

# NAV100: Getting the Most Out of OpenCPN

*Presented by Sherry McCampbell  
s/v Soggy Paws*



*Version 1.8 (Dec 2024) – With Thanks to Terry Sargent s/v Valhalla*

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St Francis 44

<http://svsoggypaws.com> <sup>3</sup>

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ASIA

# SV Soggy Paws Florida to the Philippines

NORTH AMERICA

PACIFIC OCEAN

MELBOURNE 2007  
Rio Dulce  
Colombia

Philippines 2015-2022  
Yap Truk  
2014  
Marshall Islands  
Palau F.S.M. Pohnpei

Panama  
Galapagos 2008-09  
Ecuador

Hawai'i 2011  
2013  
Tarawa  
Samoas  
Tahiti  
Tuamotus  
Fiji 2012  
Tonga  
French Polynesia  
Gambiers  
Pitcairn Island

2010  
Easter Island  
Juan Fernandez

DAVAO

Across the Pacific

~30,000 nm







# Why OpenCPN

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.**”*

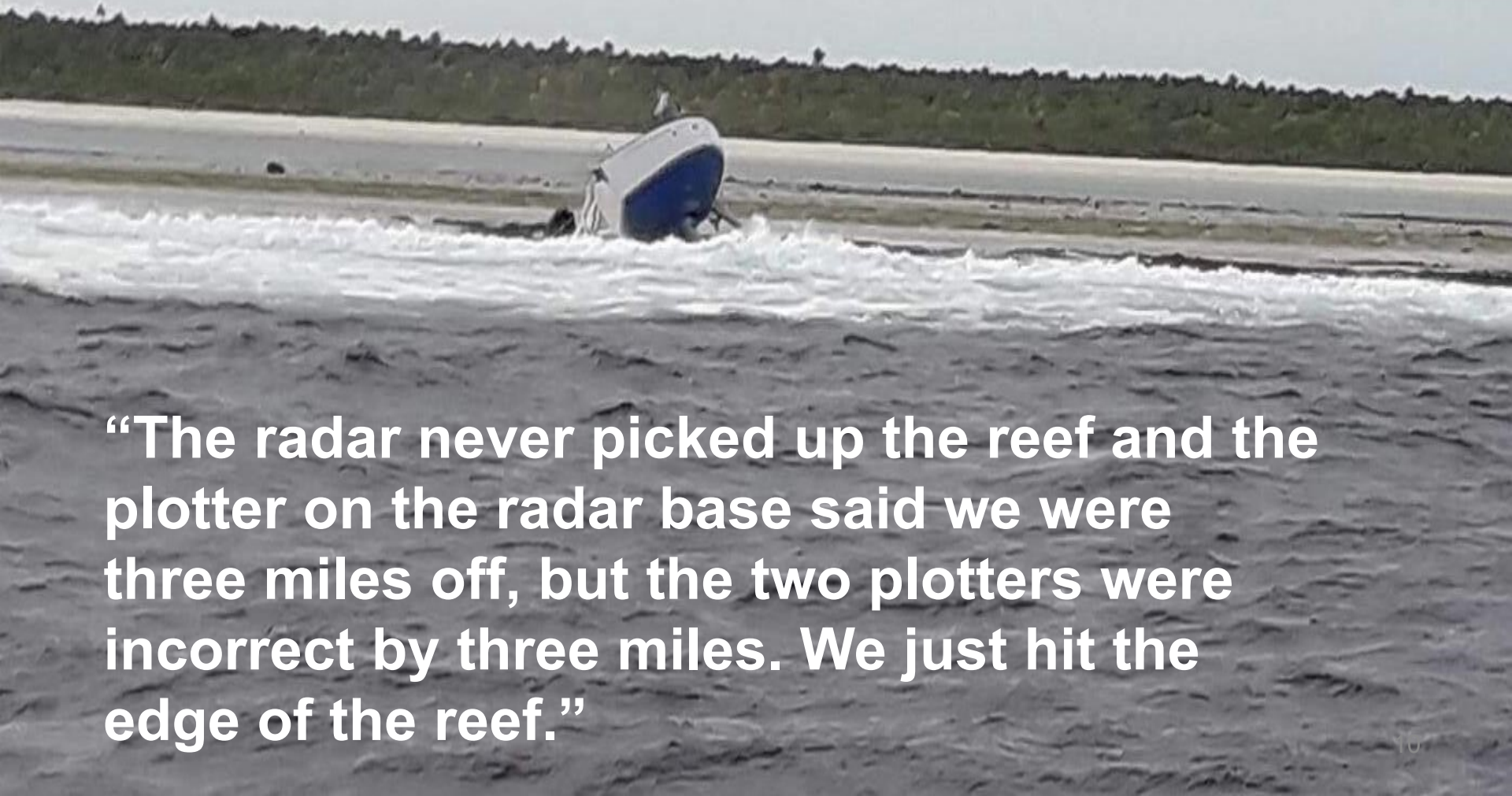




**On the rocks, NW Australia, June 2016**

# 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**

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## 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 Overview

Can be changed to meters

GPS Status

OpenCPN 5.6.2

Show/Hide Toolbar

Settings

Create a Route

Route & Mark Manager

Enable Tracking

Hover over each icon to see a tool tip for what the icon does.

Chart Outlines

Chart Information pop-up. Hover your cursor over the chart bubble to pop this window with more detail about each chart

ChartFile: C:/Users/sherr/Document/Charts/Indonesia SP/HalmaheraMorotai/BacanSW.Z16-Z16.mbtiles

Name: BacanSW.Z16-Z16 20220211135723

Scale: 1:15000

ID:

Depth Units:

Soundings:

Datum: WGS84

Projection: Web Mercator (EPSG:3857)

Source Edition:

Updated: 2000-01-01

mbtiles Chart

KAP Chart

CM93 "Background" Chart

Chart Bubble/Bars

Other cruiser's tracks

Feet

IMPORTANT!  
The background chart is in feet.  
Numbers on mbtiles/KAP charts may be in feet or meters no matter what this says!

Zoom in and out... + and - keys, or mouse scroll wheel

Center on my boat

GPS Status

Can be changed to meters

Chart Information pop-up. Hover your cursor over the chart bubble to pop this window with more detail about each chart

Chart Outlines

Other cruiser's tracks

Feet

IMPORTANT!  
The background chart is in feet.  
Numbers on mbtiles/KAP charts may be in feet or meters no matter what this says!

Chart Bubble/Bars

Zoom in and out... + and - keys, or mouse scroll wheel

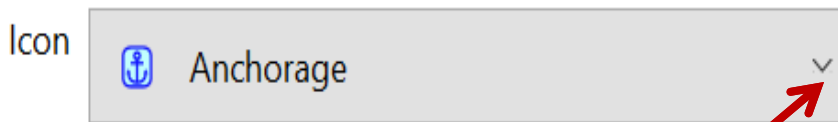
Center on my boat

GPS Status

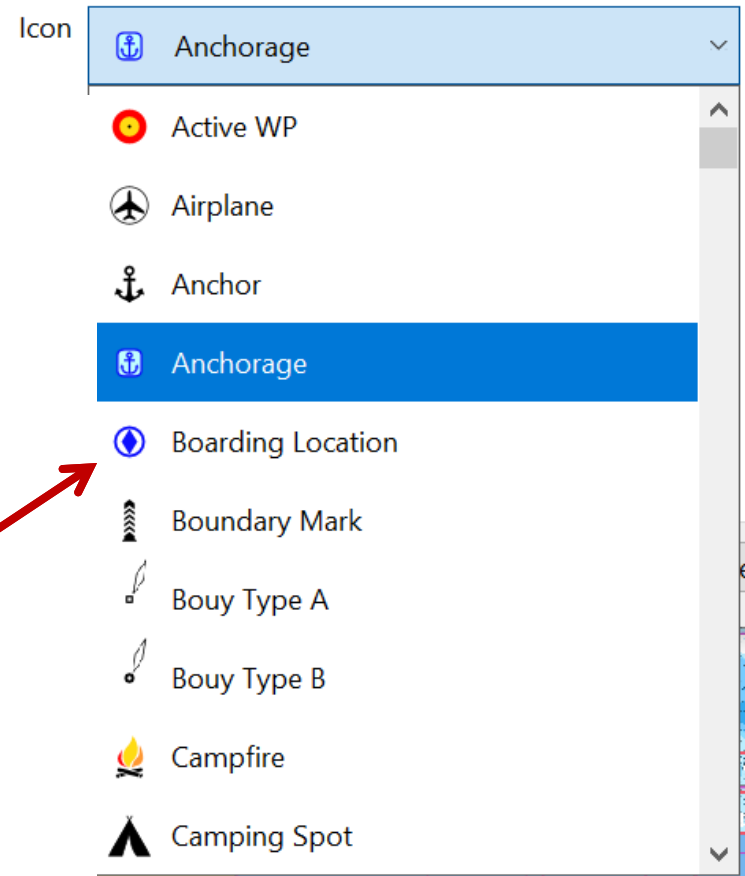
Can be changed to meters

# Terminology

## Drop-down box

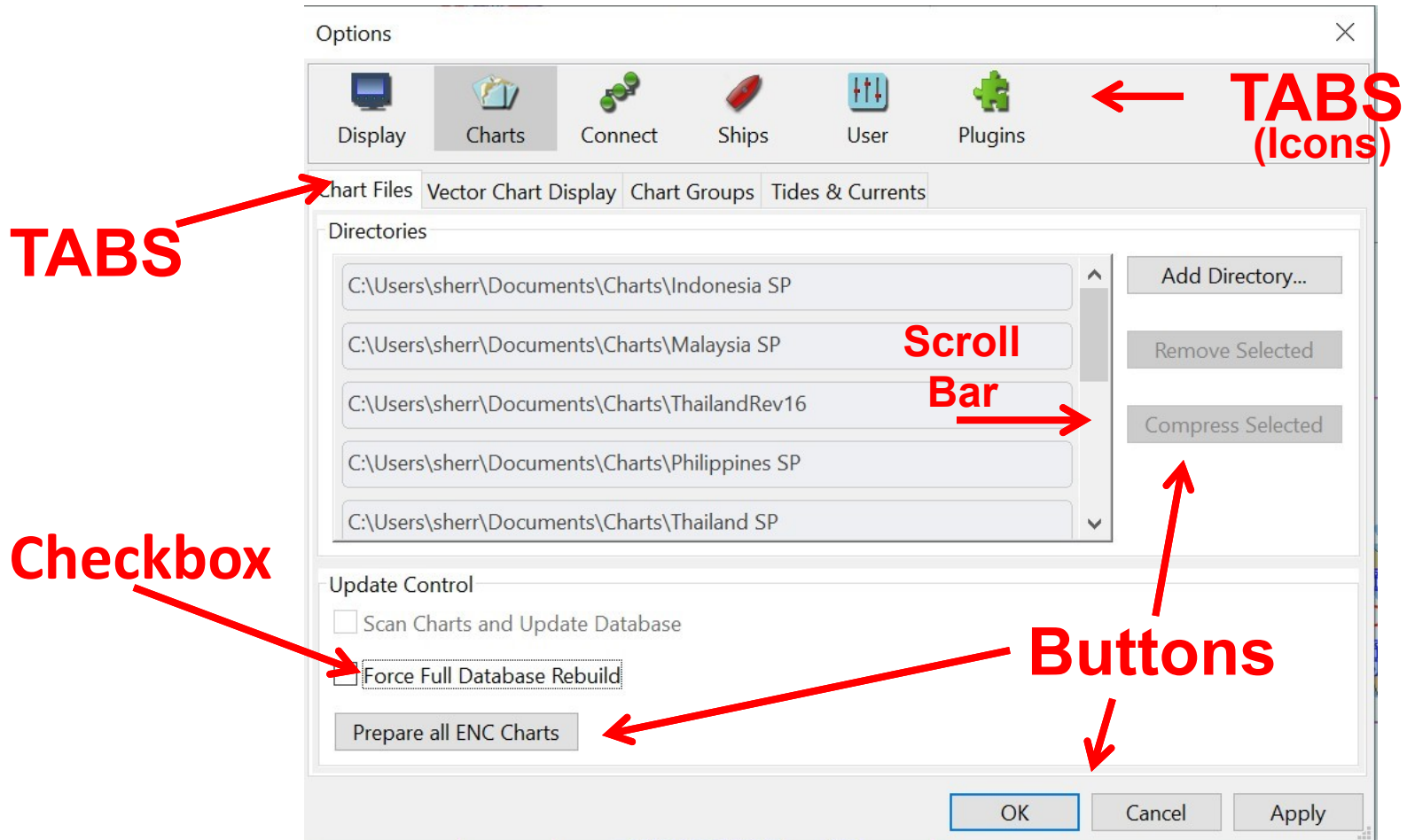


- Click the down arrow
- A selection box opens



# 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 Routings

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](http://opencpn.org)

