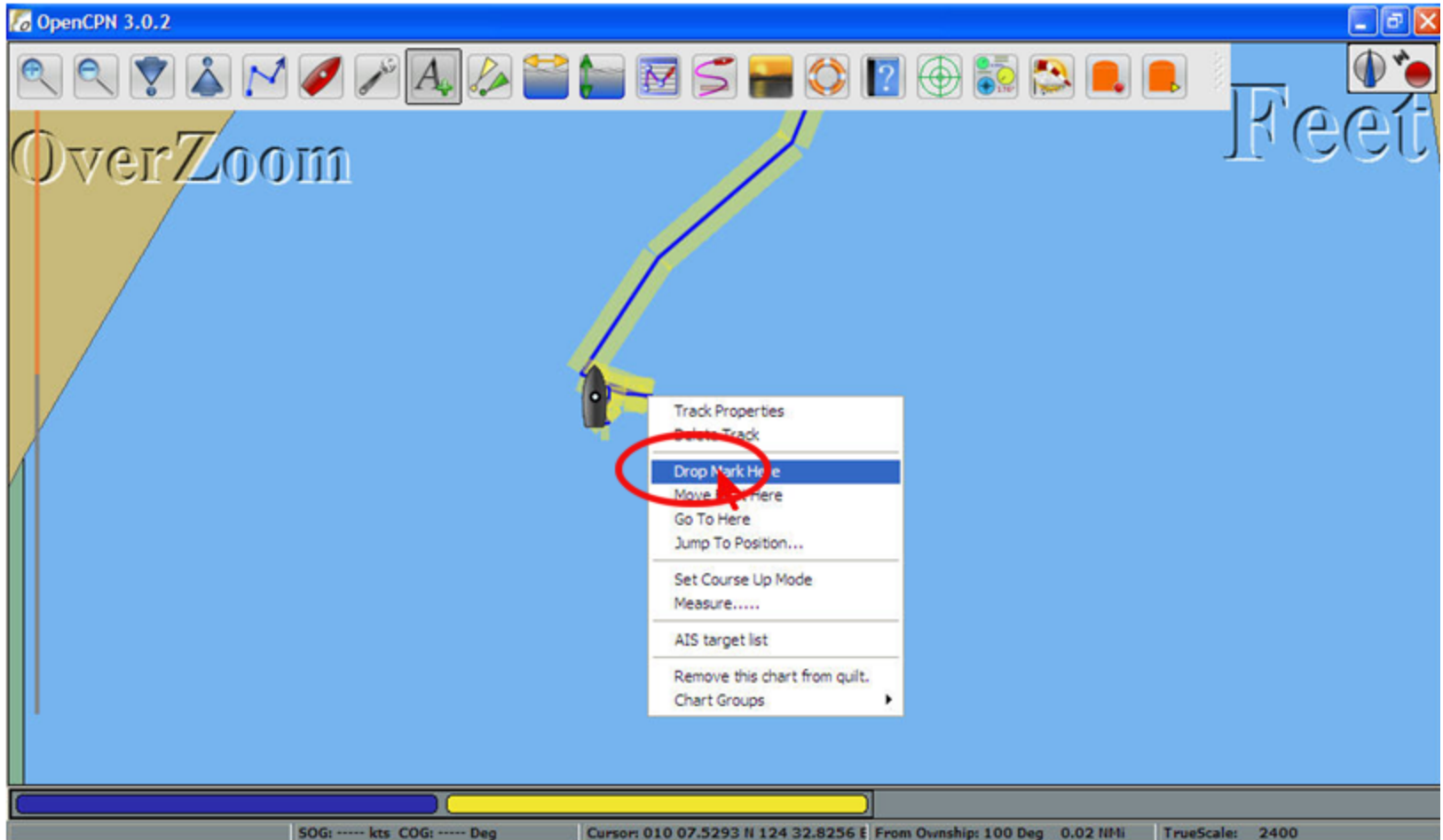
Saving Waypoints (Marks)

Zoom in to see where the anchor was dropped



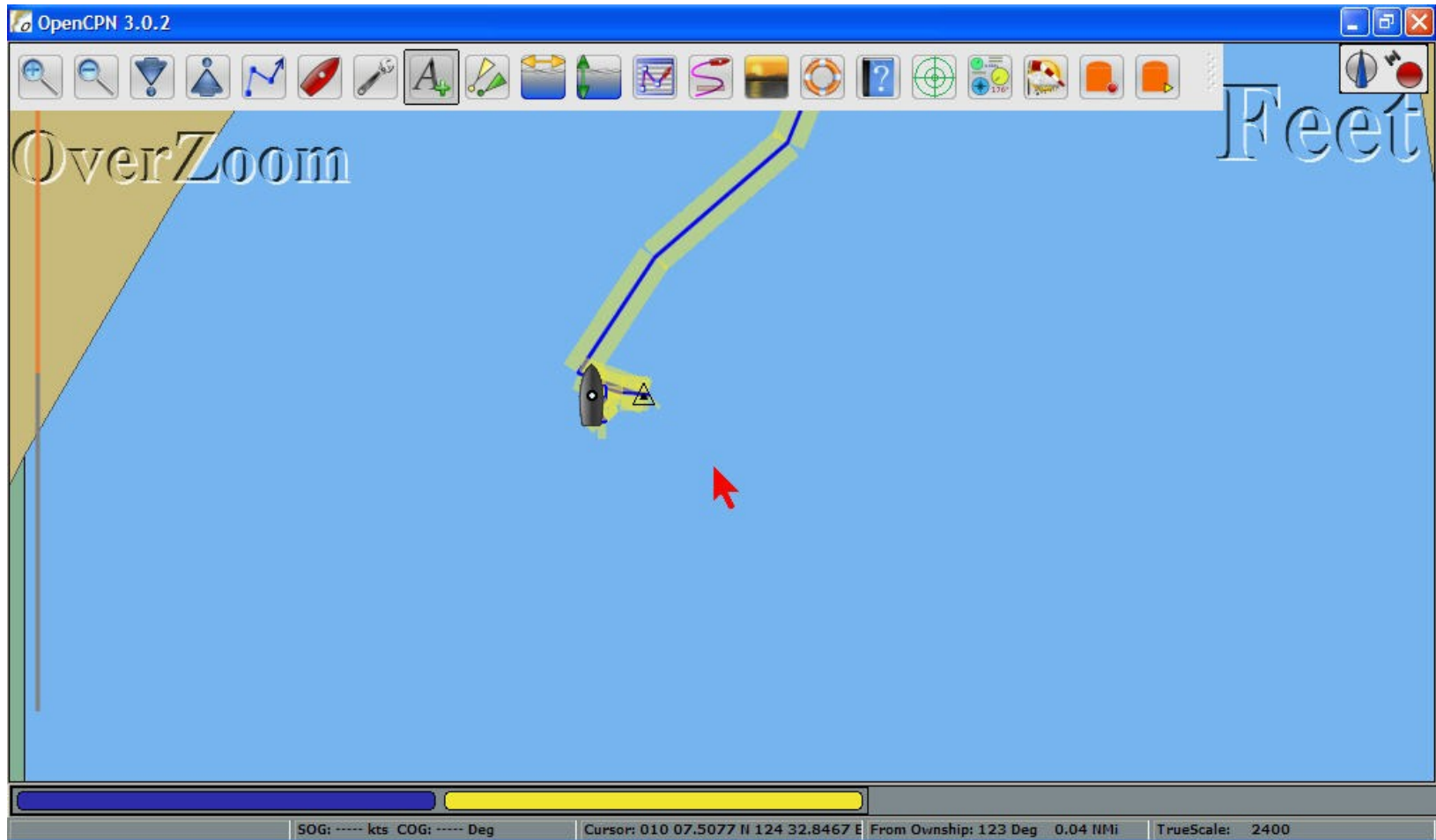
Saving Waypoints (Marks)

RIGHT-CLICK AND CLICK ON 'Drop Mark (Ctrl-M)'



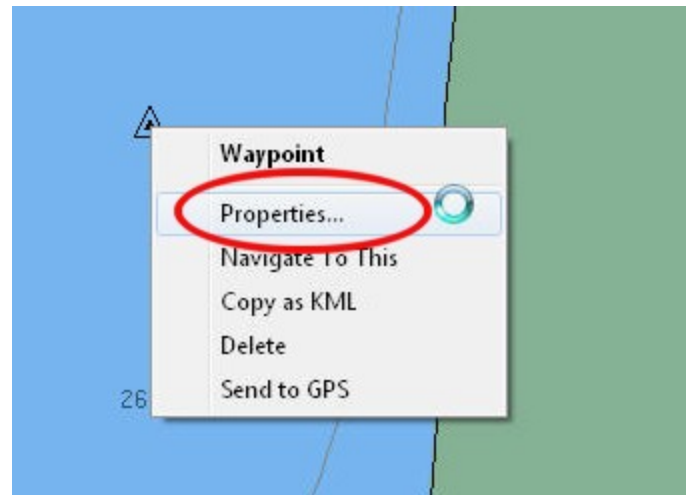
Saving Waypoints (Marks)

A MARK APPEARS AT THE SELECTED POINT
(Which mark type depends on your mark defaults)



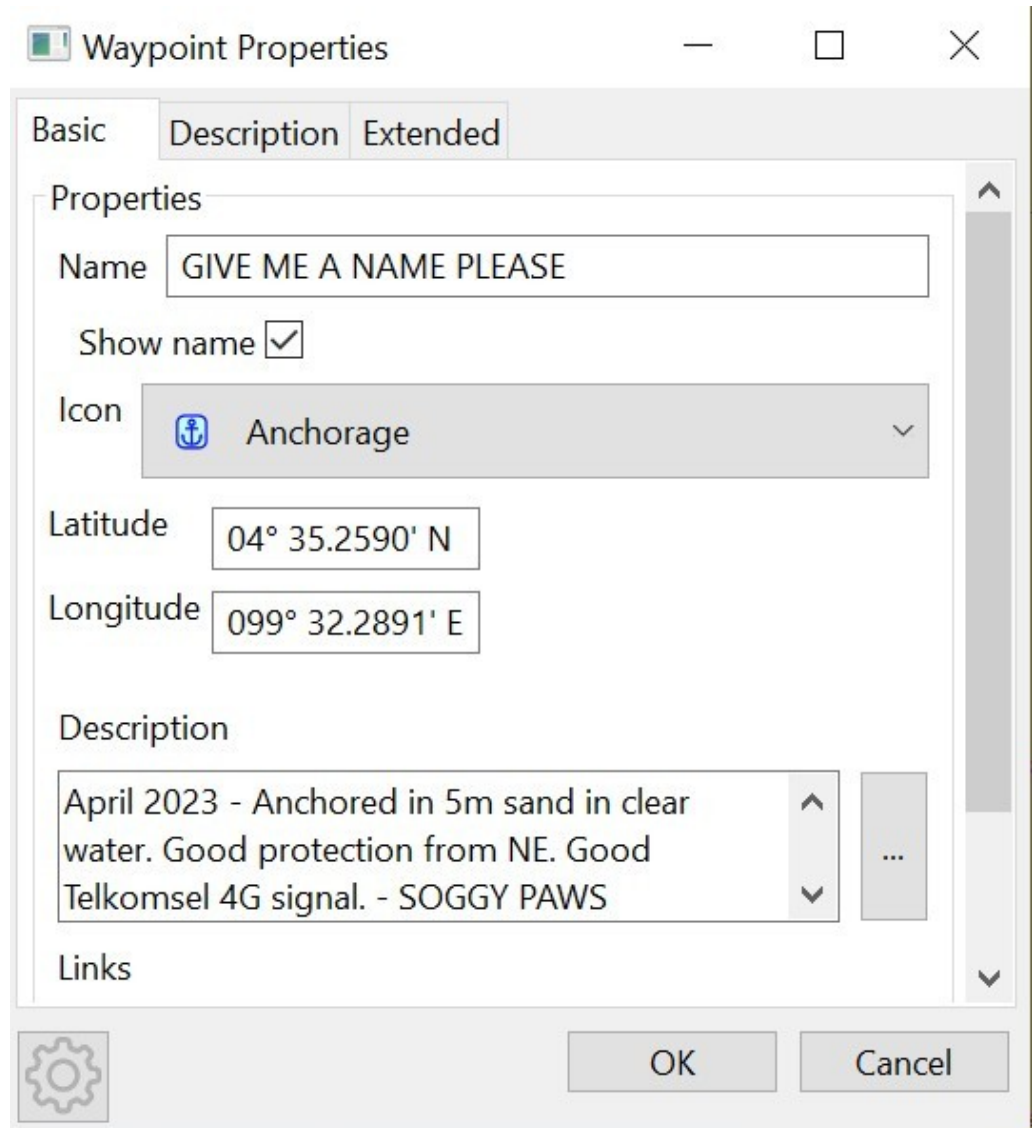
Changing Waypoints (Marks)

Right-click on the mark
and select 'Properties'
Or
Double-click on mark



Changing Waypoints (Marks)

Change waypoint icon
to a different icon,
Add descriptive info



The image shows a 'Waypoint Properties' dialog box with three tabs: 'Basic', 'Description', and 'Extended'. The 'Basic' tab is active. It contains the following fields and controls:

- Name:** A text box containing 'GIVE ME A NAME PLEASE'.
- Show name:** A checkbox that is checked.
- Icon:** A dropdown menu showing an anchor icon and the text 'Anchorage'.
- Latitude:** A text box containing '04° 35.2590' N'.
- Longitude:** A text box containing '099° 32.2891' E'.
- Description:** A text area containing 'April 2023 - Anchored in 5m sand in clear water. Good protection from NE. Good Telkomsel 4G signal. - SOGGY PAWS'. To the right of the text area are up and down arrow buttons and a button with three dots.
- Links:** A section header at the bottom of the dialog.

At the bottom of the dialog, there is a gear icon on the left, and 'OK' and 'Cancel' buttons on the right.

Waypoints Extended Info

Hide waypoints
On zoom out
(set as default
For new wpts)

Select Tide Station
(closest tide to the
wpt is listed first)

Waypoint Properties

Basic Description Extended

Extended Properties

☒ Show on chart

☒ Show at scale > 1 : 5000000

☒ Show waypoint name

Range rings

Number	Distance	Color
None	1.000	NMi

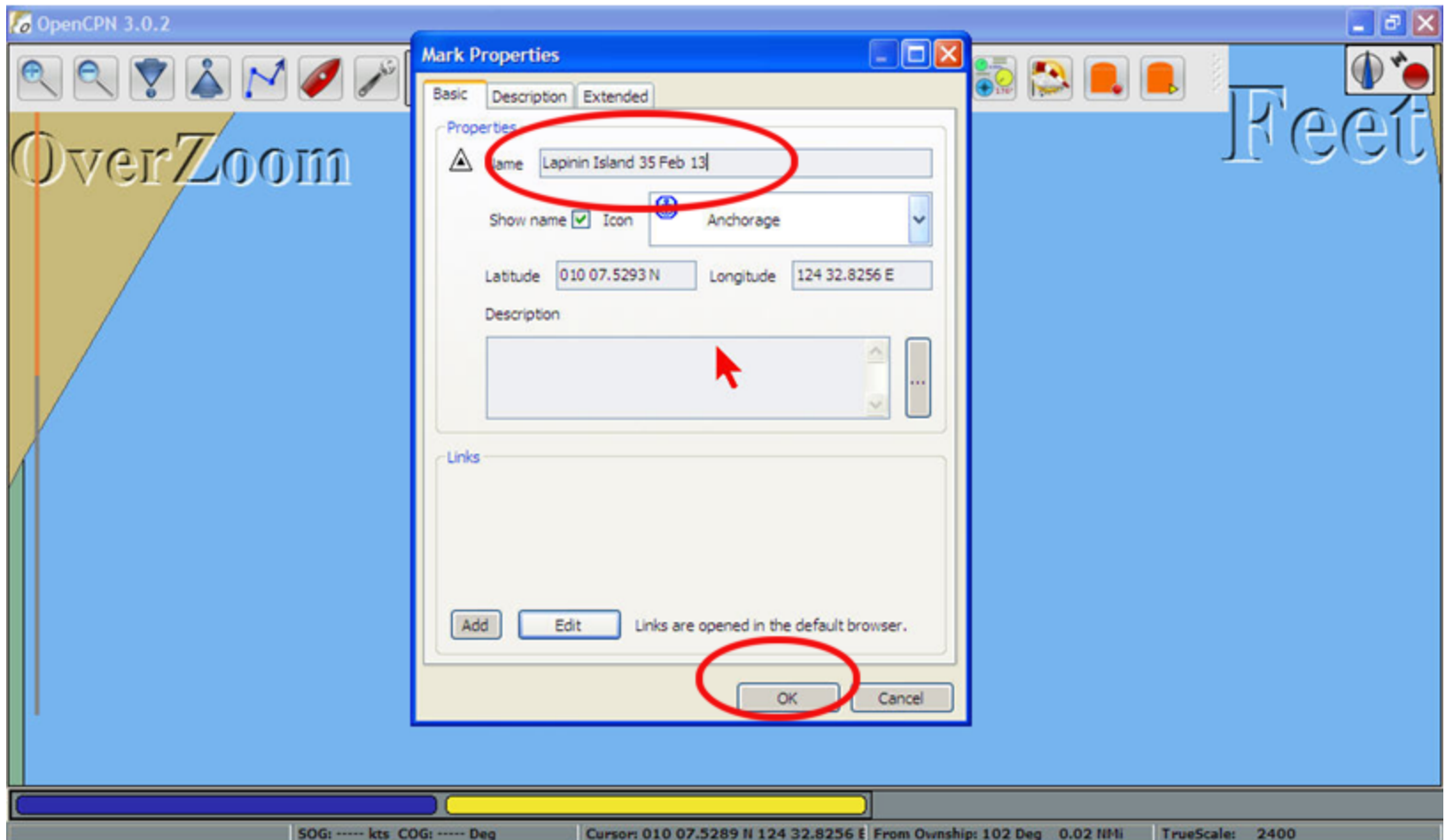
GUID 71cffff-2adc-409e-bff7-48405019ffff

Tide Station

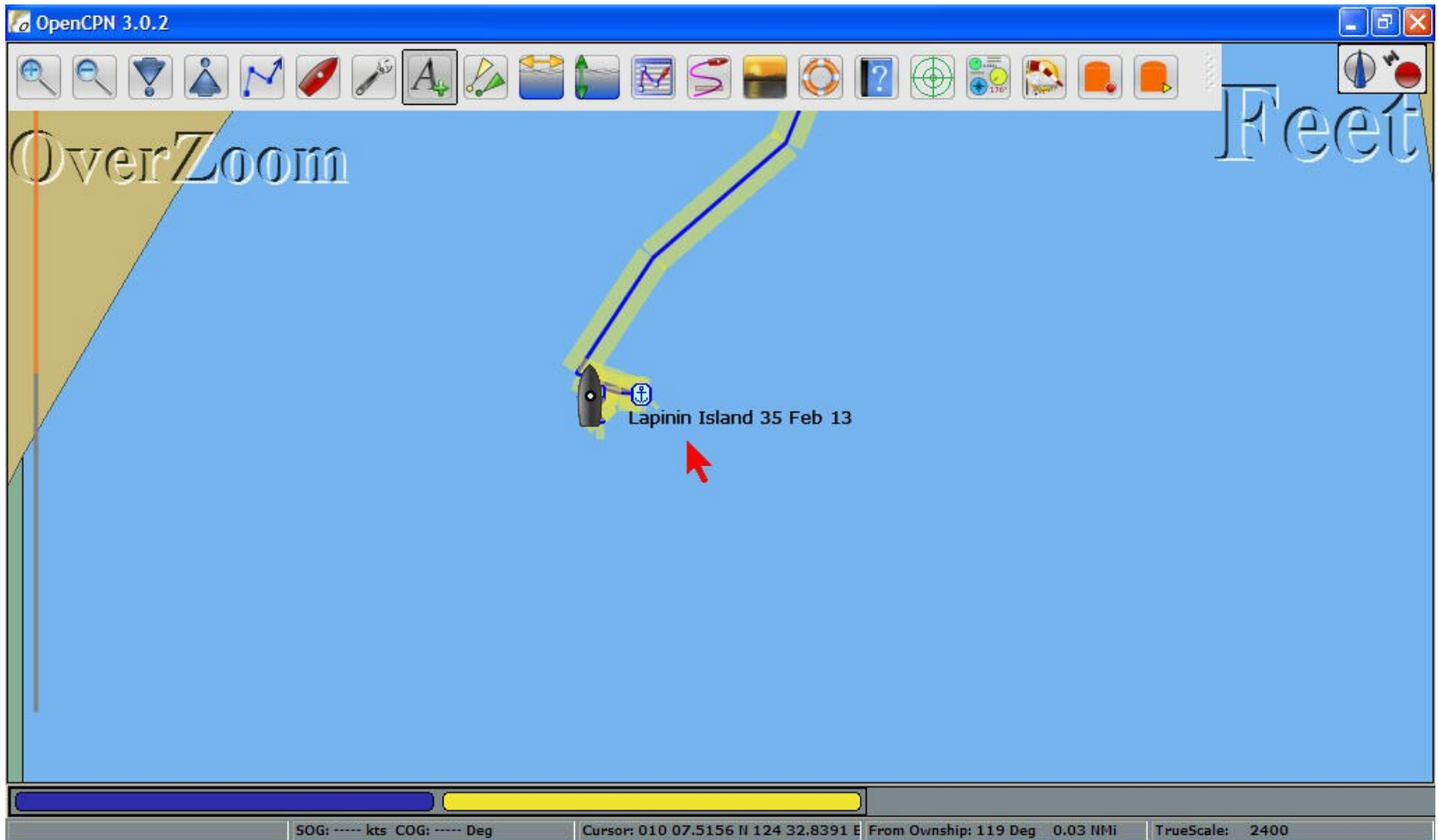
- Belawan, Sumatra, Indonesia
- Lumut, Dinding Rvr
- Pinang (Georgetown)
- Bagan Datoh
- Tanjong Tiram
- Sembilian Channel, Aroe Bay
- Langsa Bay
- Asahan River Entr
- Idi
- Berembang, Sungai Panai

Changing Waypoints (Marks)

Also change name, and add a short description



Changing Waypoints (Marks)



Saving Waypoints (Marks)

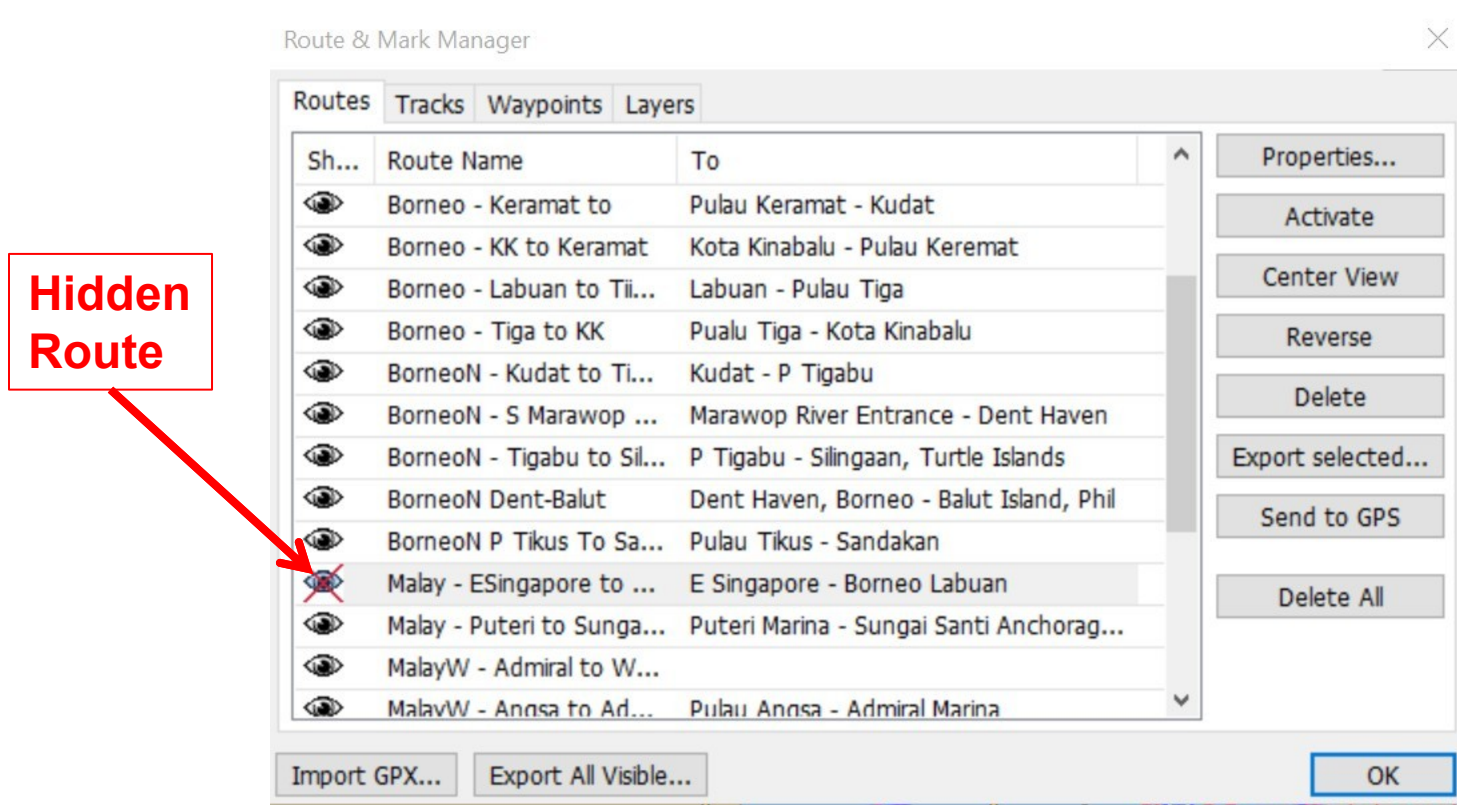
Waypoints can be manipulated just like routes and tracks