## [Direct Link to Online Manual](#)

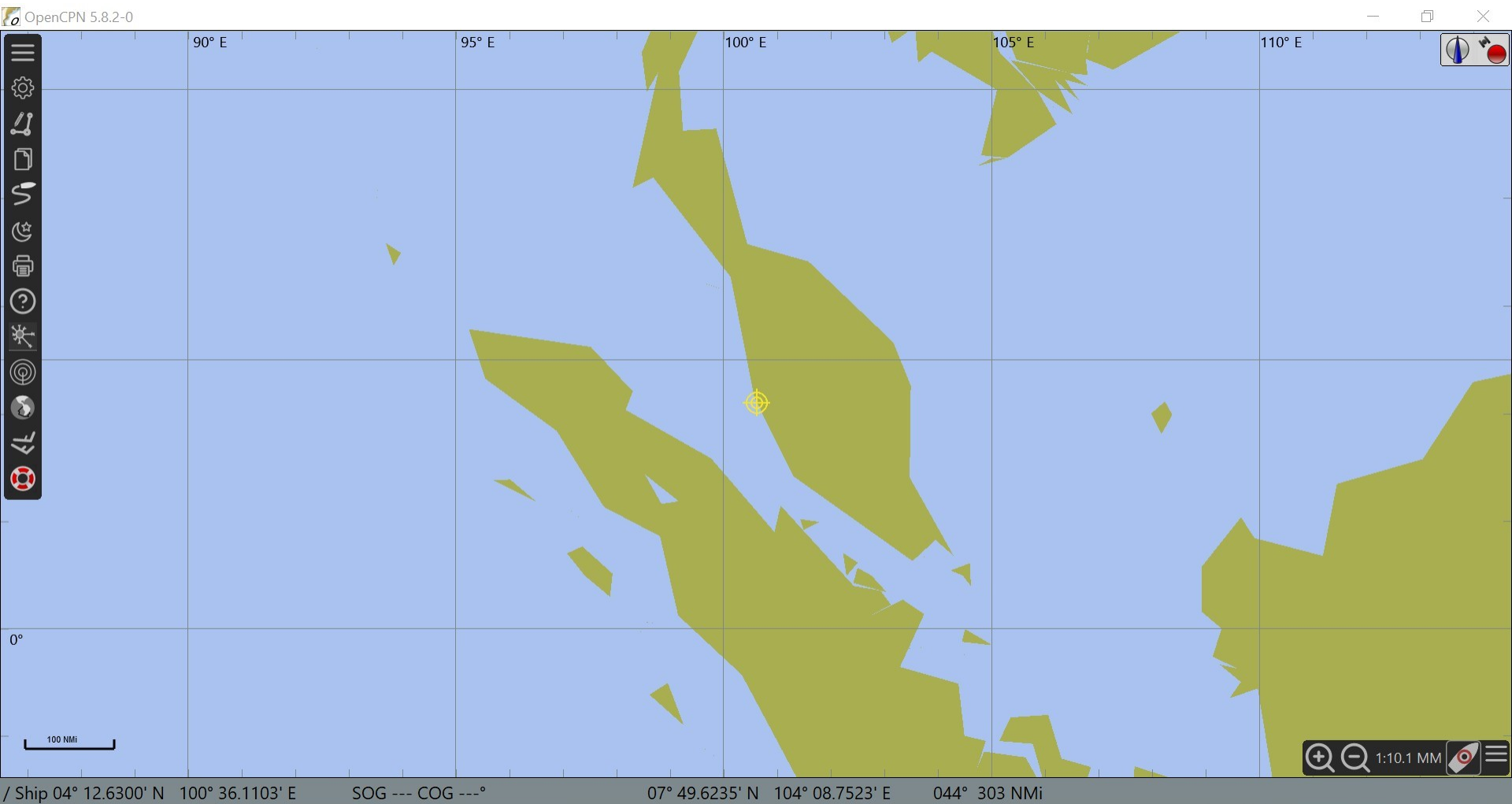
### OpenCPN User Manual

[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](#)
    - [Android](#)
  - [OpenCPN First Use](#)
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  - [Marks and Routes](#)
  - [Touch Screen Tablets](#)
  - [Help Fix Bugs!](#)
- [Getting Around](#)
  - [GPS Setup & Status](#)

# But Wait... Mine Looks Like This!



# Adding Charts – Step 1

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



in the Toolbar

2

3

4

*Charts that are already installed*

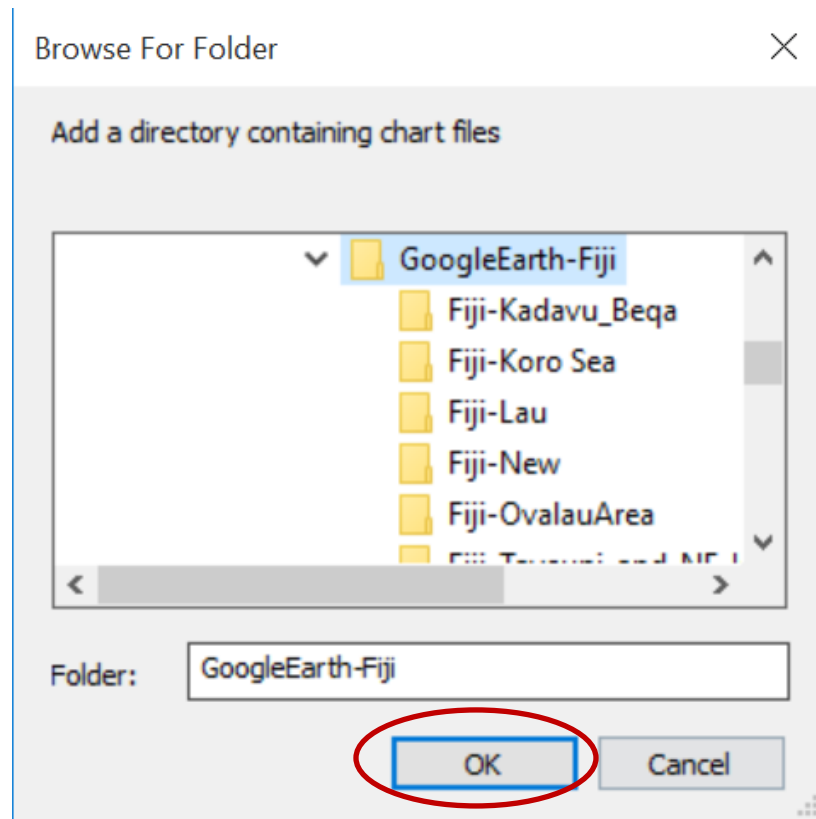
The screenshot shows the 'Options' dialog box with the 'Charts' tab selected. The 'Chart Files' sub-tab is also selected. The 'Directories' section contains a list of paths: C:\Users\sherr\Documents\Charts\Indonesia SP, C:\Users\sherr\Documents\Charts\Malaysia SP, C:\Users\sherr\Documents\Charts\ThailandRev16, C:\Users\sherr\Documents\Charts\Philippines SP, and C:\Users\sherr\Documents\Charts\Thailand SP. The 'Add Directory...' button is circled in red. A red arrow points to the list of directories with the text 'Charts that are already installed'. The 'Update Control' section has two checkboxes: 'Scan Charts and Update Database' and 'Force Full Database Rebuild', both of which are unchecked. The 'Prepare all ENC Charts' button is visible. The 'OK', 'Cancel', and 'Apply' buttons are at the bottom.



# 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

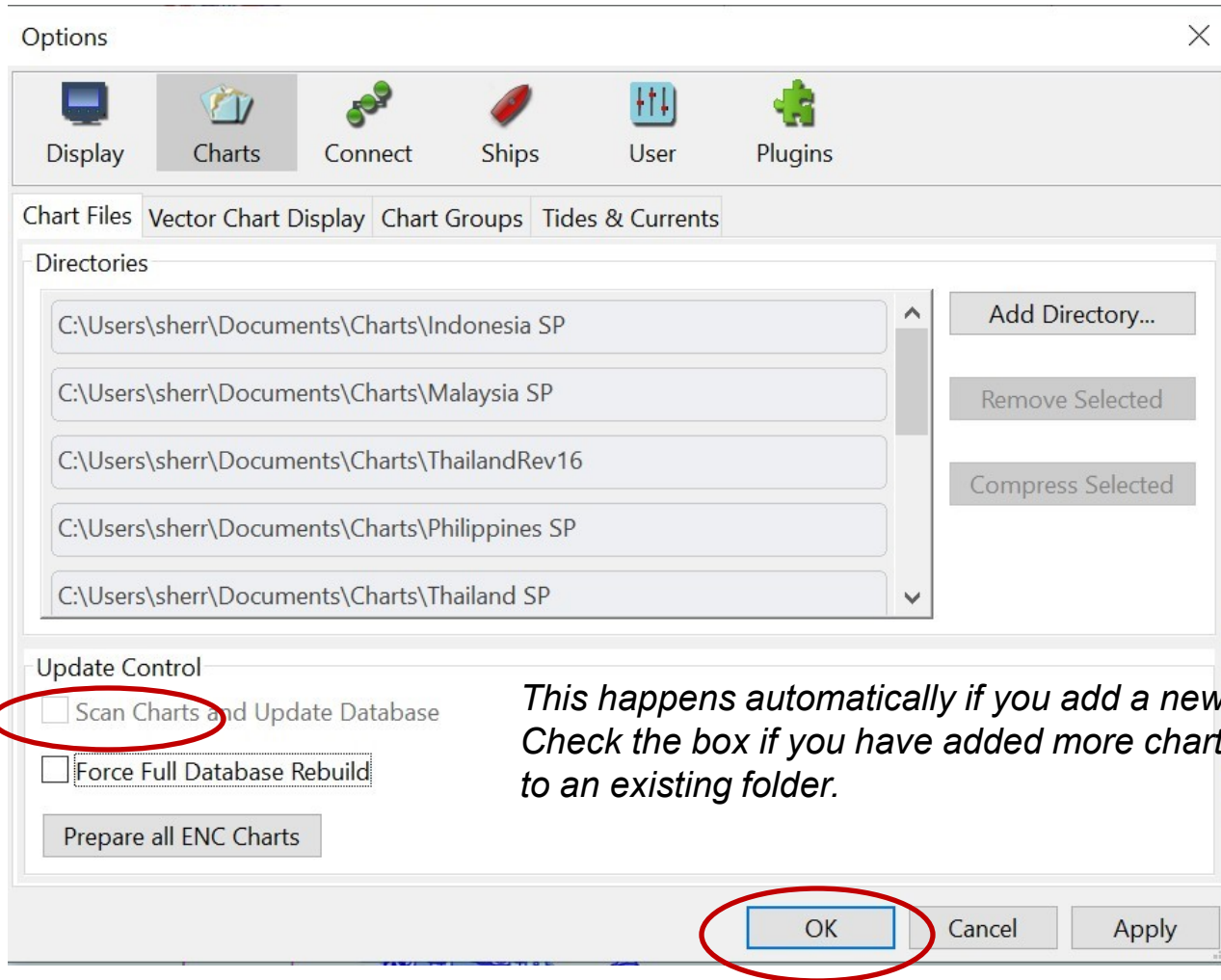
The more charts you load, the more resources OpenCPN takes on your system



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

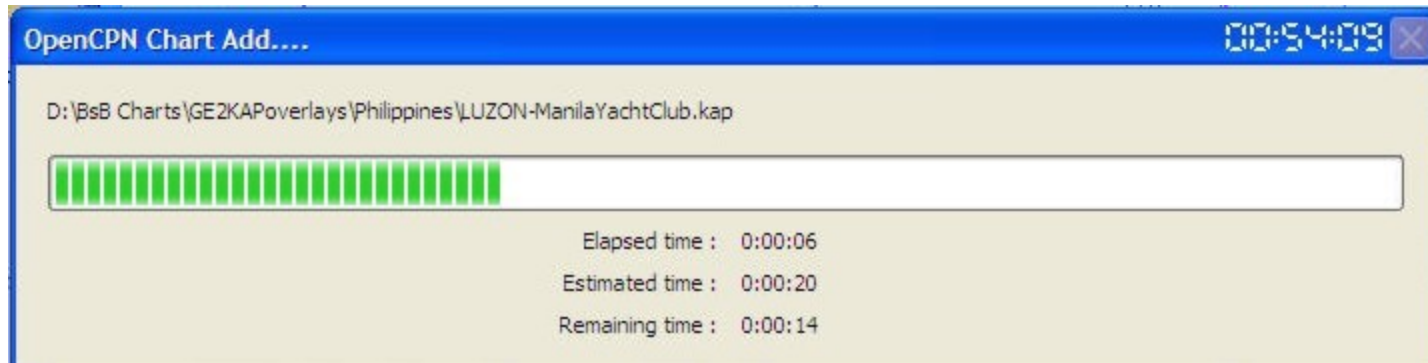
# Adding Charts – Step 3

Rebuild your chart database



# Adding Charts – Step 4

Wait while the chart database is updated



Most people start with a copy of the older CM93 World Chart Set as their “base chart” (download from Terrys Topics, or from a friend).