- Export to file
- Import from file

Waypoints can also be exported in groups

At the end of a sailing season, export Routes, Waypoints, Tracks to files

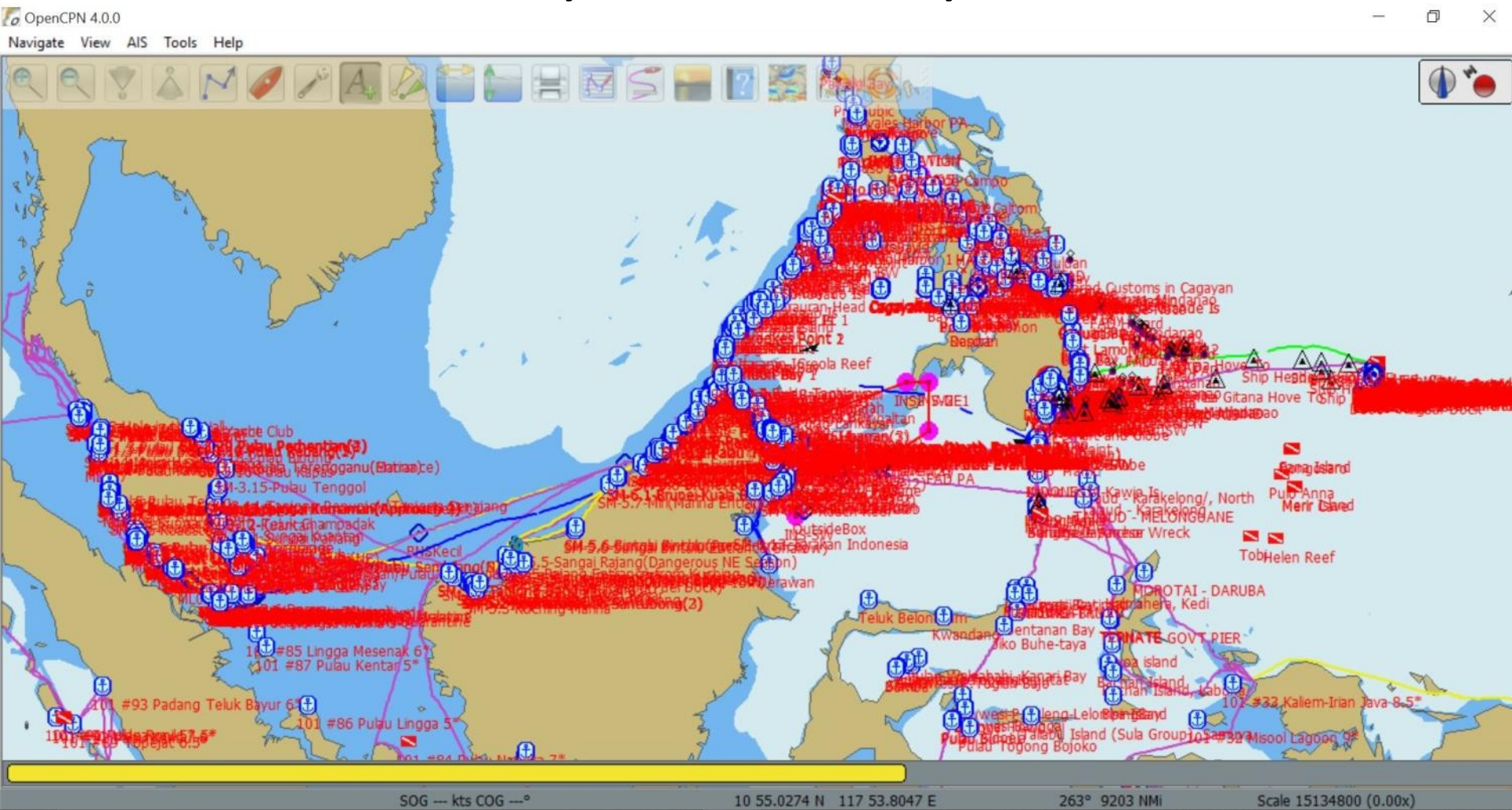
Hiding and Un-Hiding Routes and Tracks



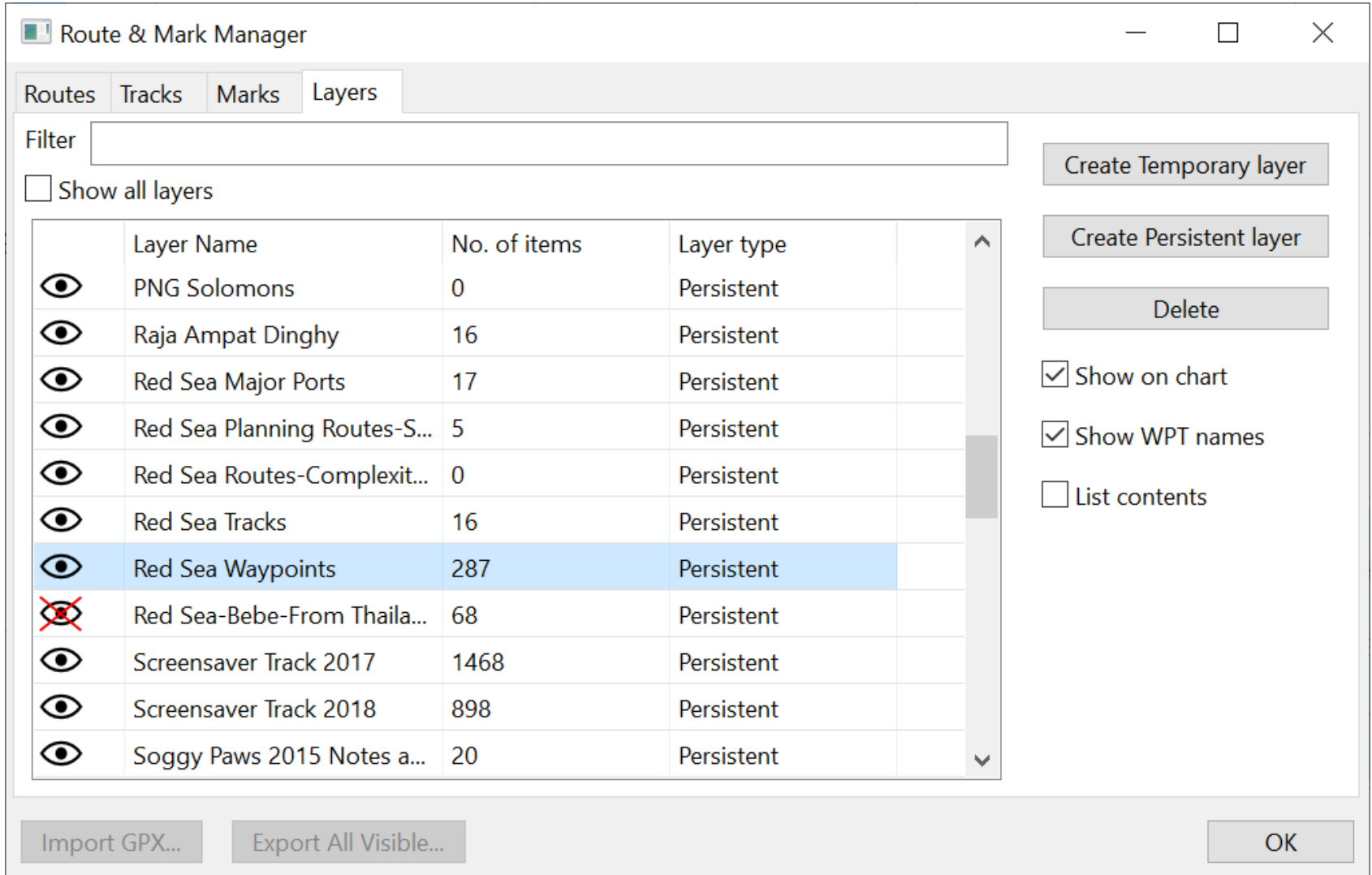
The Power of Layers

- A collection of waypoints, routes, and/or tracks that can be hidden and un-hidden with one click.
- It is kept separate from your own waypoints, routes, and tracks
- Temporary layer – lets you “import” data that stays only until you restart the program
- Permanent layers – Persist until uninstalled
- On the Layers tab of Route Manager

Why You Need Layers



Lots of Shared Info



The screenshot shows the 'Route & Mark Manager' window with the 'Layers' tab selected. The window has a title bar with standard minimize, maximize, and close buttons. Below the title bar are tabs for 'Routes', 'Tracks', 'Marks', and 'Layers'. A 'Filter' text box is located below the tabs. Below the filter is a checkbox labeled 'Show all layers'. The main area contains a table with columns: 'Layer Name', 'No. of items', and 'Layer type'. The table lists several layers, with 'Red Sea Waypoints' highlighted in blue. To the right of the table are three buttons: 'Create Temporary layer', 'Create Persistent layer', and 'Delete'. Below these buttons are three checkboxes: 'Show on chart' (checked), 'Show WPT names' (checked), and 'List contents' (unchecked). At the bottom of the window are three buttons: 'Import GPX...', 'Export All Visible...', and 'OK'.

Route & Mark Manager

Routes Tracks Marks Layers

Filter

☐ Show all layers

	Layer Name	No. of items	Layer type
	PNG Solomons	0	Persistent
	Raja Ampat Dinghy	16	Persistent
	Red Sea Major Ports	17	Persistent
	Red Sea Planning Routes-S...	5	Persistent
	Red Sea Routes-Complexit...	0	Persistent
	Red Sea Tracks	16	Persistent
	Red Sea Waypoints	287	Persistent
	Red Sea-Bebe-From Thaila...	68	Persistent
	Screensaver Track 2017	1468	Persistent
	Screensaver Track 2018	898	Persistent
	Soggy Paws 2015 Notes a...	20	Persistent

Create Temporary layer

Create Persistent layer

Delete

☒ Show on chart

☒ Show WPT names

☐ List contents

Import GPX... Export All Visible... OK

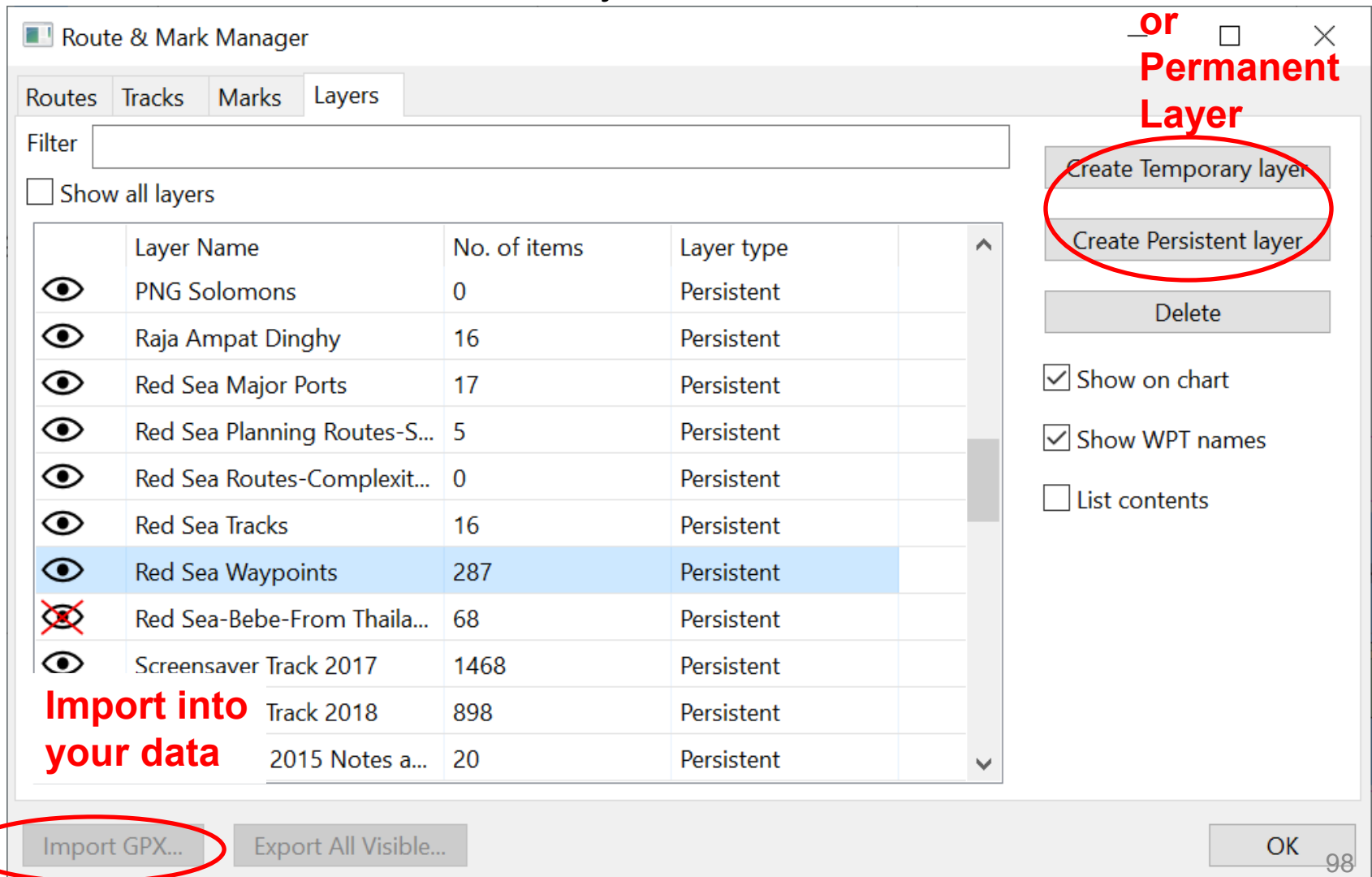
Importing Others' GPX Files

- If you just Import
 - Intermingles with your routes/tracks/wpts
 - Difficult to get rid of
 - Eventually impacts performance
- Import as Temporary Layer
 - Lets you temporarily load a GPX file to see what's in it
 - Can delete the layer in the Layers tab (doesn't delete the file) or just close OpenCPN