## Sources of Additional Charts

- See long list in Chart Sources section of manual
- Satellite Charts <http://svsoggypaws.coms/SatCharts/>
- Crowd-sourced charts <http://OpenSeaMap.org>
- OpenCPN Chart Downloader
- Cruiser sharing (Legacy Raster and Vector Charts, sat charts)
- **Bottom line: Don't leave home without an external drive!**

# Sources of Free Satellite Charts

Location	Coverage
<a href="#">Migration's ChartLocker</a>	Mexico, all the Pacific Islands, the Dominican Republic, Panama, Australia mbtiles 2021/2023
<a href="#">Ocelot's mbtiles Charts</a>	SE Asia, Western Pacific, and Indian Ocean 2021/2022
<a href="#">Zen Again's Charts</a>	Pacific Ocean, SE Asia, Crossing to S Africa, S Atlantic, Brazil
<a href="#">Valhalla's Charts</a>	SE Asia, Indian Ocean, and Western Pacific And CM93 v2 Download for OpenCPN. Downloadable anchorage waypoints in GPX format. Mbtiles
<a href="#">Jacaranda's Charts</a>	French Polynesia
<a href="#">Soggy Paws' Charts</a>	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

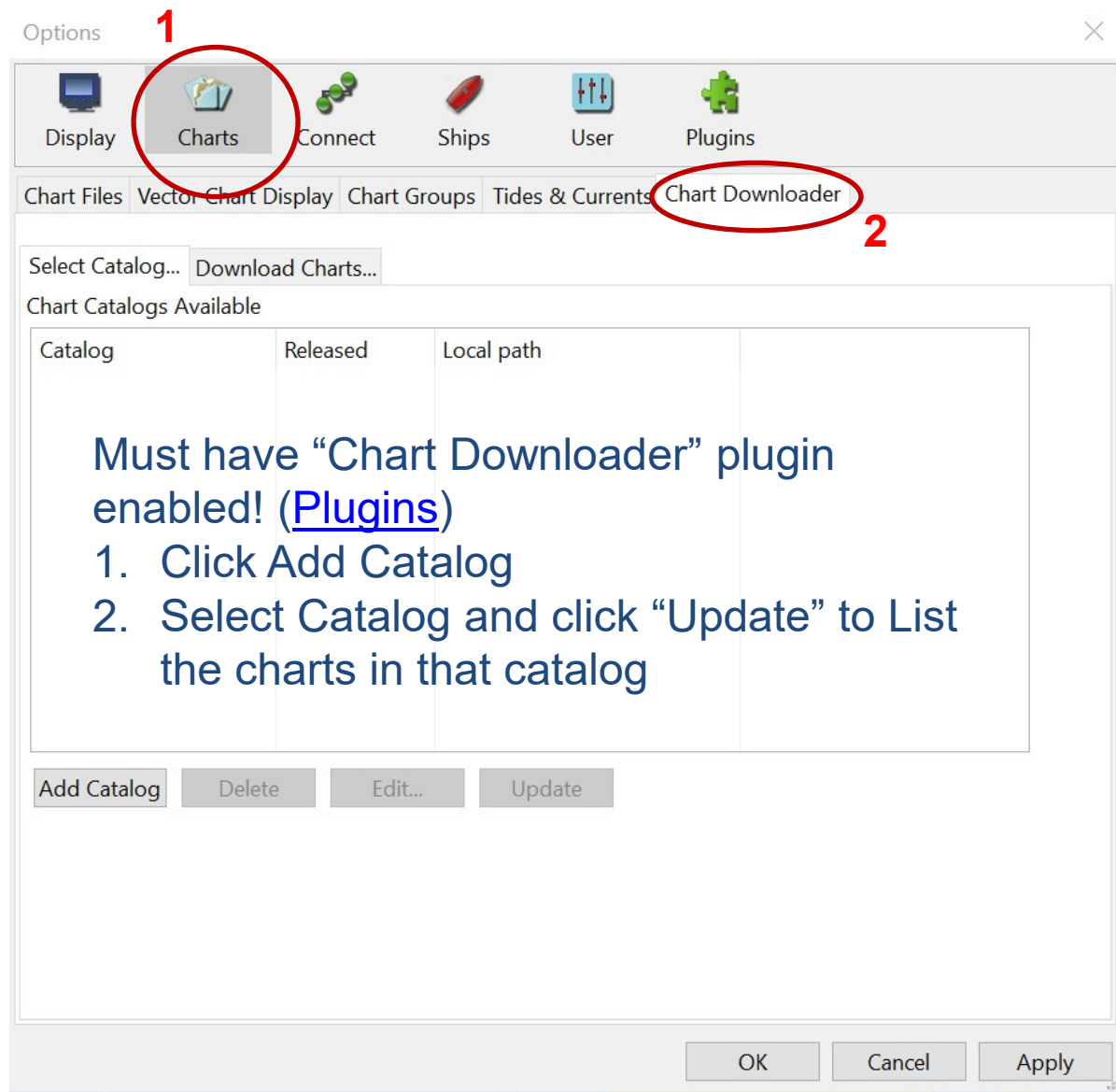
<https://svsoggypaws.com/SatCharts/>

Also check the OpenCPN.org Chart Sources Page:

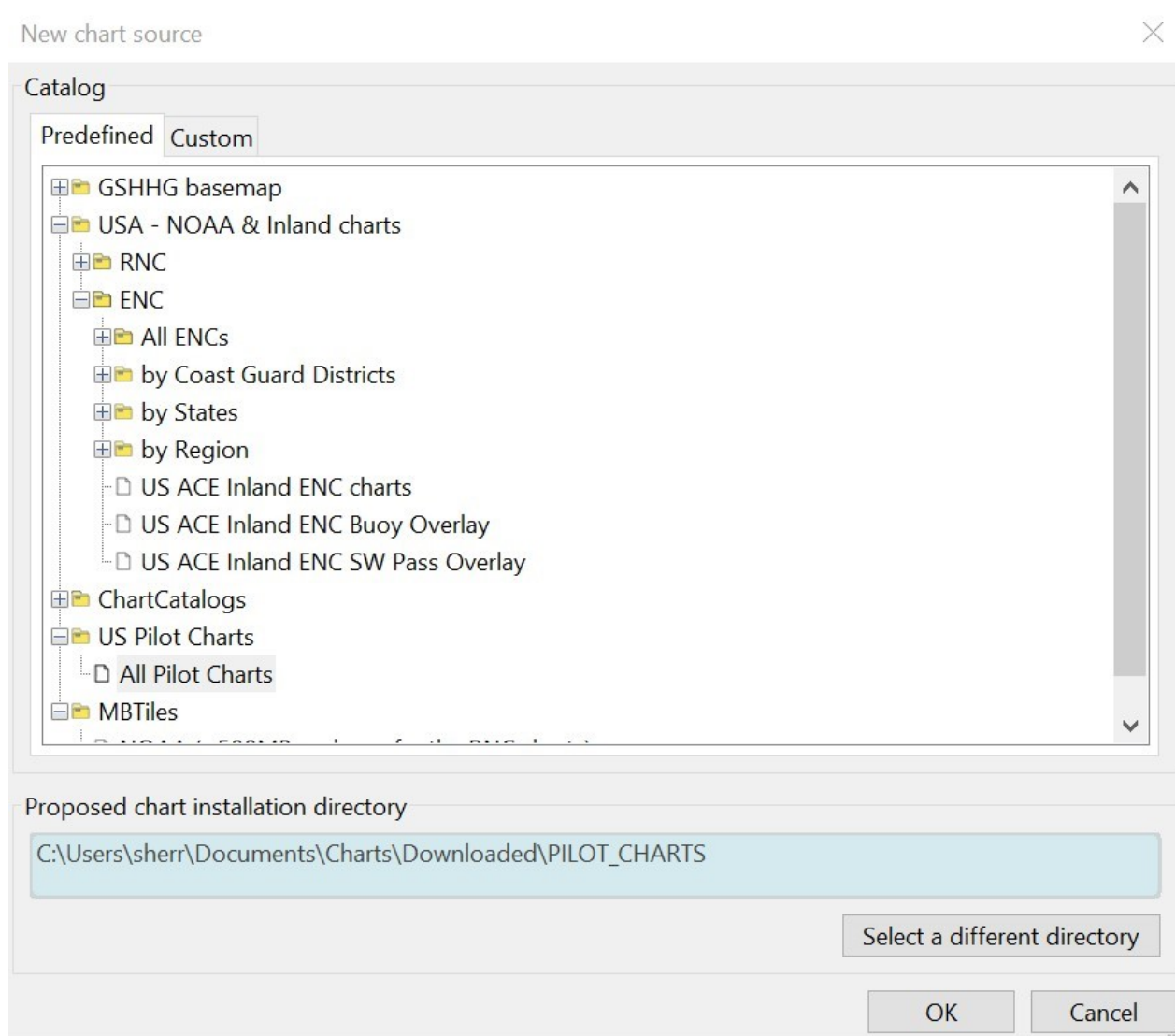
<https://opencpn.org/OpenCPN/info/chartsource.html>



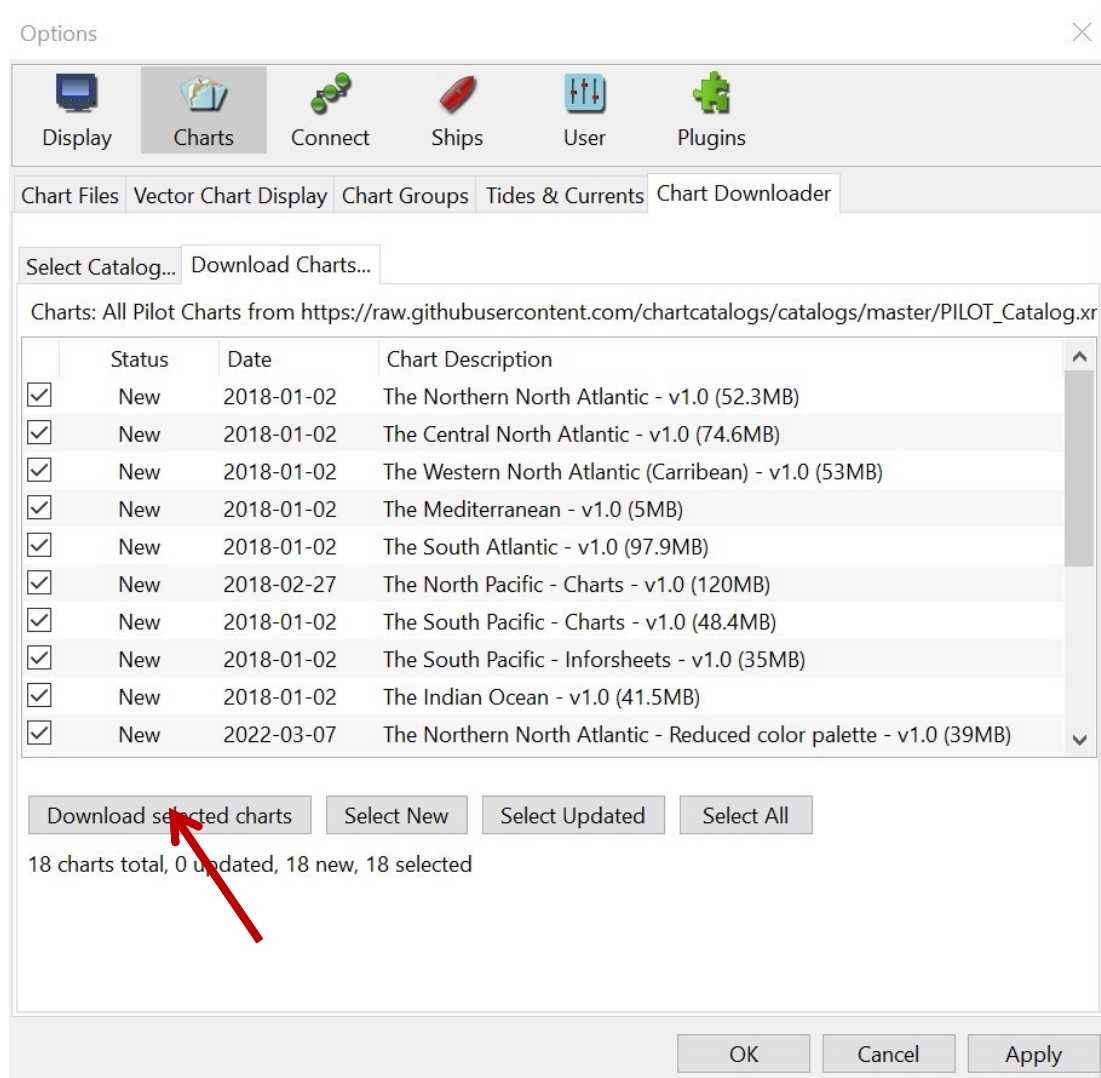
# The Chart Downloader



# Chart Downloader-Add Catalog

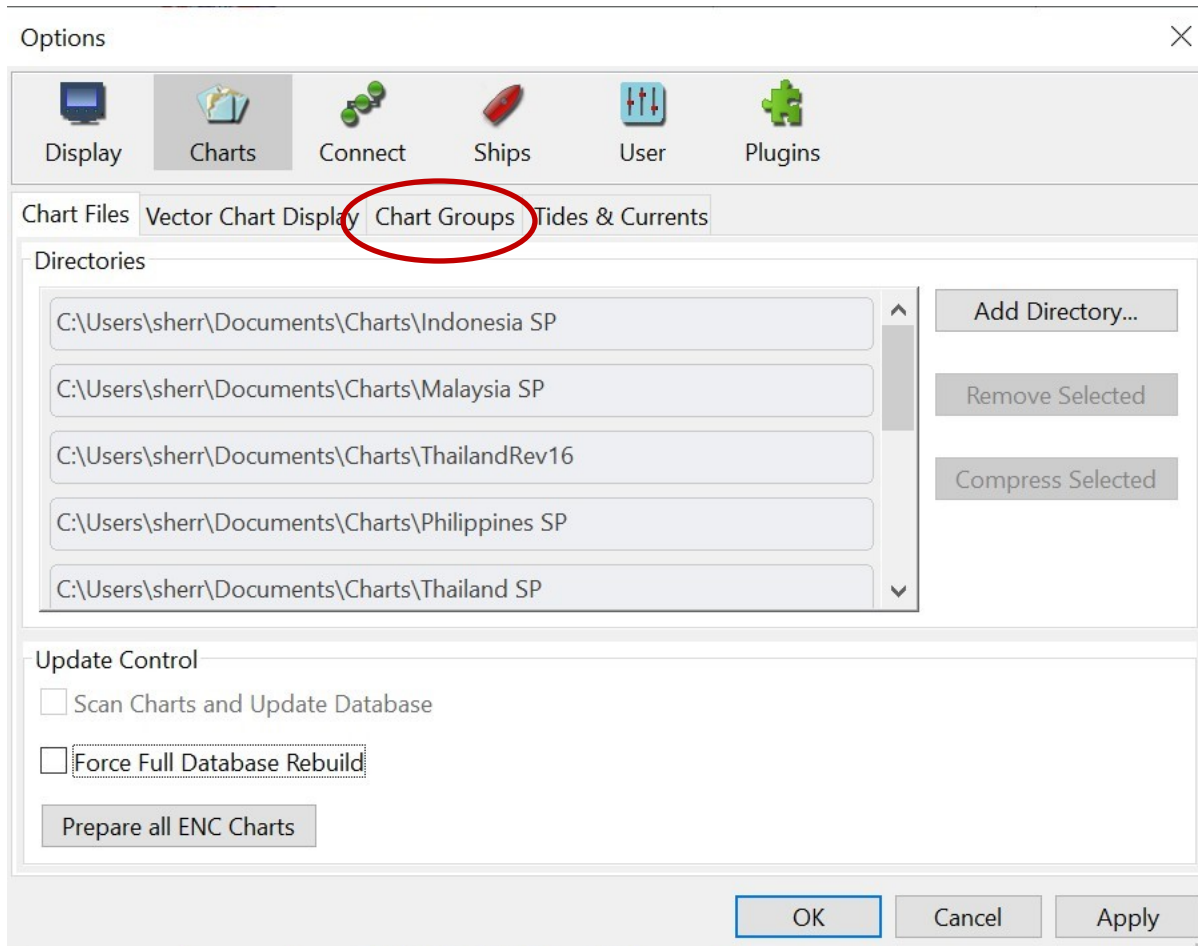


# Chart Downloader-Add Charts



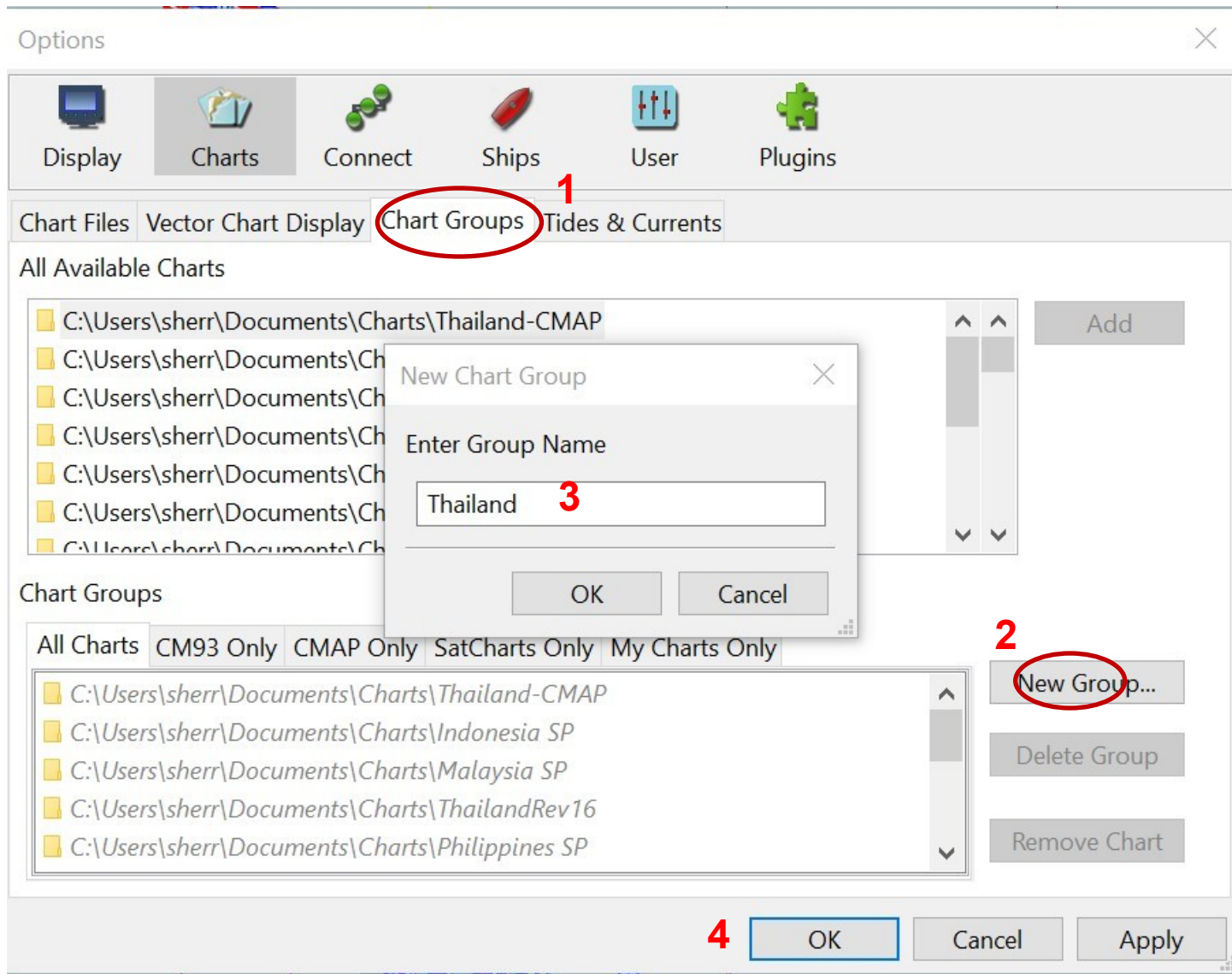
# Managing Charts

The more charts you load, the longer it takes on startup  
Overlapping charts from different sources can get confusing)  
“Chart Groups” lets you manage groups of charts