Importing Others' GPX Files

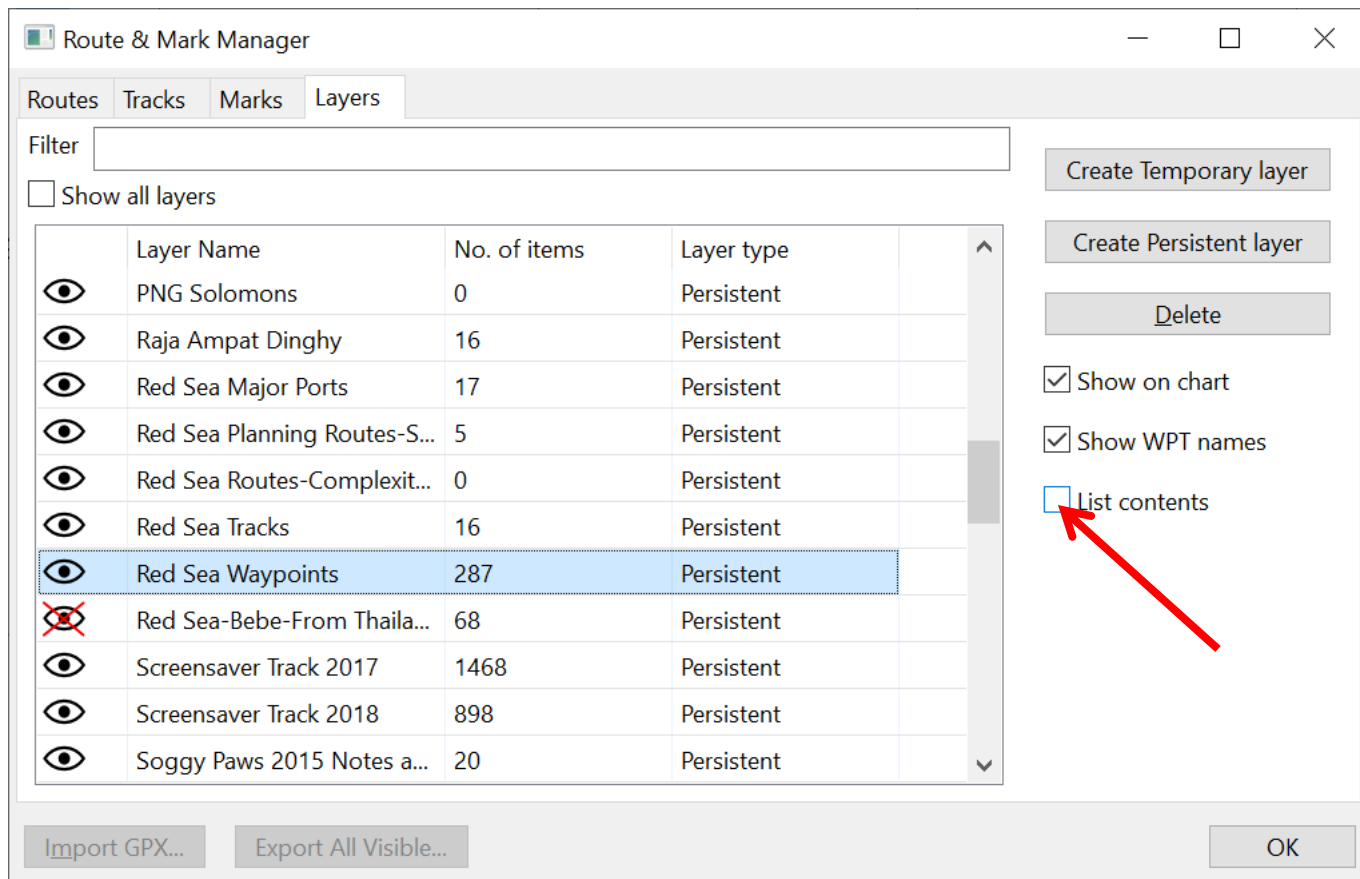
On OpenCPN open the Route Manager
and click on the 'Layers' tab

**Import as
Temporary
or
Permanent
Layer**



Exploring OpenCPN – LAYERS

If “List Contents” is not selected, the individual waypoints, routes, and tracks won’t show in your waypoint list



For the Geeks: What A GPX File Looks Like

Sail Malaysia Waypoints.gpx * SciTE

File Edit Search View Tools Options Language Buffers Help

1 Sail Malaysia Waypoints.gpx *

```
1  <?xml version="1.0"?>
2  - <gpx version="1.1" creator="OpenCPN" xmlns:xsi="http://www.w3.org/2001/XMLSchema
3  - <wpt lat="2.513166667" lon="101.803833333">
4      <time>2013-11-16T08:34:56Z</time>
5      <name>SM-1.11-Palau Burung 2</name>
6      <sym>anchorage</sym>
7      <type>WPT</type>
8      - <extensions>
9          <opencpn:guid>4c1dffff-af83-4f1f-9224-0a5271faffff</opencpn:guid>
10         <opencpn:viz_name>1</opencpn:viz_name>
11     </extensions>
12 </wpt>
13 - <wpt lat="2.542833333" lon="101.785500000">
14     <time>2013-11-16T08:33:40Z</time>
15     <name>SM-1.11-Pulau Burung</name>
16     <sym>anchorage</sym>
17     <type>WPT</type>
18     - <extensions>
19         <opencpn:guid>5efbffff-c757-42e6-a33c-2bd4185d0000</opencpn:guid>
20         <opencpn:viz_name>1</opencpn:viz_name>
21     </extensions>
22 </wpt>
23 - <wpt lat="2.476000000" lon="101.846000000">
24     <time>2013-11-16T08:31:05Z</time>
25     <name>SM-1.12-Port Dickson Admiral Marina</name>
26     <sym>anchorage</sym>
27     <type>WPT</type>
28     - <extensions>
29         <opencpn:guid>71ceffff-787e-4a0d-8b13-d1851b3b0000</opencpn:guid>
30         <opencpn:viz_name>1</opencpn:viz_name>
31     </extensions>
32 </wpt>
```

Structured text (XML)
Can edit with Notepad
I use SciTE
Easy to email (zips well)

Permanent (Persistent) Layers

- Permanent layers, that stay when you restart OpenCPN, are created by importing using the Persistent Layers button.

Advanced Topic: Organizing your Persistent Layers

Backing Up Your Data (Old Way)

To make a complete backup of all your routes, waypoints, tracks and layers data,

Copy the entire OpenCPN folder in ProgramData to a backup drive!

(navobj.xml is the OpenCPN database, moving that file to the OpenCPN data folder on a new computer will move all your routes, waypoints, and tracks!) *In 5.14+ it's called navobj.db*

To share ALL your info with someone else as gpx, use “Export all Visible” to a gpx file.

Backing Up Your Data (New Way)

To make a complete backup of all your routes, waypoints, and tracks data,

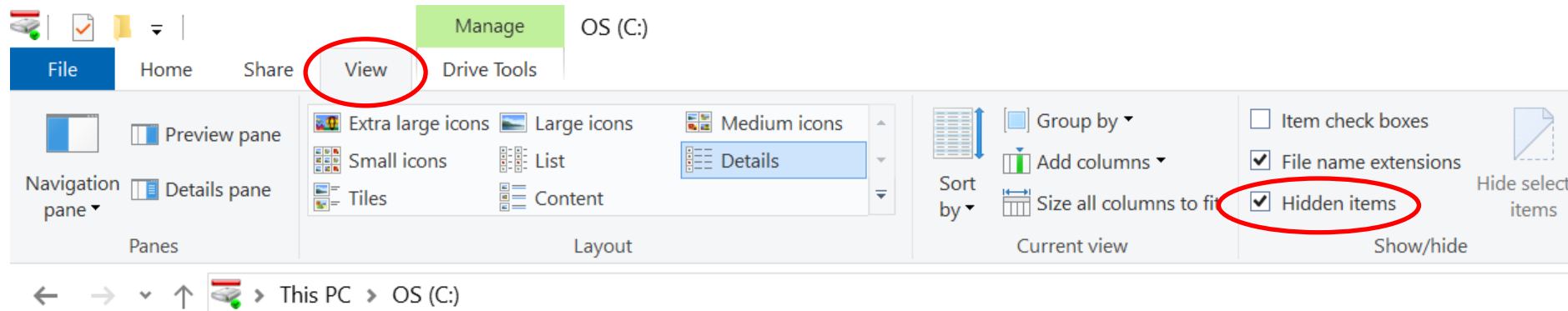
- On the Route and Mark Manager page
- At the bottom... click Backup
- Or “Export all Visible”

Where to Find Your OpenCPN Data

Windows 7-11, it's in ProgramData

The ProgramData folder is usually hidden—how to unhide?

- On the top bar of any open folder
- On the 'View' tab check the box 'Hidden Items'.
- Only need to do once



C:\ProgramData\opencpn

Adding Functionality with Plugins

- Plugins: Snap-in functionality to extend basic OpenCPN functionality
- Two plugins built-in: Dashboard and Grib
- Others can be downloaded from OpenCPN site

There are about 40 plugins!

Three we'll cover here:



GRIB File – View downloaded GRIB files on chart



Chart Downloader - Download charts from within OpenCPN



Climatology - Planning tool, to help visualize weather patterns.
Better data than US Pilot Charts because wx data is updated.

Exploring OpenCPN - Plugins

← → ↻ 🏠 🔒 opencpn.org/OpenCPN/info/downloadplugins.html



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Plugins for OpenCPN

Plugins for OpenCPN 5.6.2 and up

Third party features that expand the functionality of OpenCPN into niche areas.