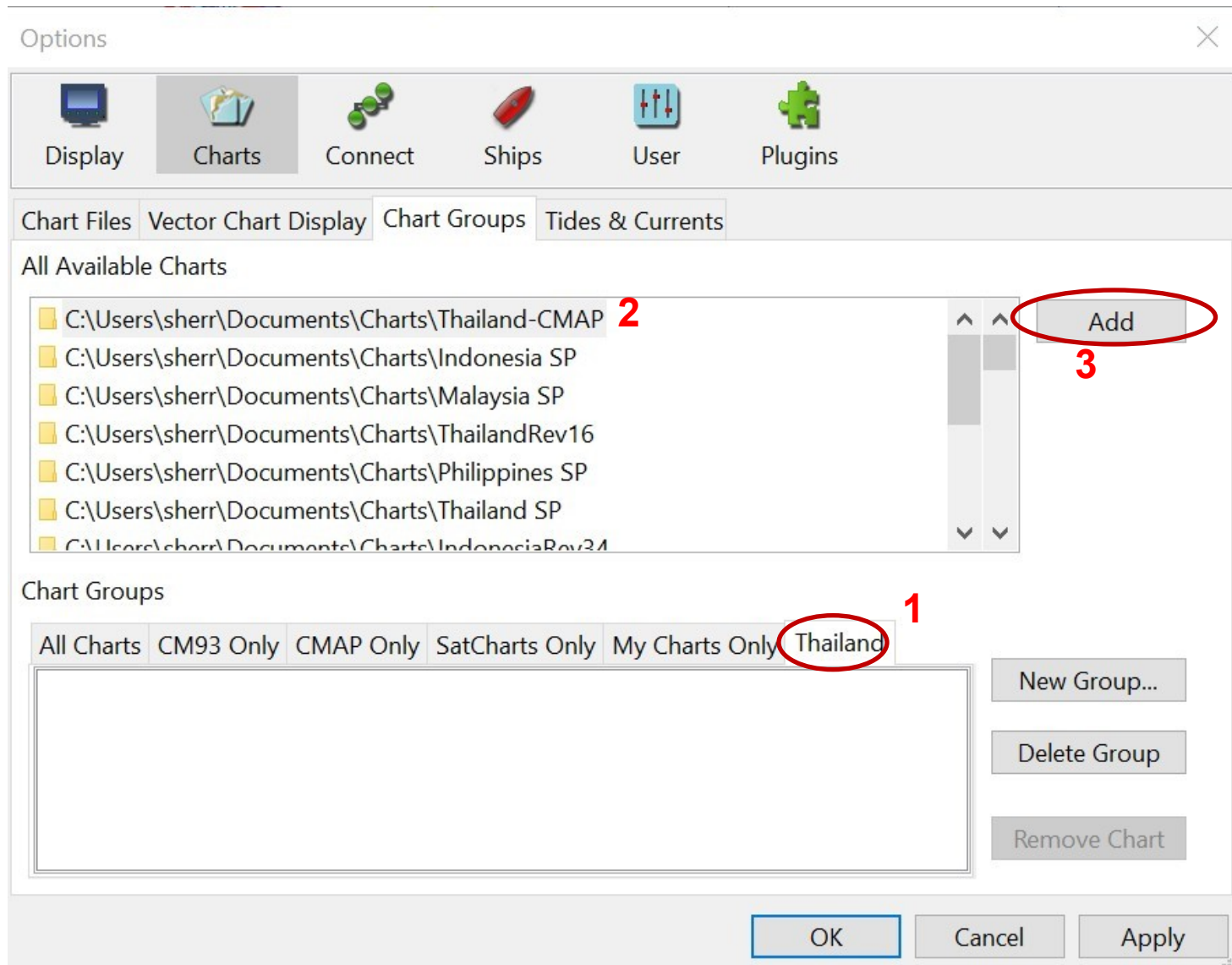


# Creating Chart Groups

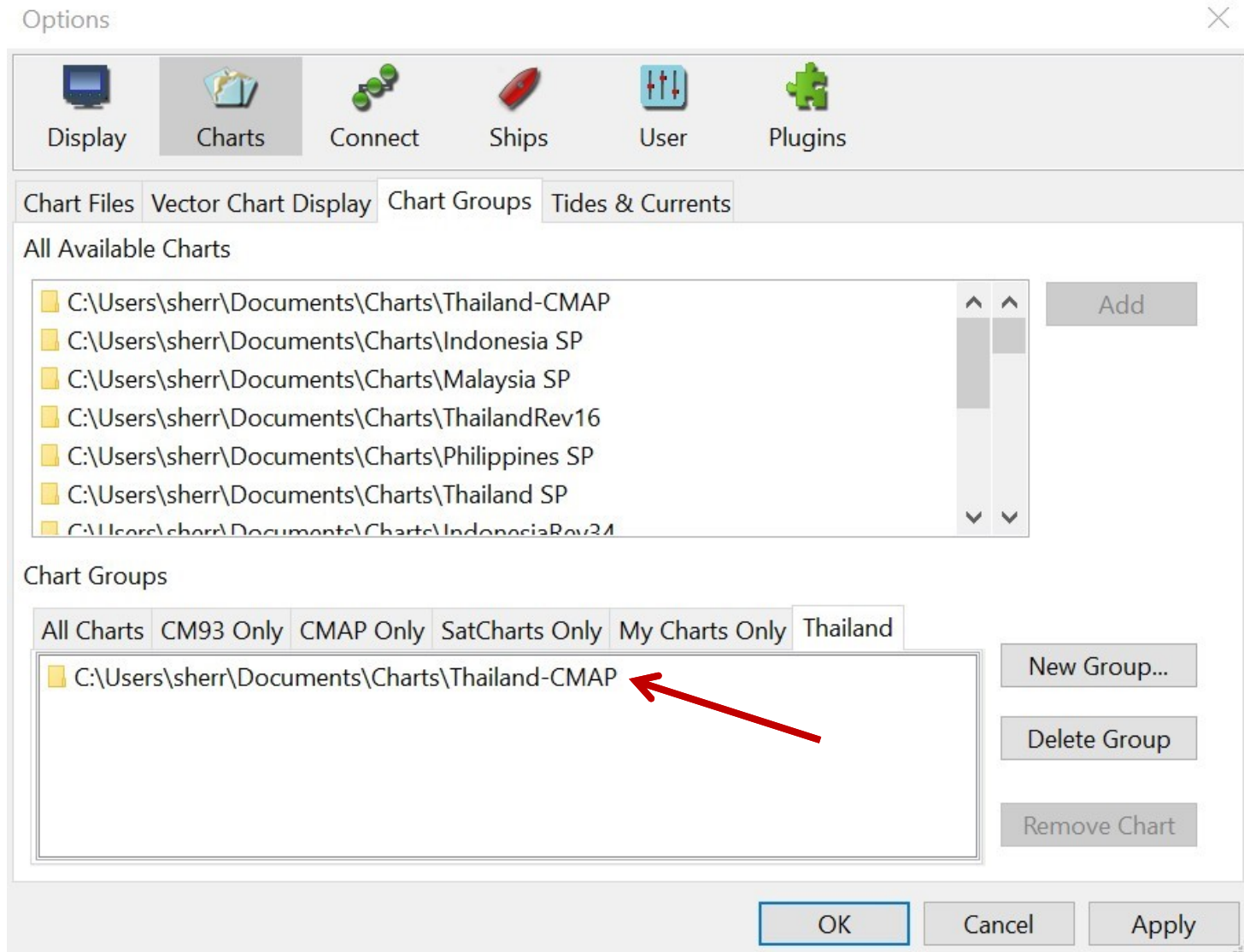


You must do Step 4 before proceeding with adding charts to the group<sup>31</sup>

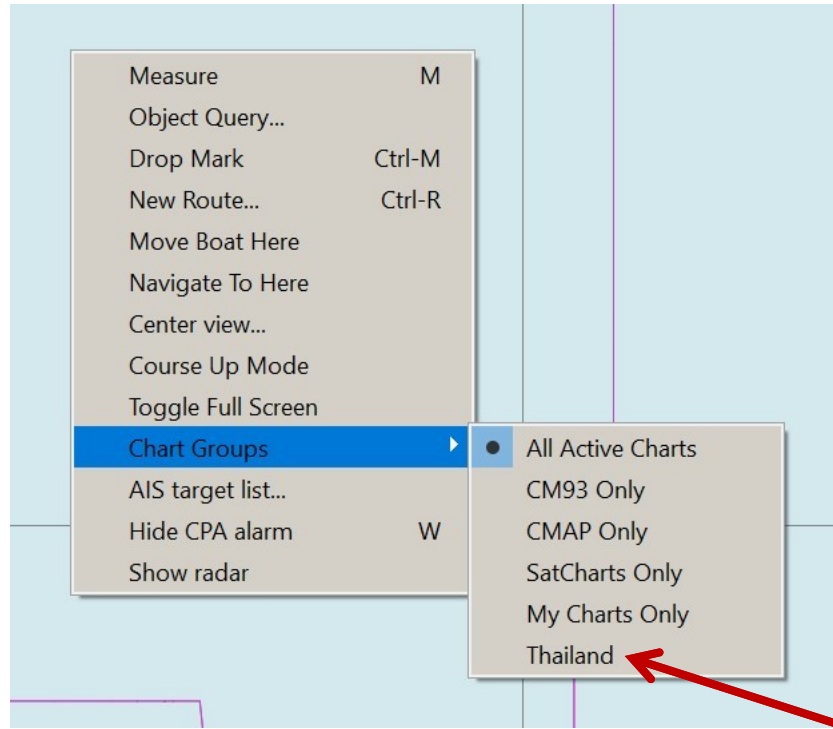
# Adding Charts to a Chart Group



# Adding Charts to a Chart Group



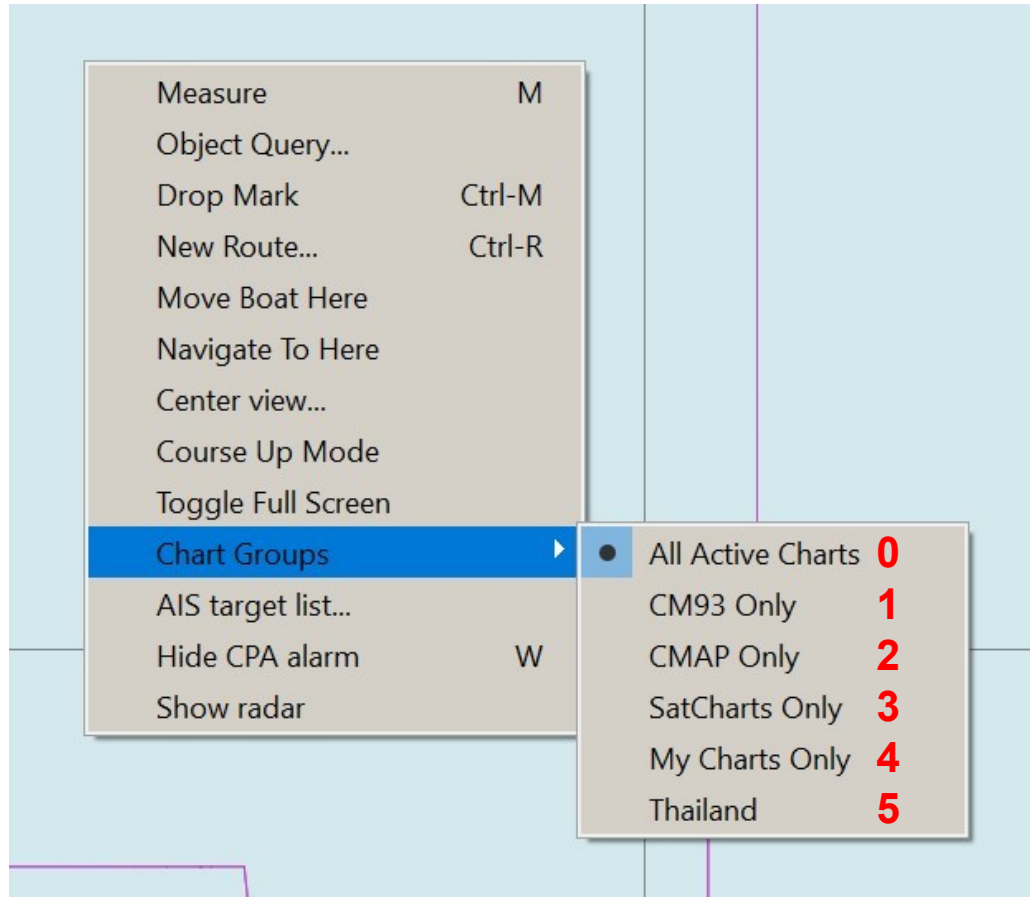
# Selecting Chart Groups



Right-click on chart  
Select appropriate Group  
Only Charts in Group "Thailand" will be visible



# Selecting Chart Groups

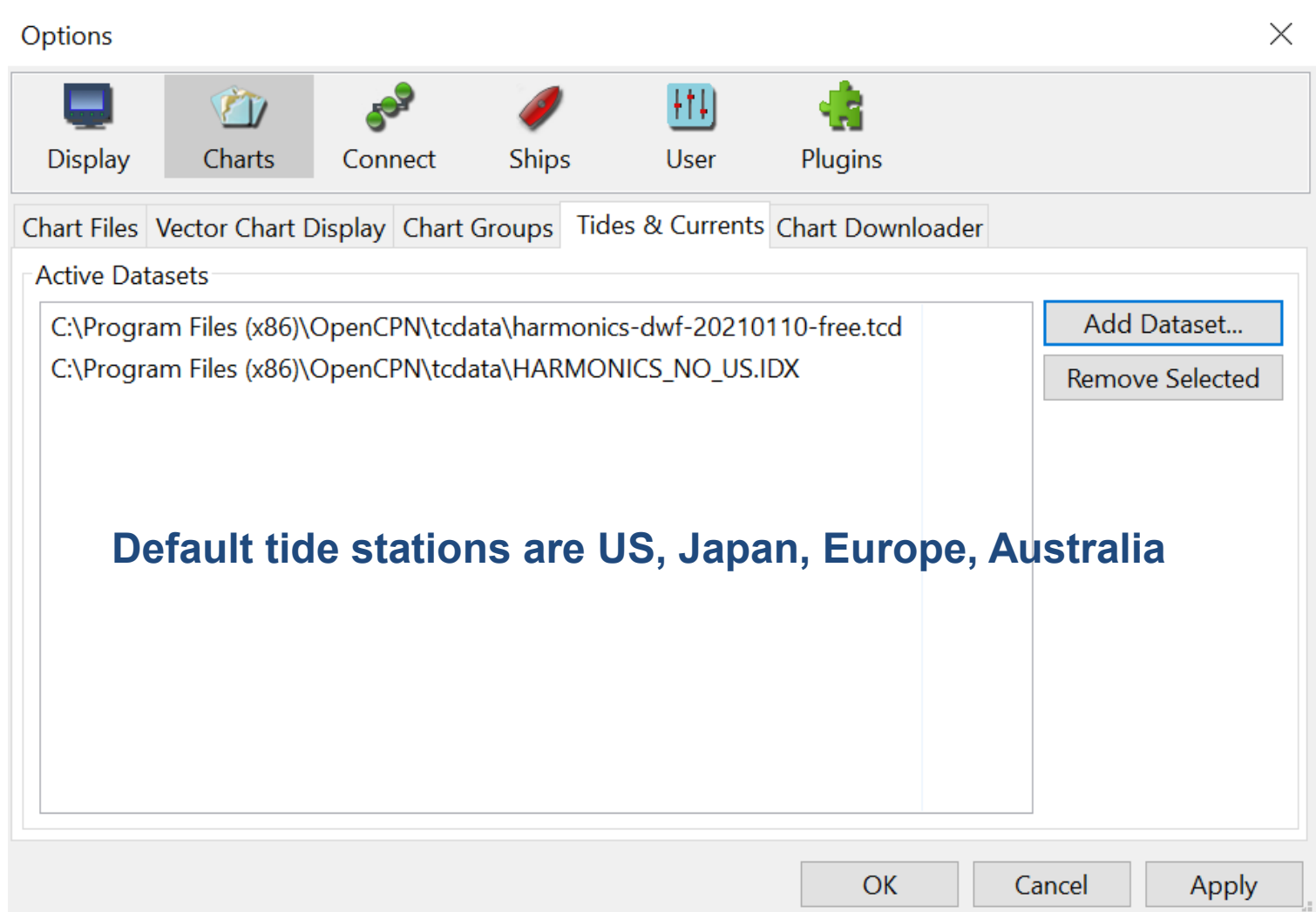


Or, use the number “Hot Key”  
(one keystroke selects option)

No need to right-click  
Typing “5” on the keyboard selects Thailand, 0=All charts

# Tides

## Options / Charts / Tides & Currents



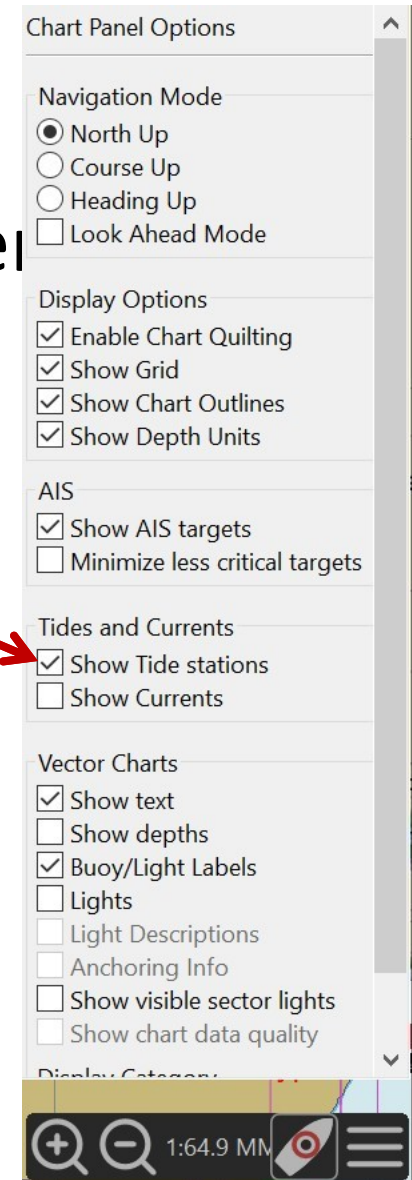
# Rest of the World Tides

- Download from Terry's Topics [[Link](#)]  
(download both Harmonic Files)
- Put in new Tides folder in Documents
- Options / Charts / Tides & Currents
- Add Dataset
- Select HARMONIC.IDX

You may have to re-install tides every time you re-install or upgrade OpenCPN (this may have been fixed in v5.10)

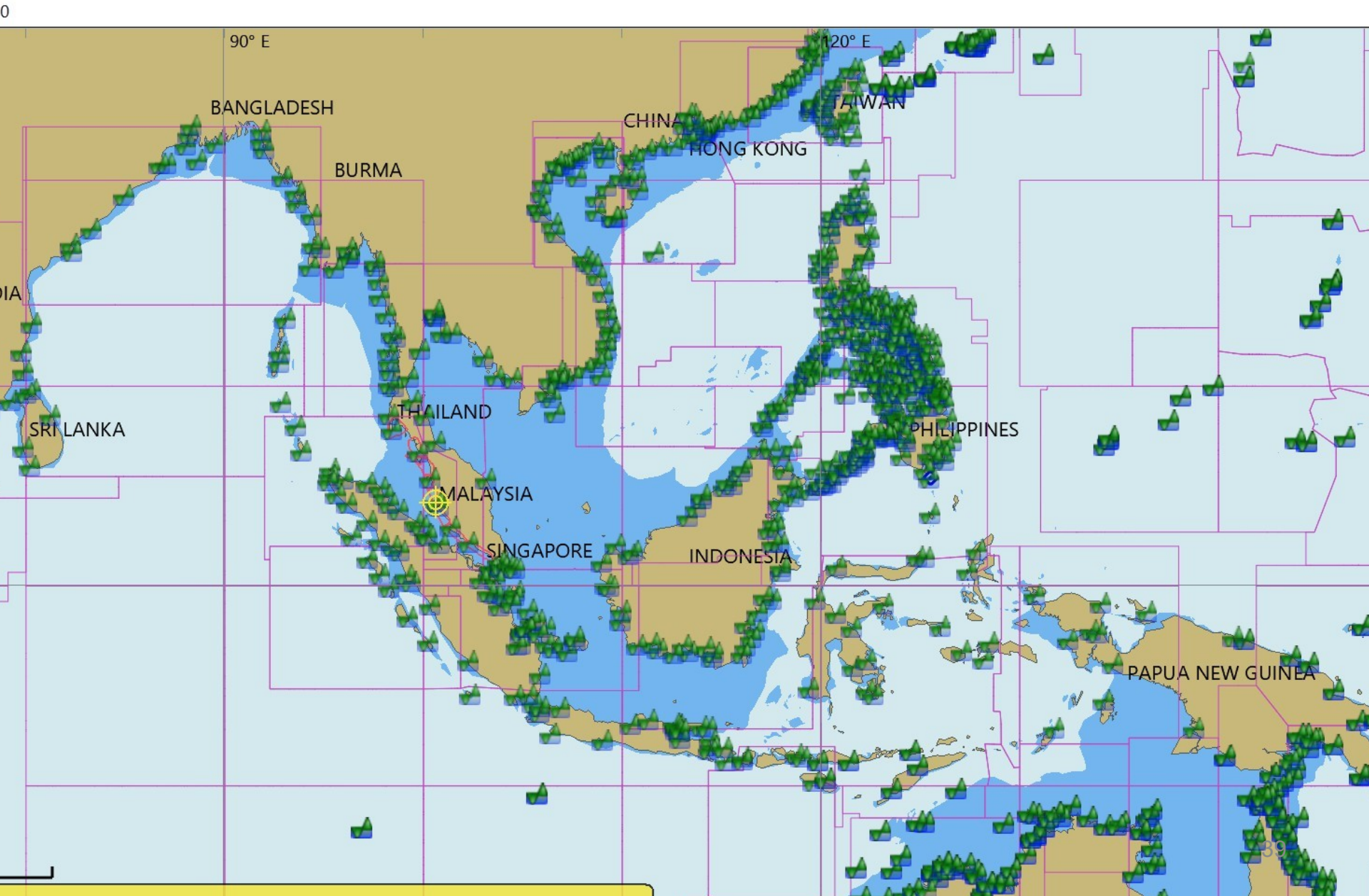
# To show the tide stations

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

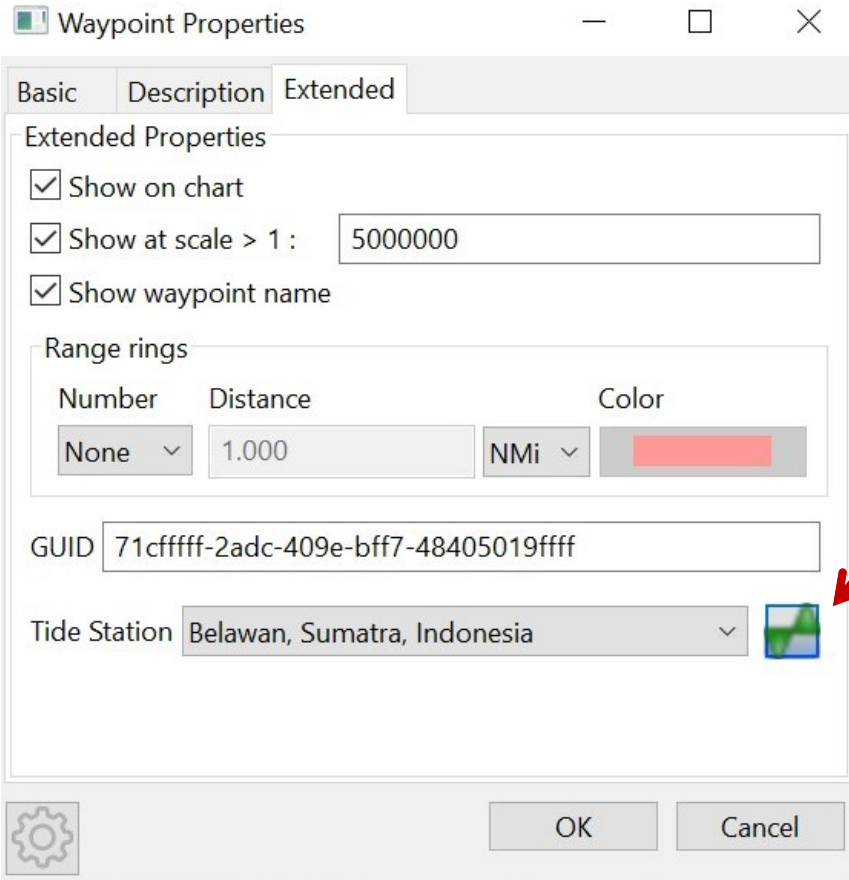




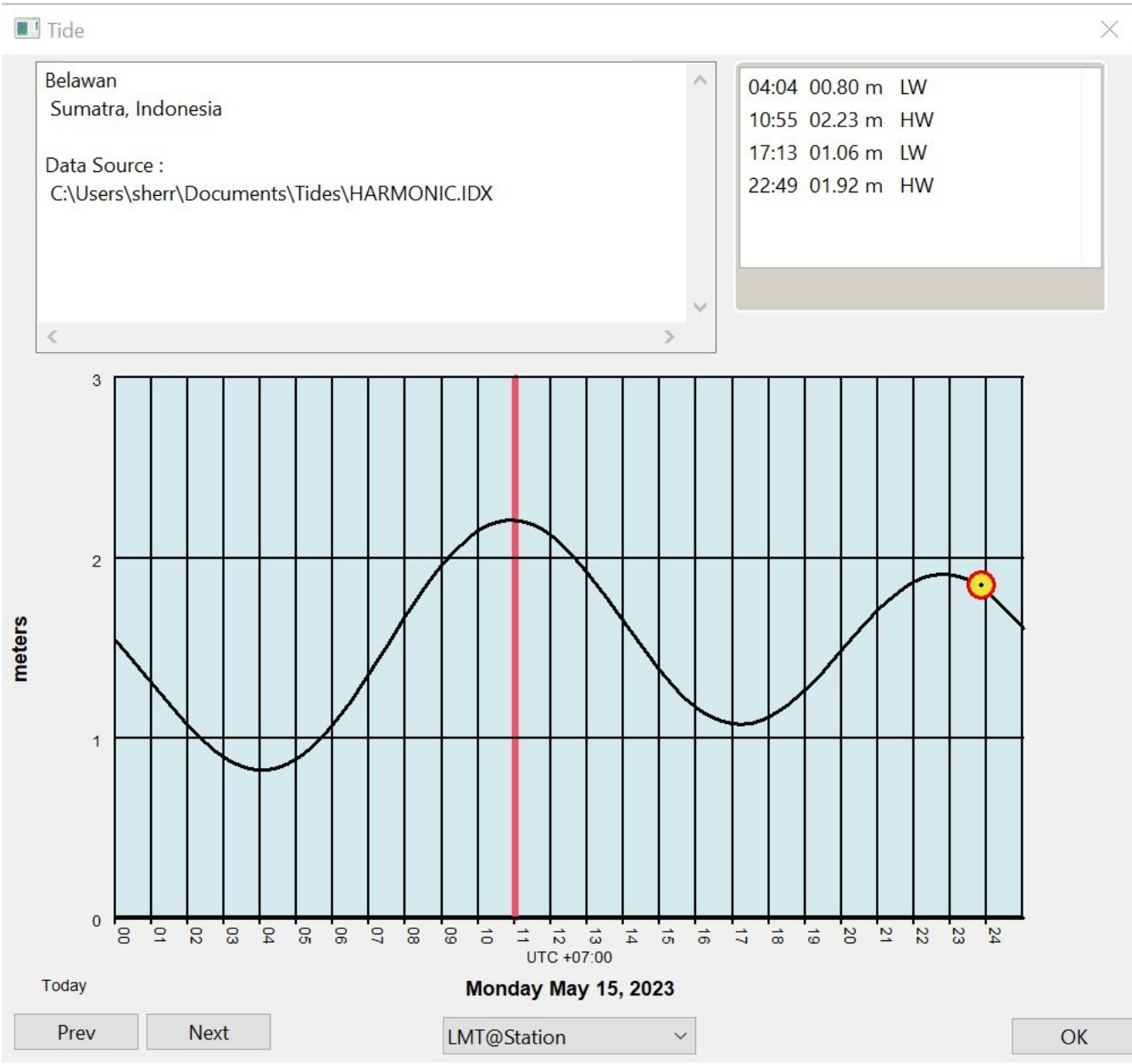
# Tide stations all over!



# Showing a Tide Station



On Waypoint Properties  
Click on the Tide Icon



# Setting Up a GPS

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





# Setting Up a GPS

Options ×

Display   Charts   **Connect**   Ships   User   Plugins

General

Filter NMEA Course and Speed data   Filter period (sec)

Show NMEA Debug Window

Format uploads for Furuno GP3X   **Special cases, ignore for now!**

Use Garmin GRMN (Host) mode for uploads

Use magnetic bearings in output sentence ECAPB

Data Connections

**Your new “connections” will show up here,  
Scroll down to see the Add Connection button**

**Scroll To add**

OK   Cancel   Apply





# Setting Up a NMEA GPS (Serial Connection)

Options ×

Display Charts **Connect** Ships User Plugins

Adjust communication priorities...