Use the built in Plugin Manager included with v5.6.2+ to install

AIS/Radar

⬆ AIS Radar View

⬆ Radar PI

⬆ GRadar

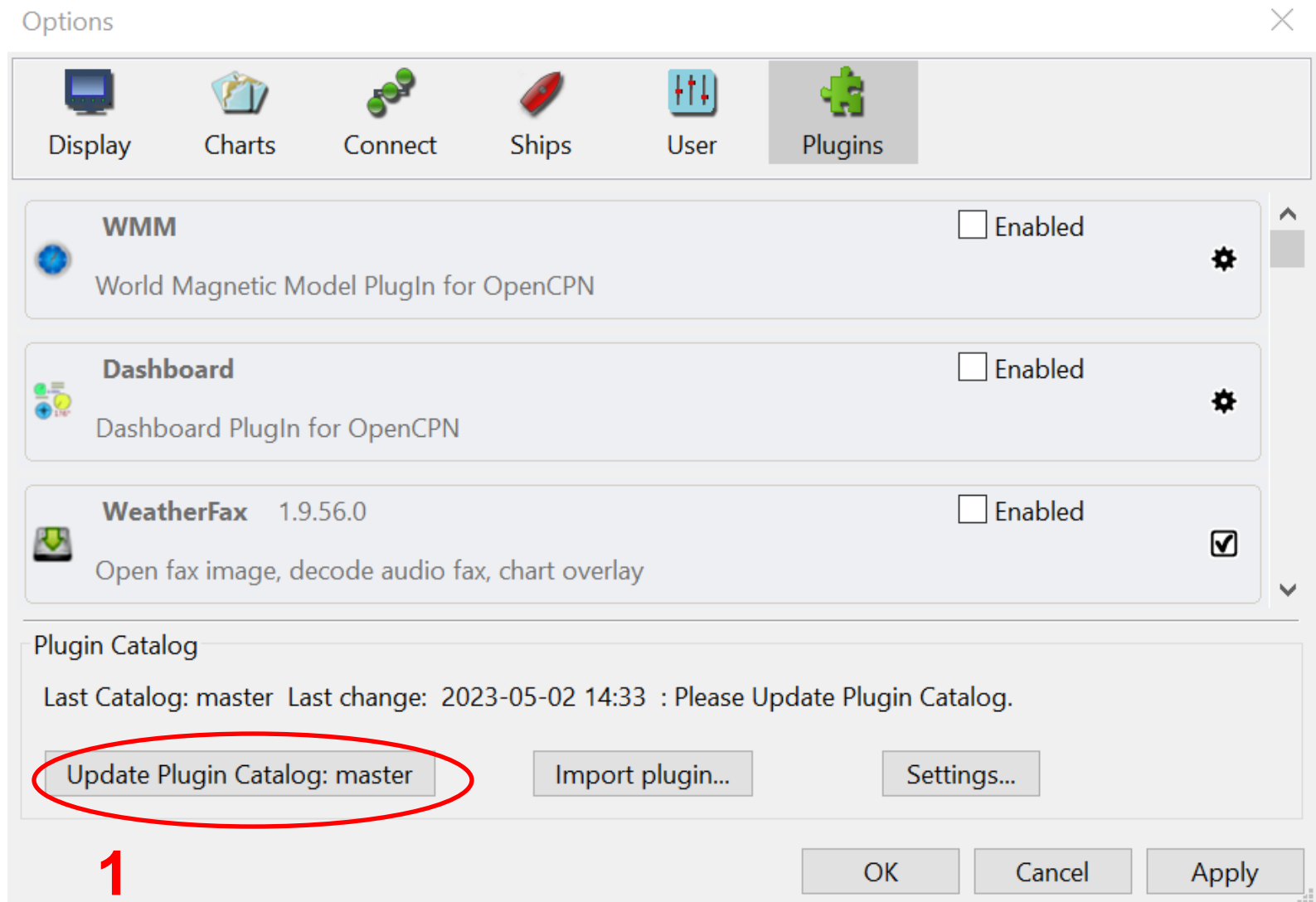
⬆ GXRadar

⬆ Navico Radar

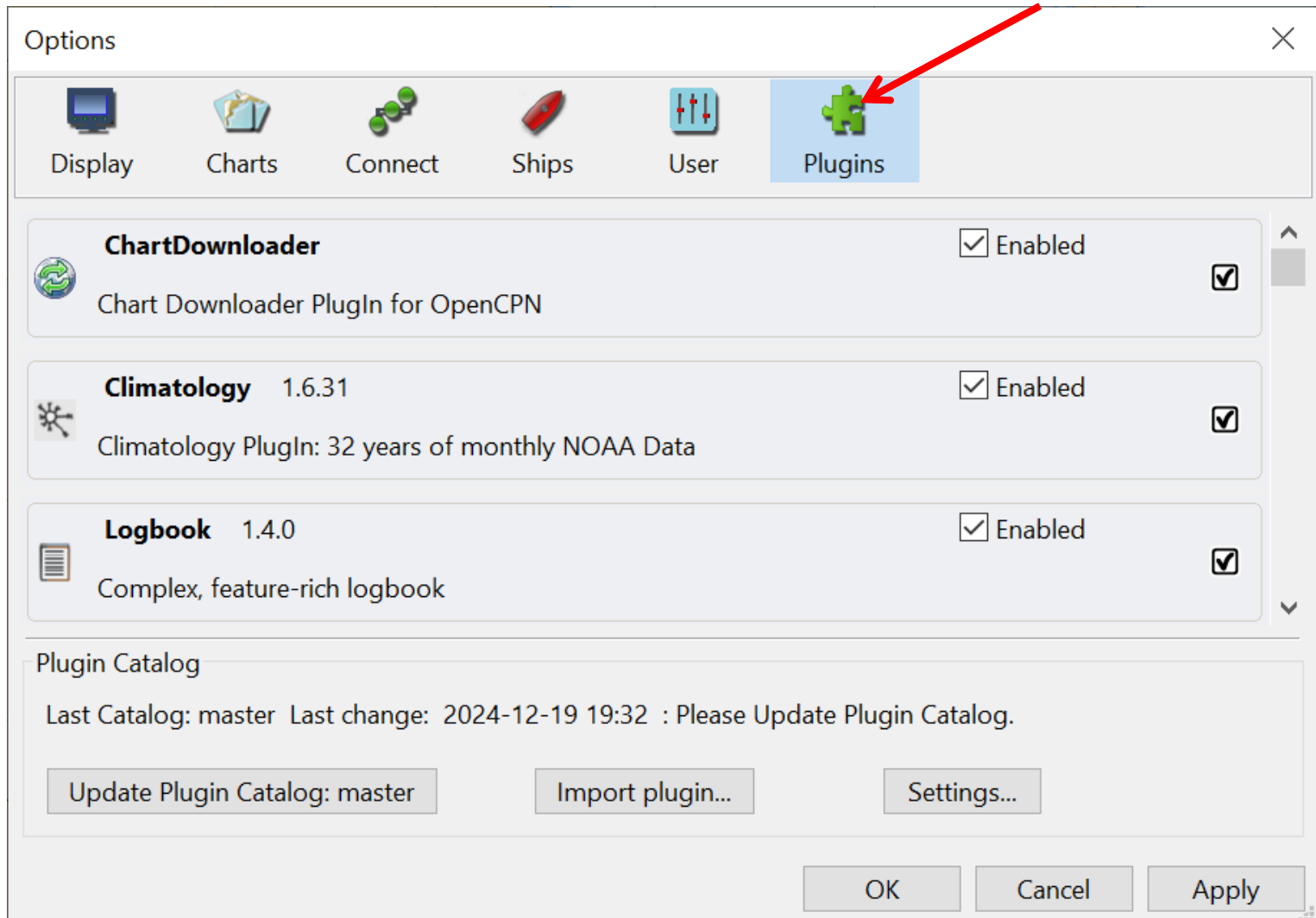
⬆ RTL-SDR

Plugins

Options / Plugins



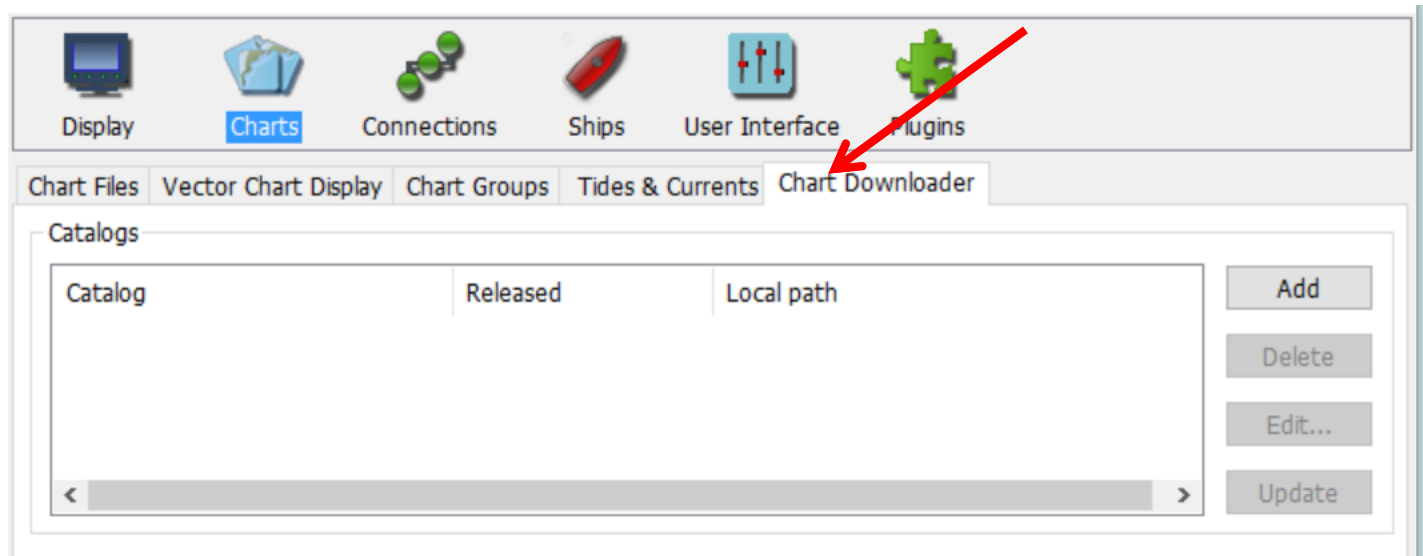
Enable Plugin and Set Preferences



Most Plugins Add a New Icon on the Toolbar

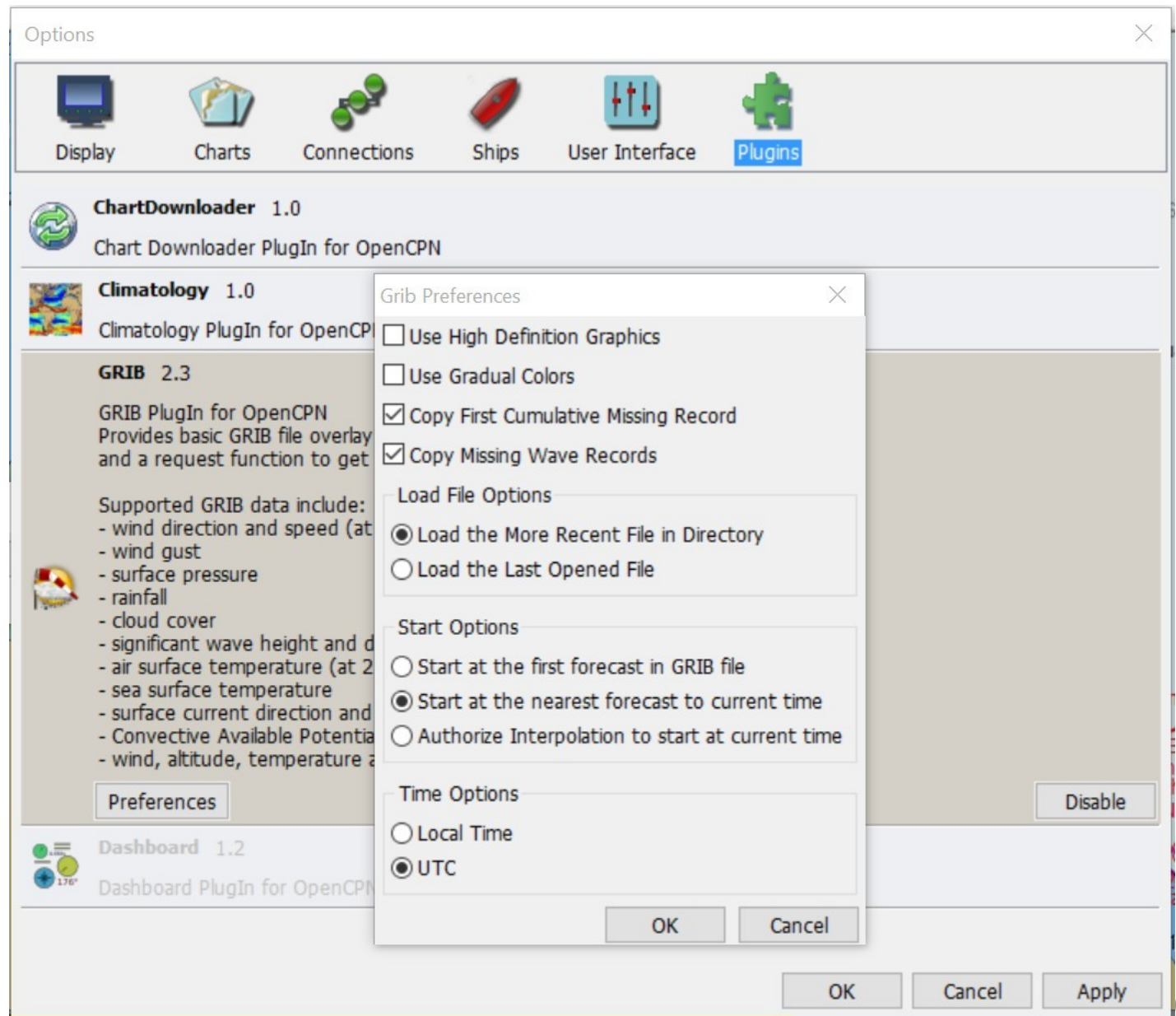
Plug-in Icons

Chart Downloader adds a new tab on the Charts page



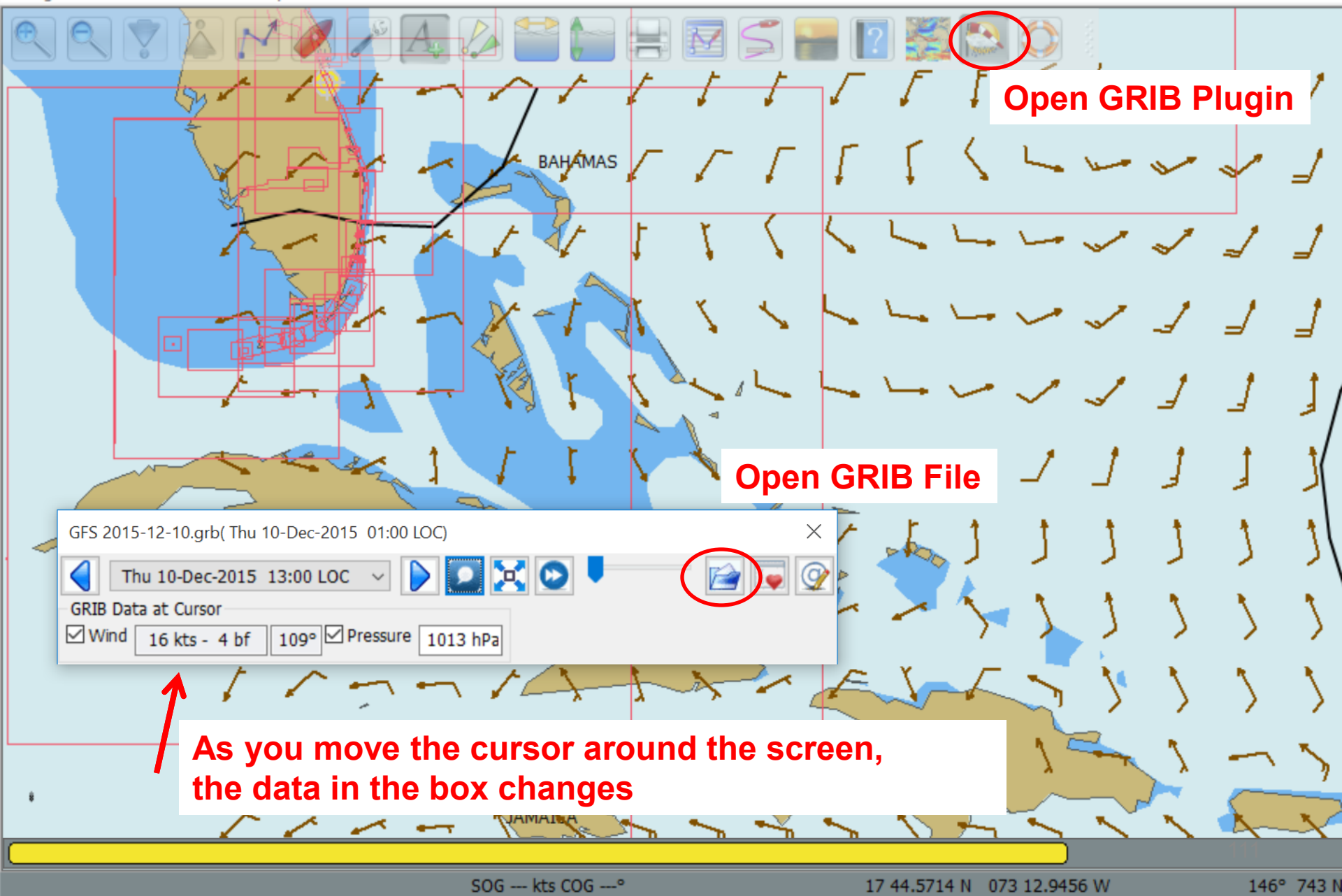
GRIB Plugin

Check
GRIB
Plugin