Data Connections

Your new “connections” will show up here

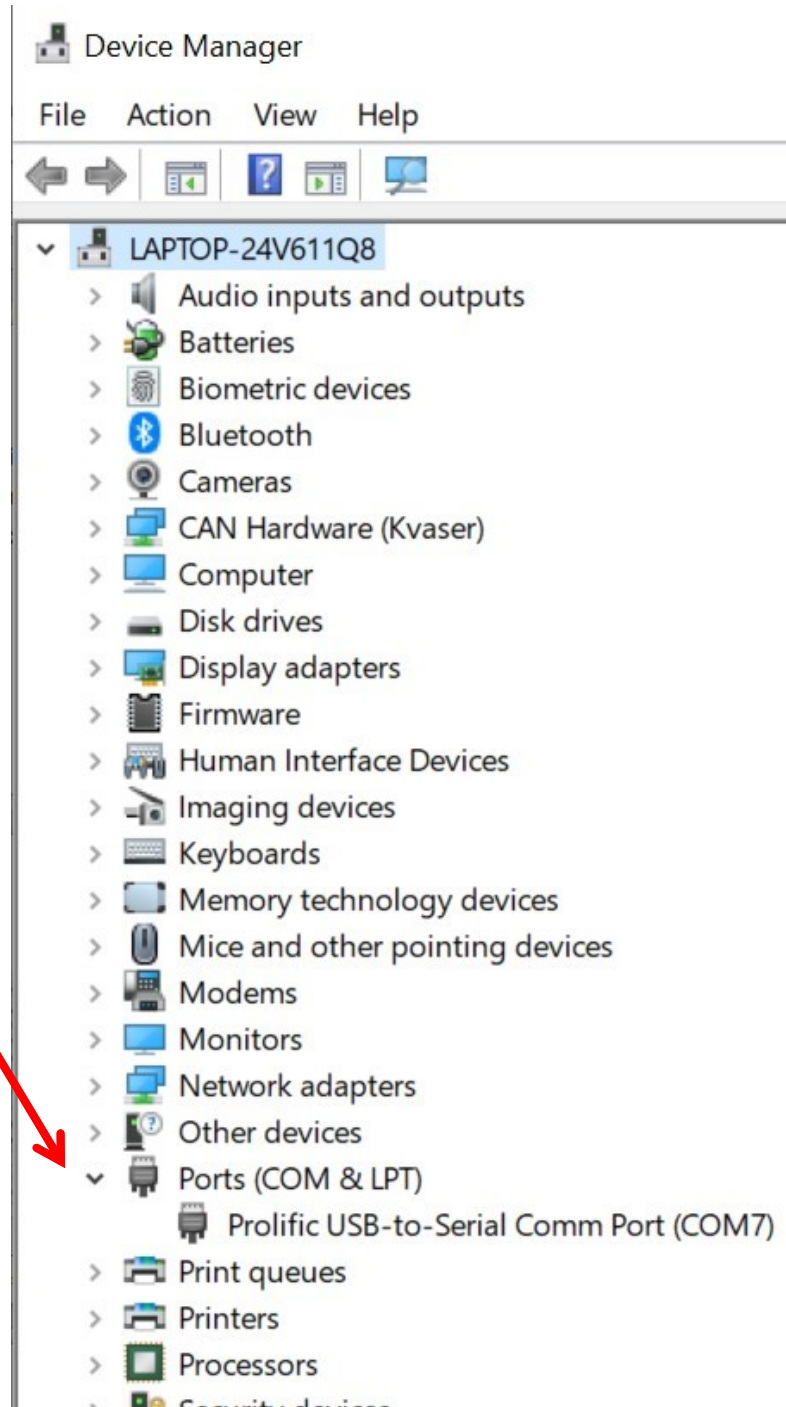
**Add Connection** Remove Connection

Serial  Network

OK Cancel Apply

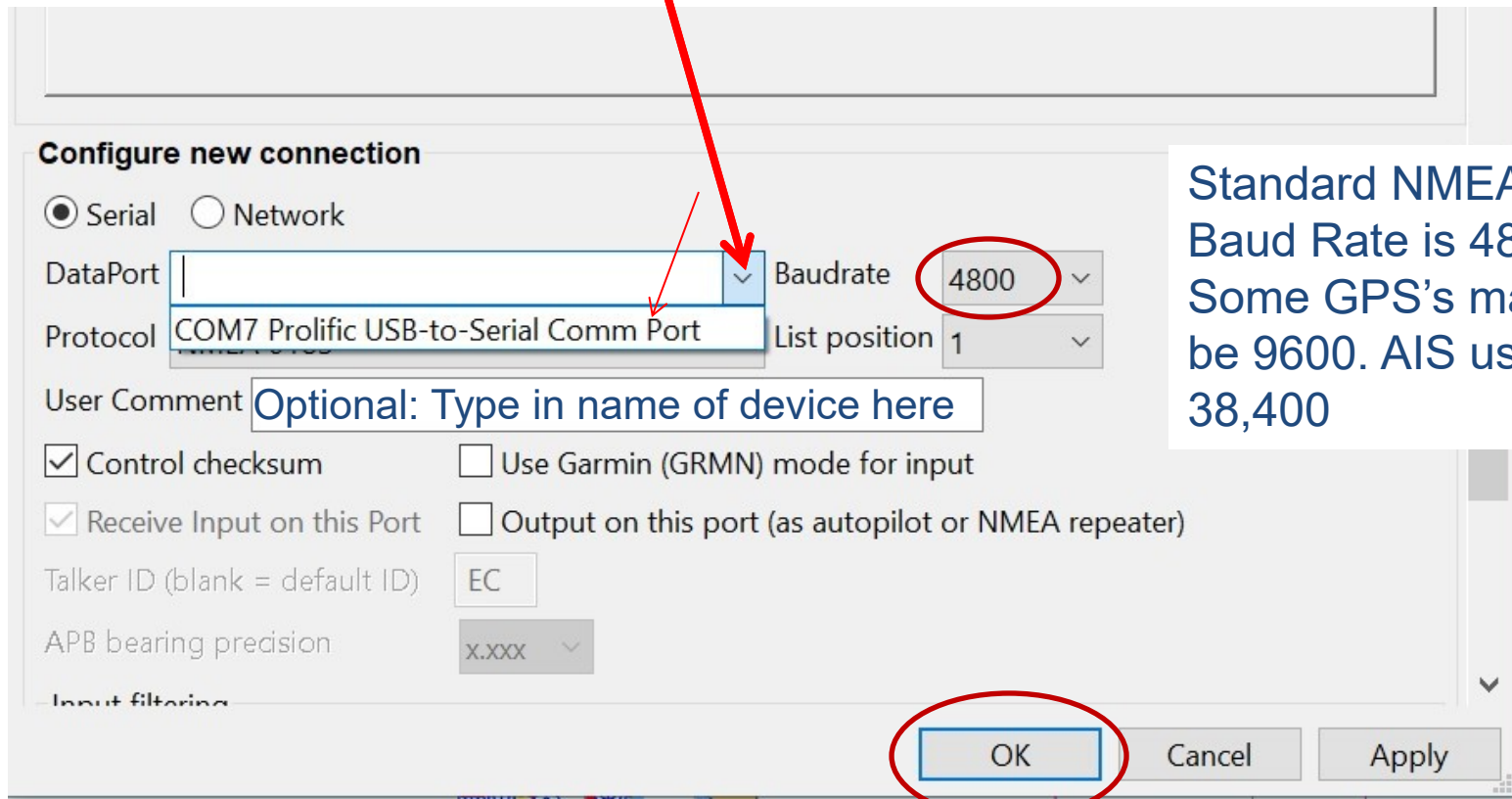
# Setting up a GPS

- First, install driver(s)
- 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

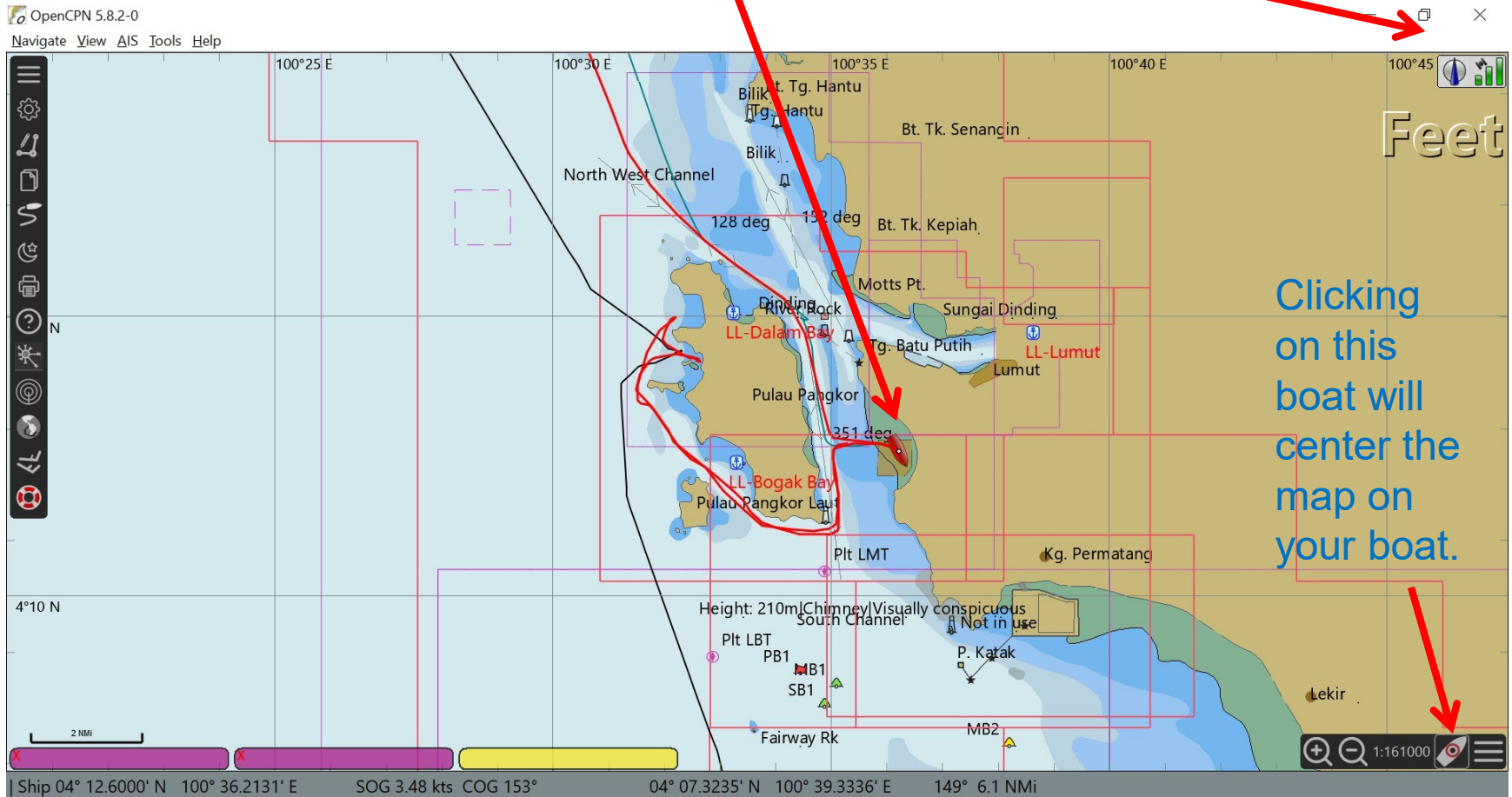


For a simple NMEA GPS for position input, that's all you need to do!

# Setting Up a GPS

Once GPS configured

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



# Do I Have a Working GPS?

The image shows a screenshot of the NMEA Debug Window and its Options dialog box. The NMEA Debug Window displays a list of NMEA sentences, including \$GPGSA, \$GPGGA, \$GPRMC, and \$GPGSV. The Options dialog box is open, showing the 'Connect' tab selected. In the 'General' section, the 'Show NMEA Debug Window' checkbox is checked and circled in red. The 'Data Connections' section shows a table with one entry: 'Serial Input NMEA 0183 COM7 4800 1' with a comment 'USB GPS'. The 'Filter' and 'Legend' sections are also visible in the NMEA Debug Window.

Options

Display Charts **Connect** Ships User Plugins

General

Filter NMEA Course and Speed data Filter period (sec) 1

Show NMEA Debug Window

Format uploads for Furuno GP3X

Use Garmin GRMN (Host) mode for uploads

Use magnetic bearings in output sentence ECAPB

Adjust communication priorities...

Data Connections

<input checked="" type="checkbox"/> Enable	Type	Direction	Protocol	Serial Port	Baudrate	List position
	Serial	Input	NMEA 0183	COM7	4800	1

Comment: USB GPS

OK Cancel Apply

If you have stuff scrolling across the NMEA Debug screen, there is data



# 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

- 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.