Preferences



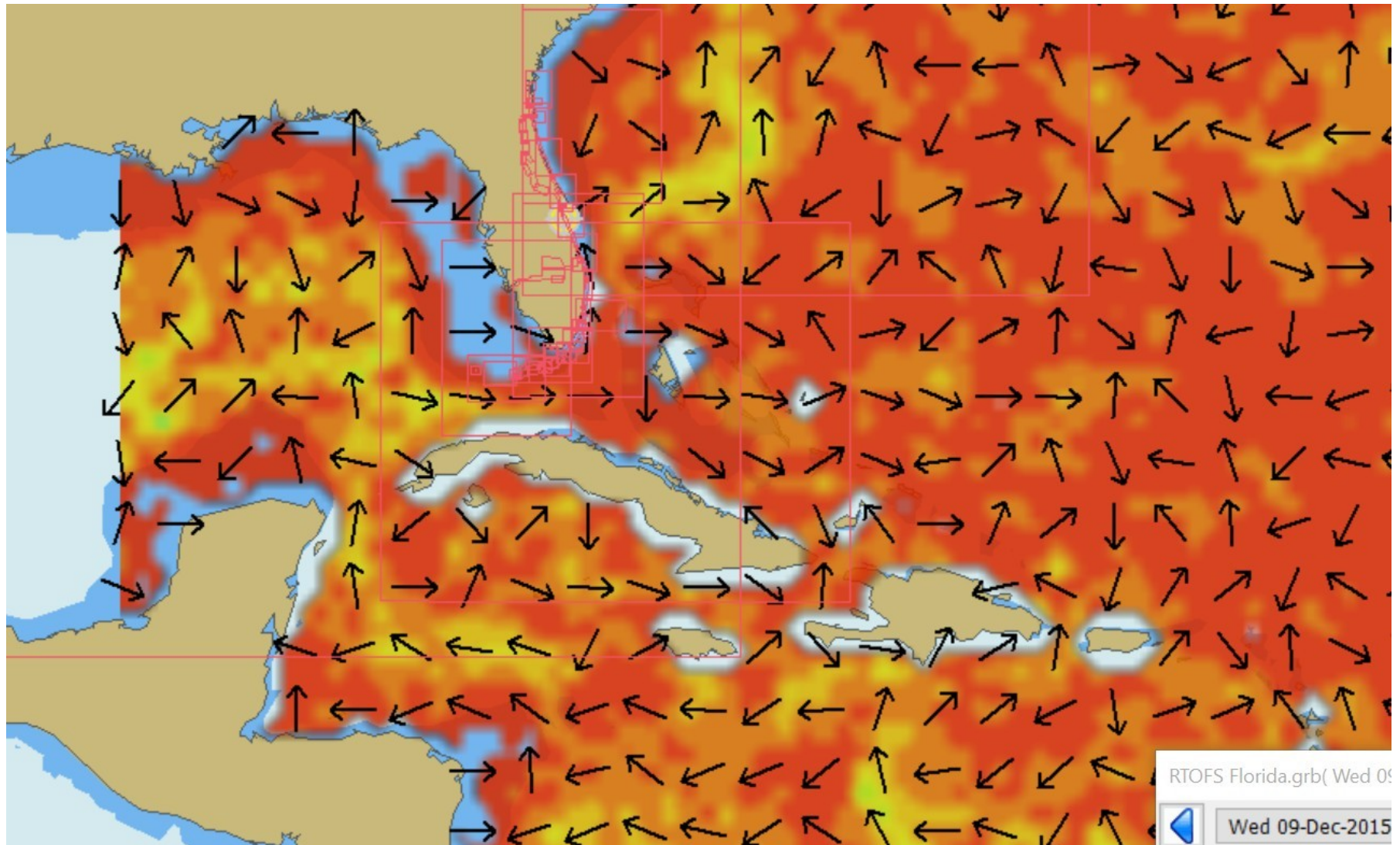
Open GRIB Plugin

Navigate View AIS Tools Help

**Open GRIB Plugin****Open GRIB File**

**As you move the cursor around the screen,
the data in the box changes**

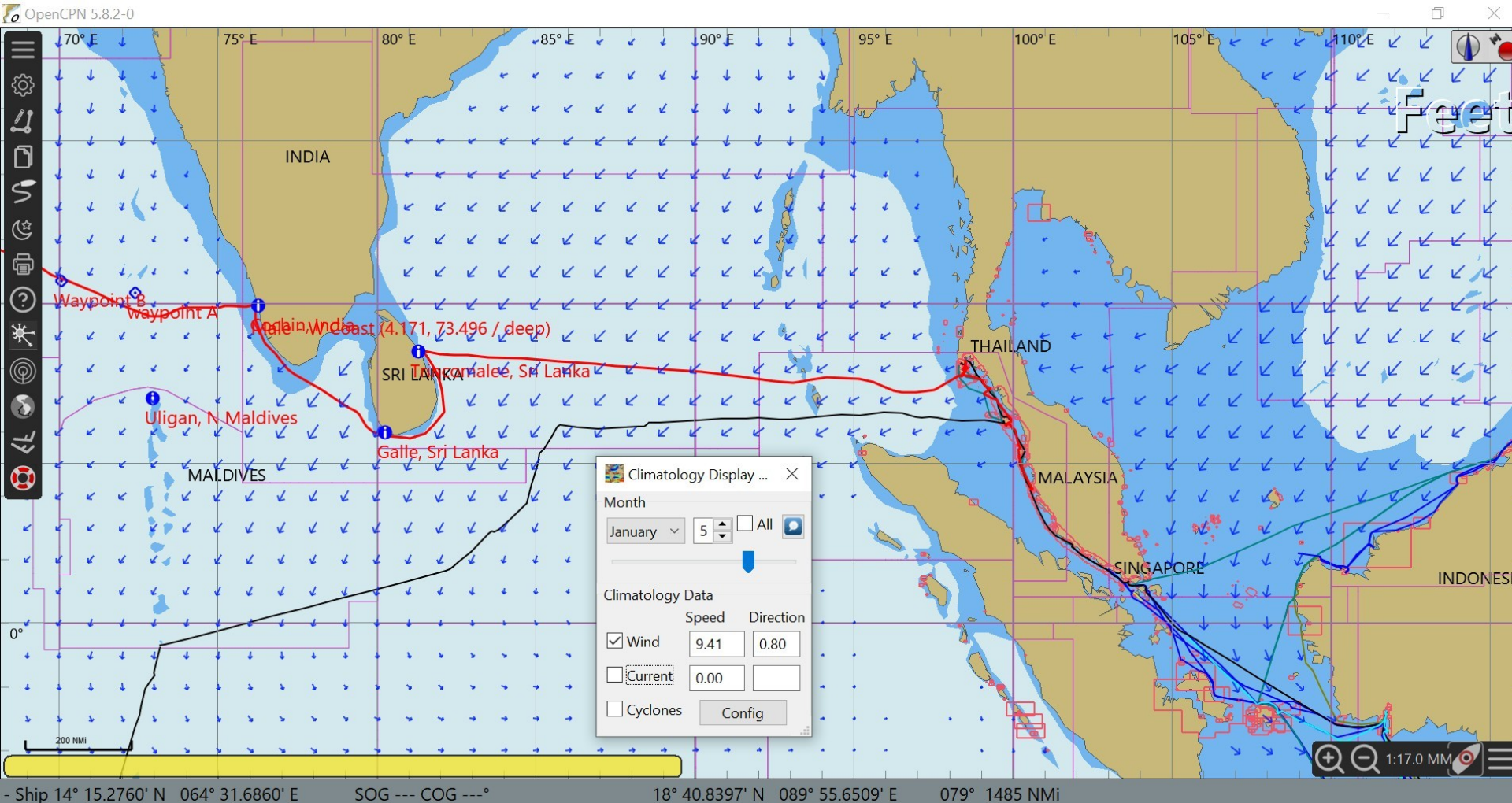
RTOFS (Current) Display



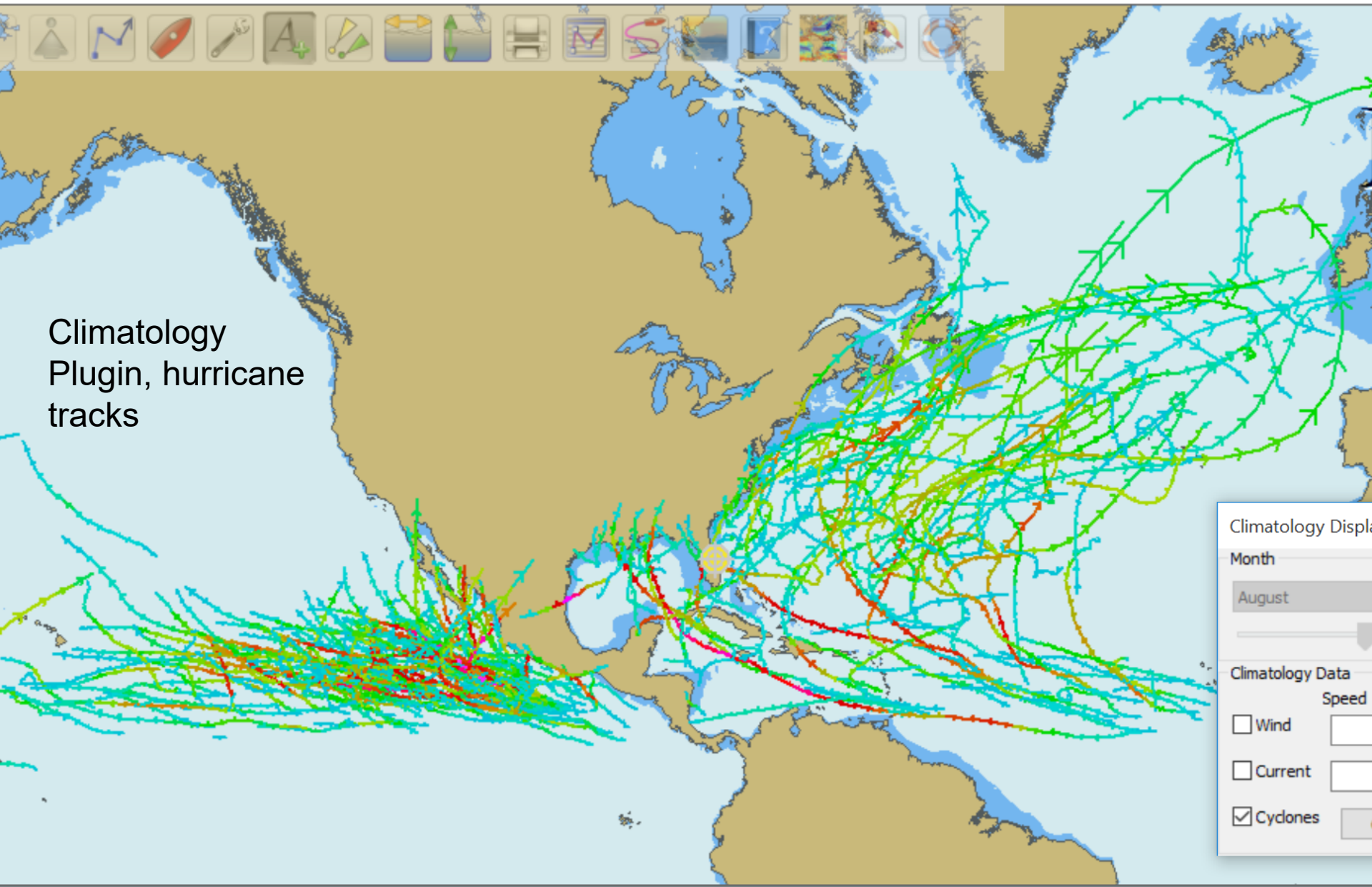
Climatology Plugin

- Pilot charts overlaid on your chart
- Updated with RECENT data
- Wind, currents, and tropical storm tracks
- Traditional wind rose display, or wind barbs

Climatology for January - Wind



Where is a Safe Place to Be In August?



Climatology Config Screen

Climatology Configuration

Standard Displays Wind Cyclones About

Start Date: 12/ 5/1972 End Date: 12/ 7/2015

Display Spanning: 30 days

Min Windspeed: 35

Max Pressure: 1010

El Nino Period:
☒ El Nino ☐ La Nina
☐ Neutral ☐ N/A

Storm Types:
☒ Tropical ☐ Sub Tropical
☒ ExtraTropical ☐ Remanent

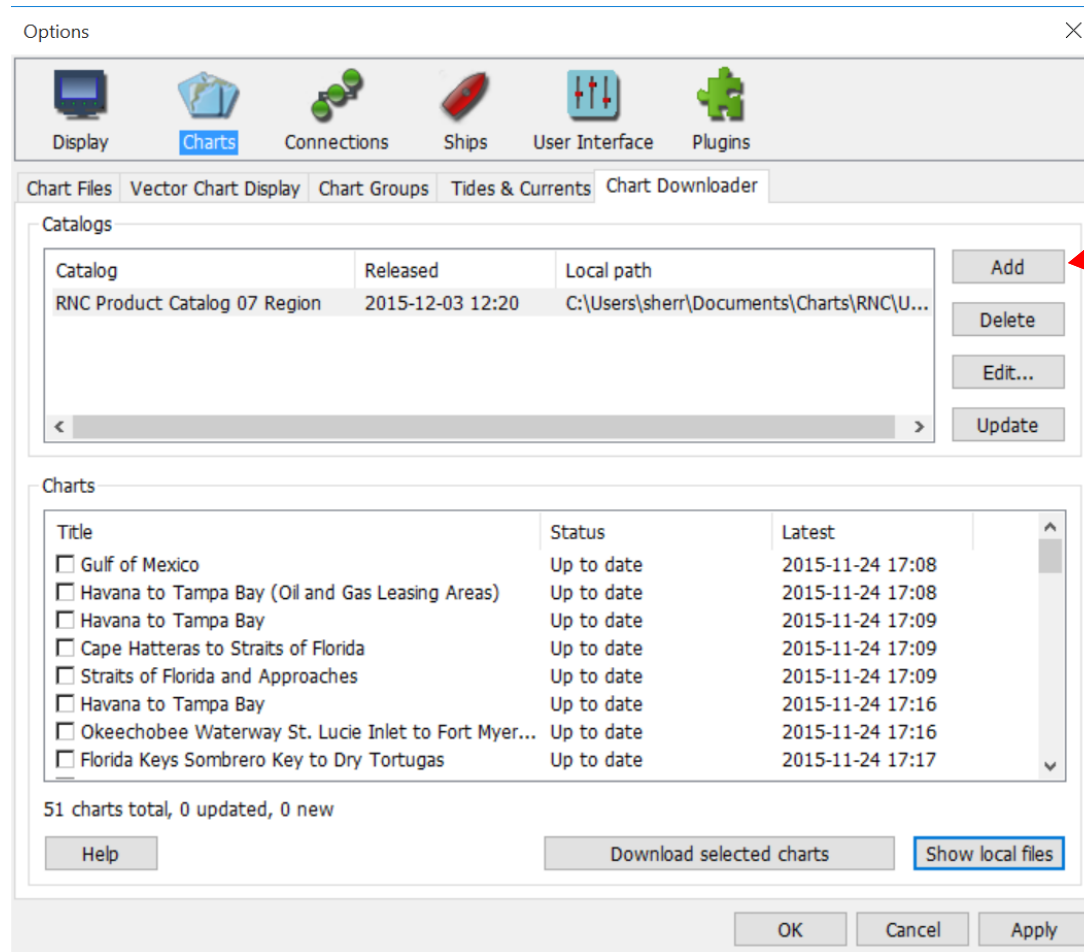
Sustained Wind Key (knots):

20	40	60
80	100	120
140	160	200

Direction arrows are spaced every 6 hours on storm track

About Author Close

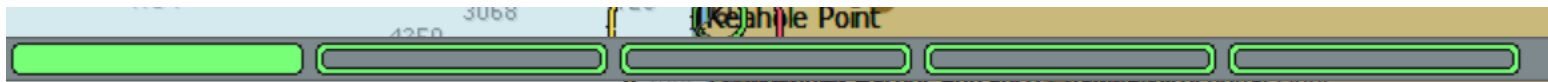
Chart Downloader Plugin



To
download
a new
chart area

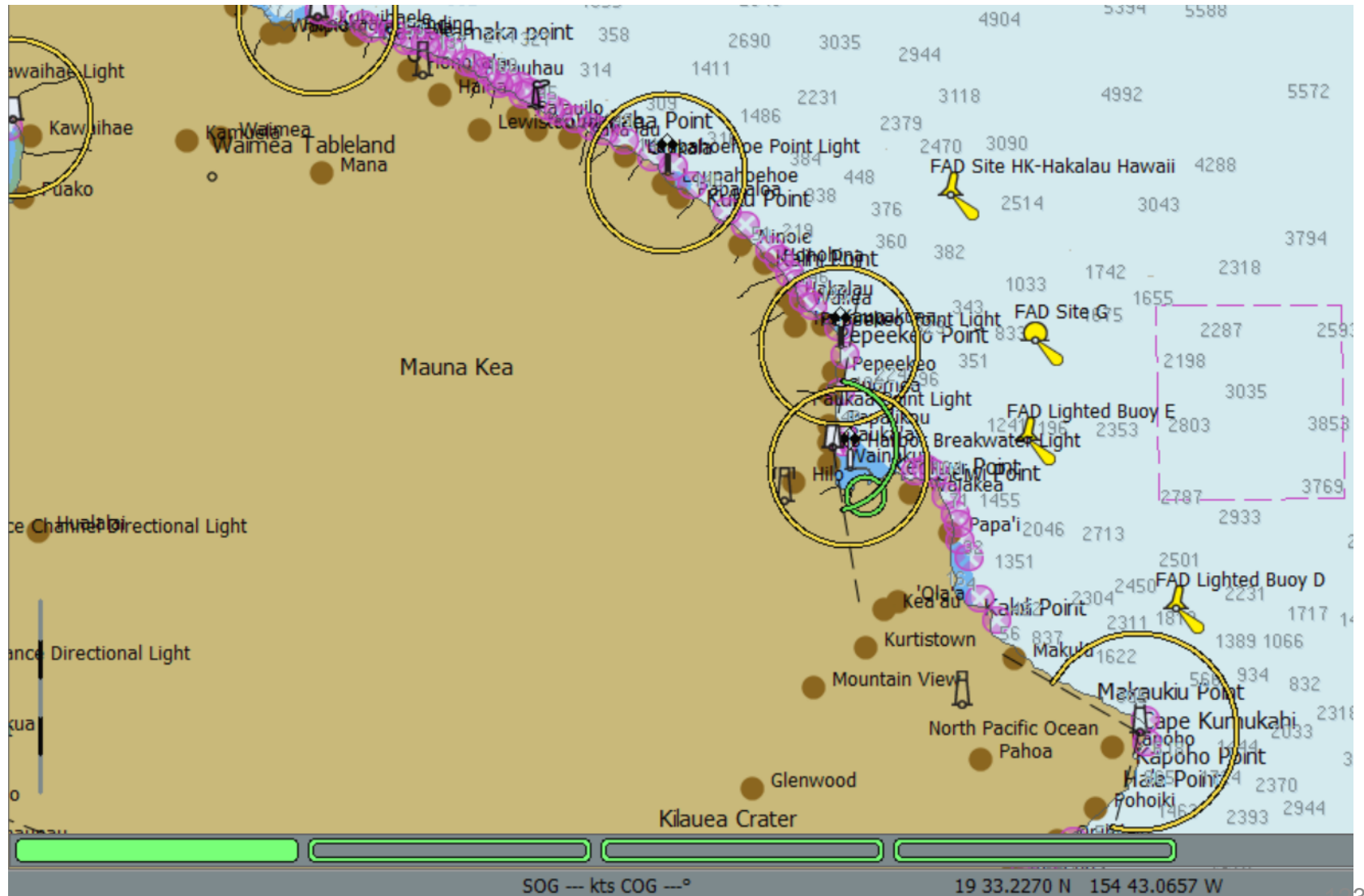
Note on ENC Charts

- After Download completes, must still add charts using the normal Add Chart Folder function
- Charts are fully downloaded to your computer and will stay there, even if you delete them in the Chart Downloader
- You can update them using the Update function on the Chart Downloader
- New green bubble at bottom of chart screen



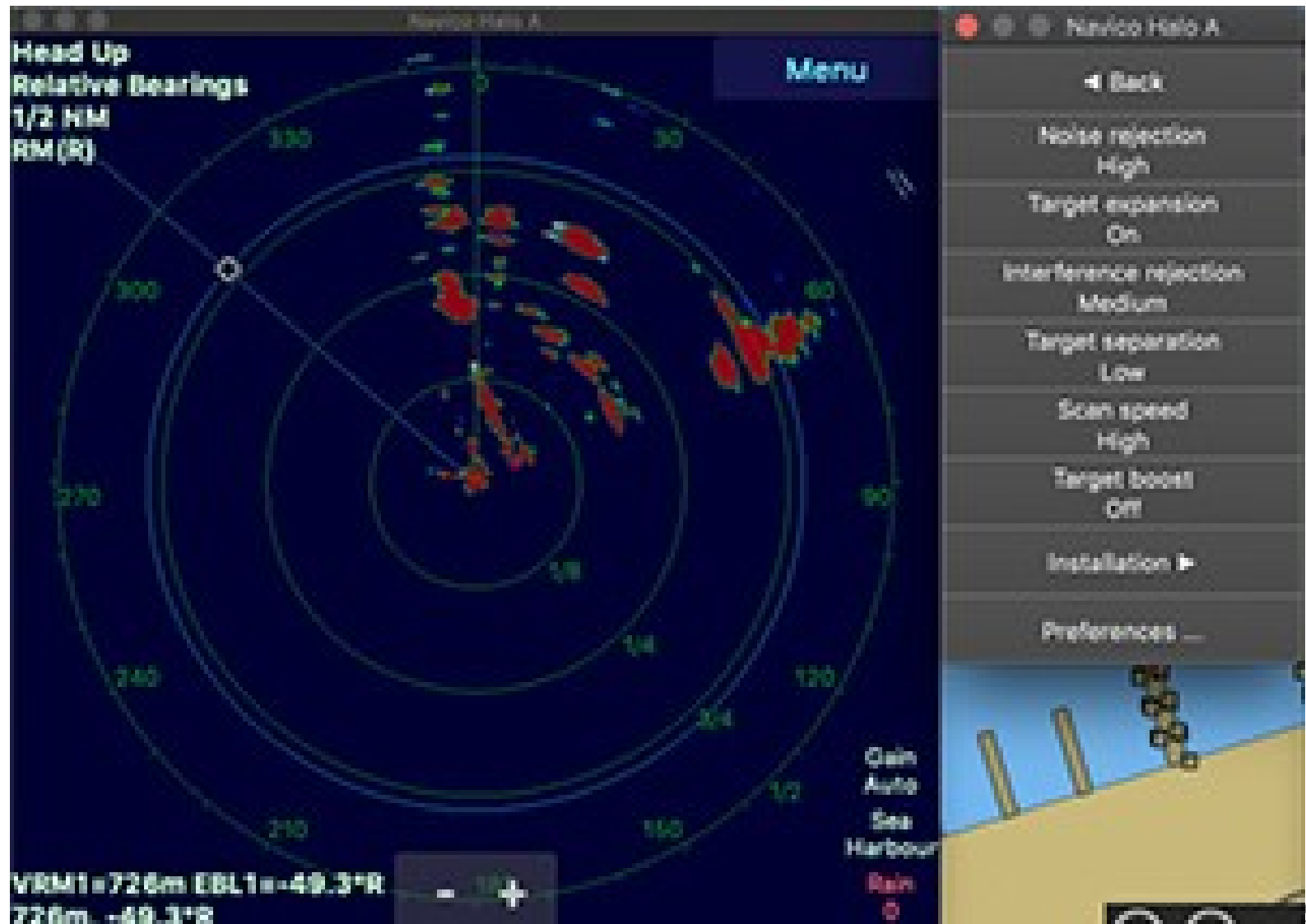
(I found this a bit quirky)

ENC Chart for Hawaii

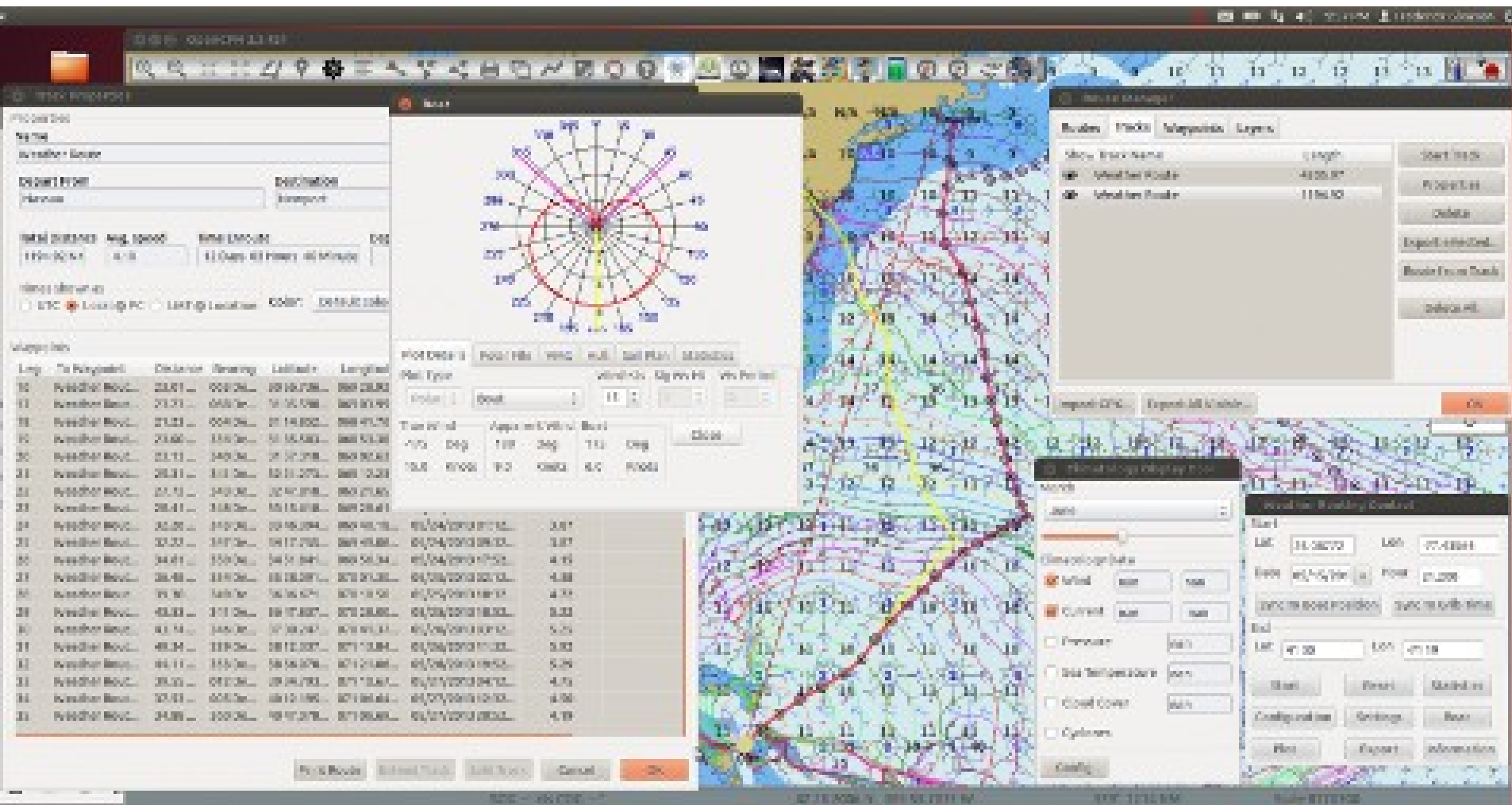


Radar Overlay Plugin

(Modern Digital Radars)



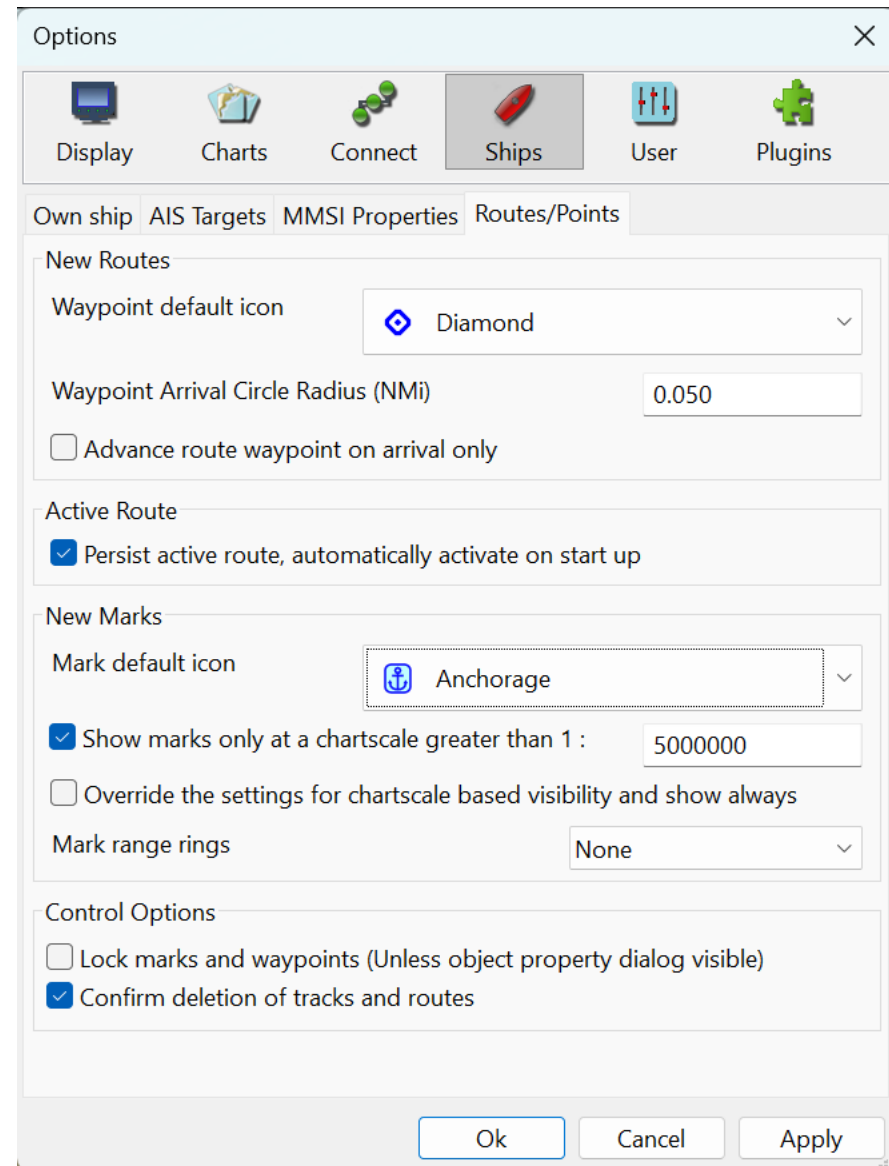
Weather Routing Plugin



Use GRIB & Climatology Data and boat polars to plan an optimized route

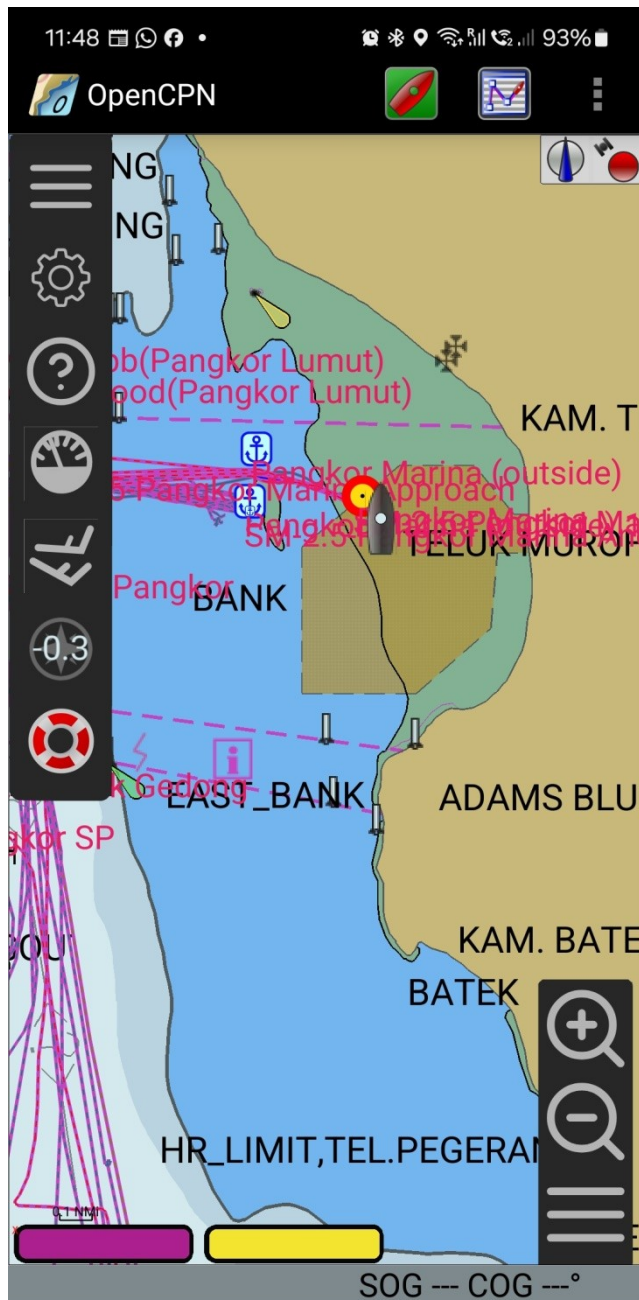
Tweaks to do on a new install

- Add Tides database
(How to, [here](#))
- Marks Text to Red
Options / User / Fonts / Marks
- Default Mark settings
Options / Ships / Routes/Points
- Turn off “Highlight Tracks”
Options / Ships / Own Ship



OpenCPN for Android

- Usually one release behind
- Install \$9.99 version from Google Play
 - this is the supported version & will receive automatic updates
 - There is a free version for Android, but not supported
- Identical in most respects to Windows version, just on a tiny screen
- Chart downloader plugin built-in (but pretty quirky on small phone)
- Some plugins not supported
- Android “sandboxing” has made OpenCPN more difficult



Primary screen in Android

Click and hold to right click

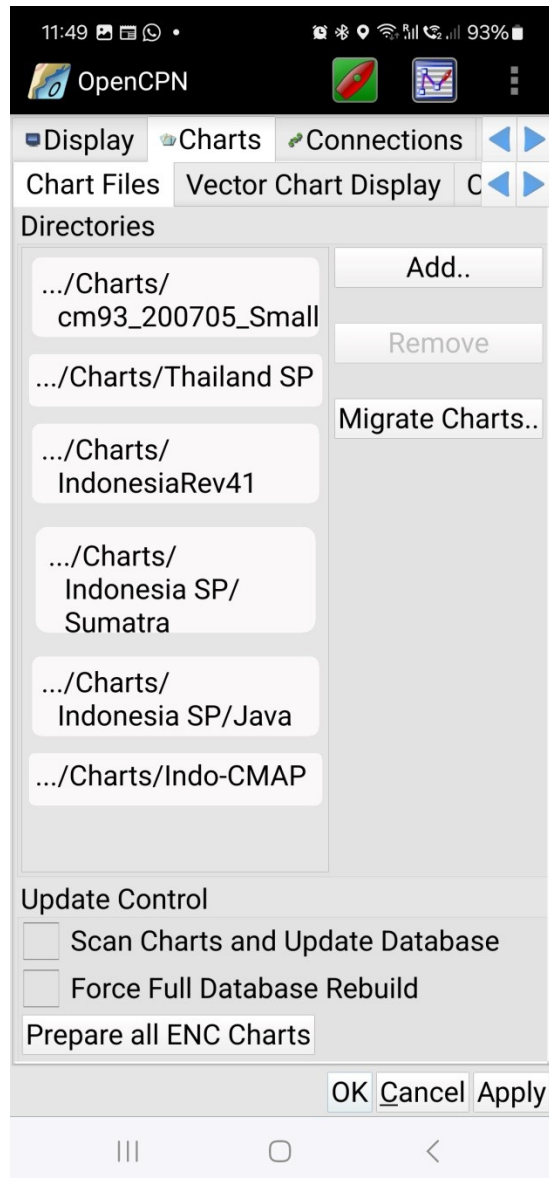
- Pops right-click menu (couldn't get screen shot)
- All the right click functions appropriate to where you are right-clicking

Pinch and un-pinch to zoom in/out

Swipe to move

Click and hold to get toolbar config screen up (add more tb icons)

Options screen in Android



Click on tab to change tabs

← Scroll tabs horizontally

Loading charts & GPX files

- Easiest way is to connect Android to a computer
- Use Charts tab to load charts

Downloading charts

- Use downloader
- Difficult to select chart catalog (+ too small to select, no zoom)
- Scroll bars need to be scrolled on bars, not in window area

Navigation Mode screen in Android



OpenCPN for Android

- Difficult to use fully on a phone (maybe better with stylus)
 - Difficult to move a waypoint
 - Chart Downloader config pop-up too big—unusable
 - No esc button
- Probably much better on a tablet
- Still a little buggy
 - Crashed when I tried to delete a waypoint—wants a quick click not a long click on 'delete'
 - Chart Downloader seemed to hang (bad folder selection)
- Not quite ready for Prime Time, but getting there
- Separate documentation file



The End

<http://svsoggypaws.com>

Questions?

More Info

- Just play with it—but NOT on your Nav computer!
- OpenCPN Website / User Manual
- [Out Chasing Stars YouTube Channel](#)
- [Sabado's \(Holly & Ray\) YouTube Channel](#) (advanced)



A big THANKS to Terry Sargent, who loaned me his original presentation as a starting point. There are a lot of OpenCPN resources on his webpage.

<https://sailingamazinggrace.com/charts/terrrys-topics>