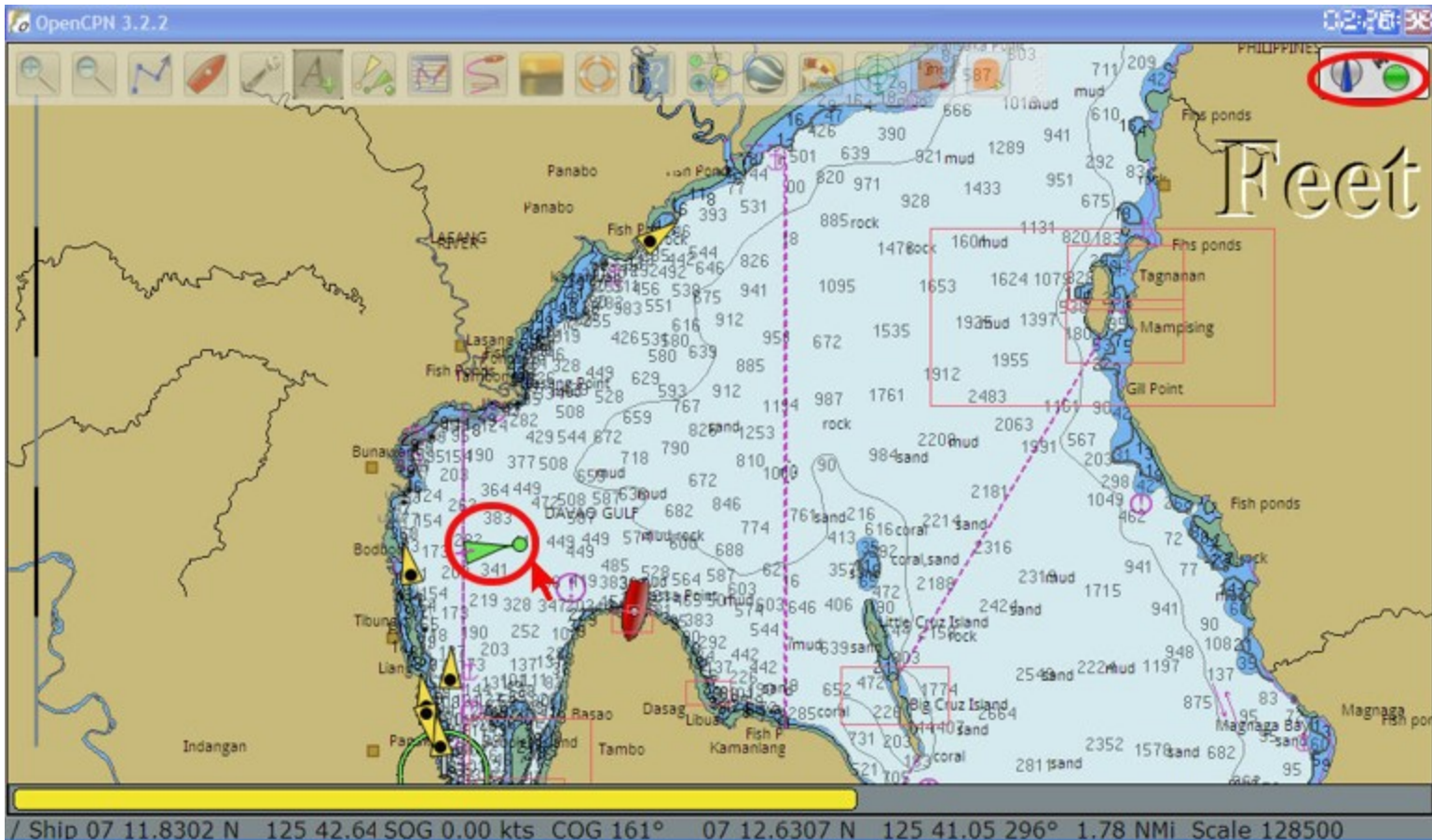
Newer AIS's may supply AIS (and maybe position) by Wifi. OpenCPN can do this by adding the connection as a Network connection.

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

# Working with AIS in OpenCPN

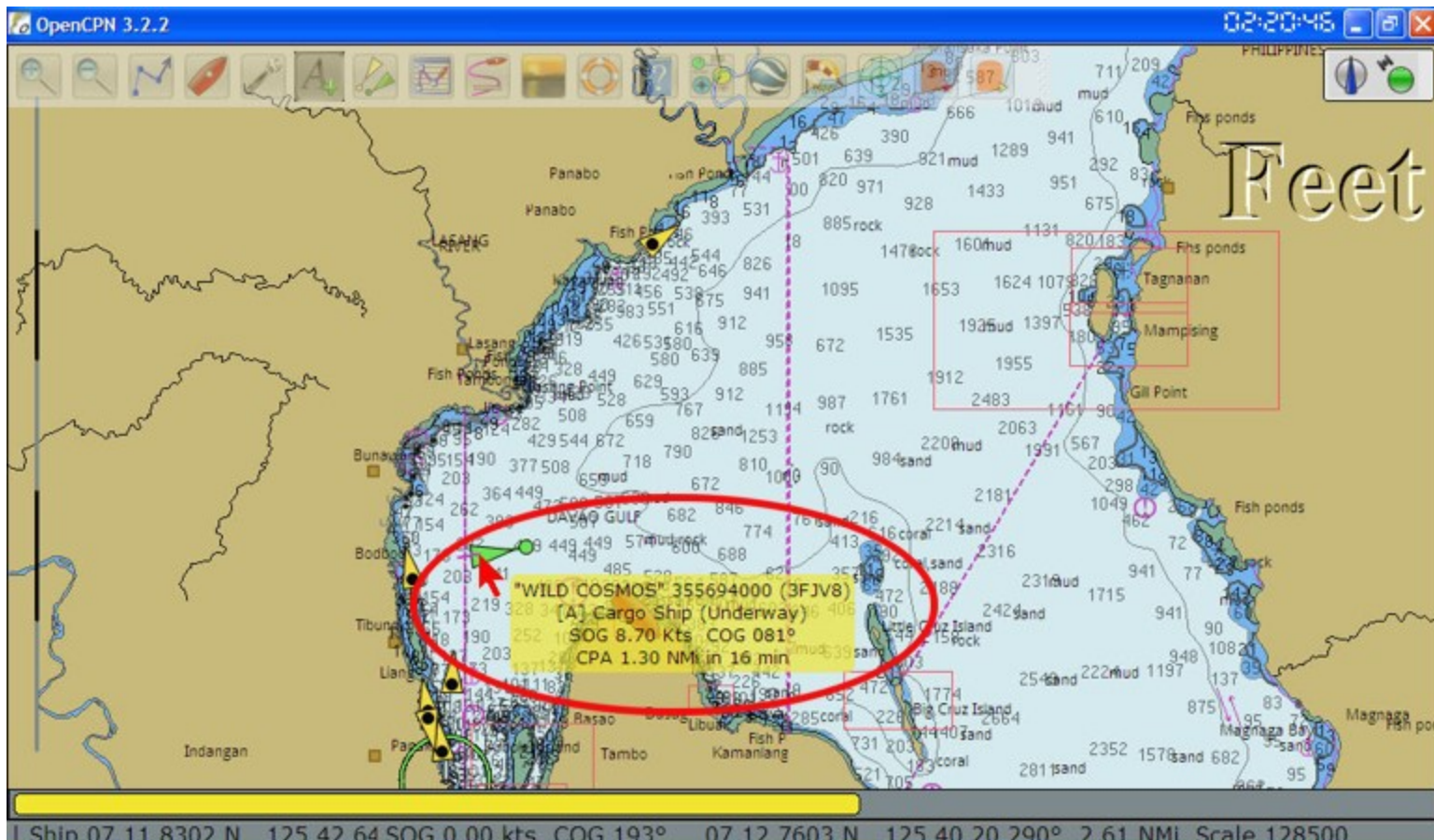
Once installed and configured – Ships with AIS on your chart!

- Ships at anchor – Yellow with black dot
- Ships underway – Green
- GPS Status Indicator Green Ball



# Working with AIS in OpenCPN

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

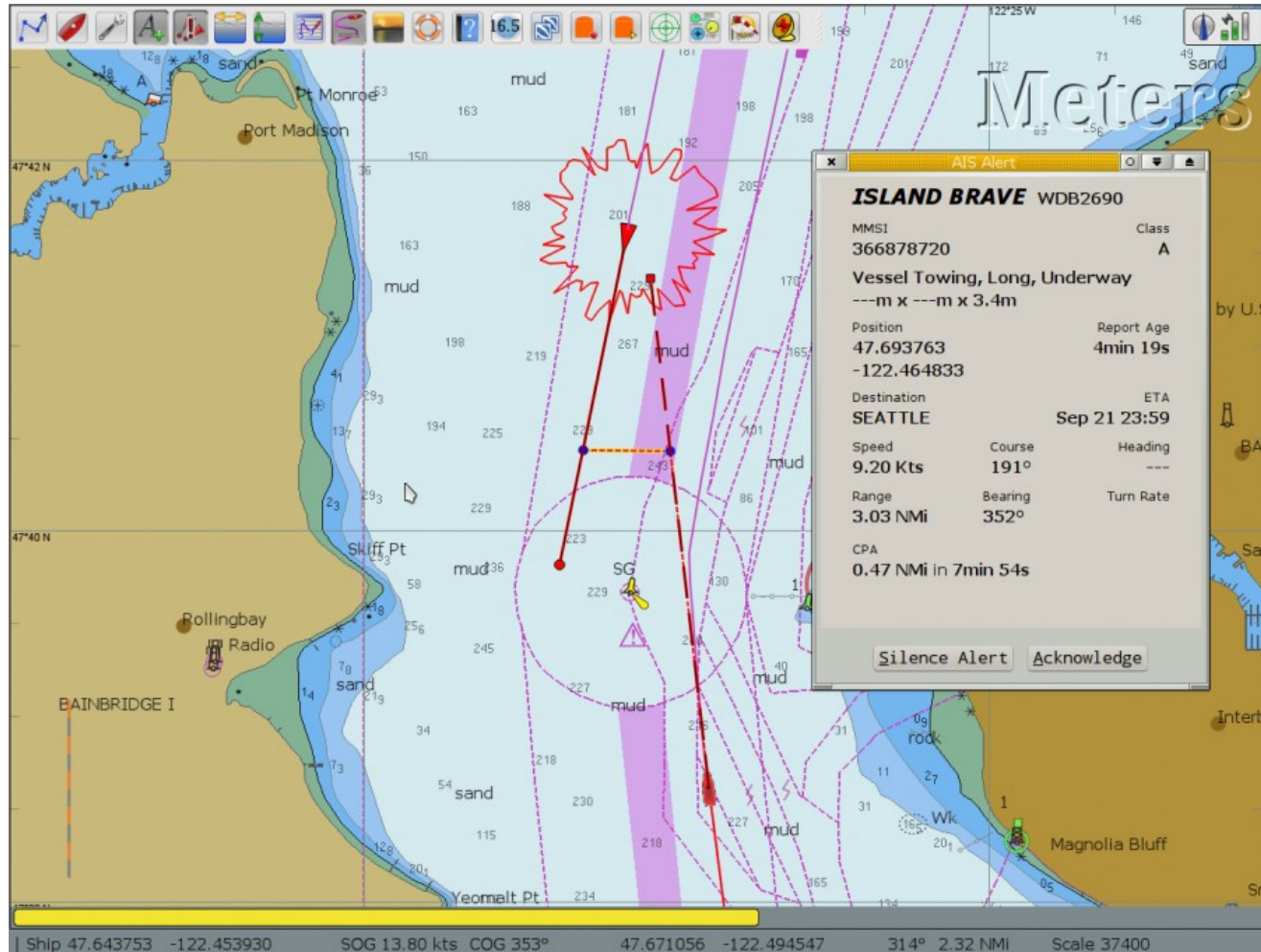




# Working with AIS in OpenCPN

Right click on target to show AIS Target Data and CPA

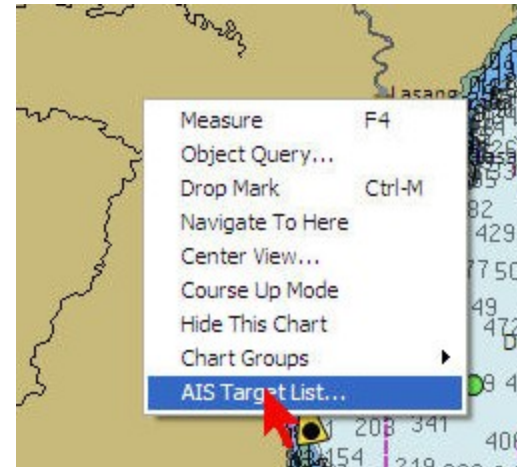
See  
OpenCPN  
Manual for  
LOTS more  
on AIS in  
OpenCPN





# Working with AIS in OpenCPN

- Right-click anywhere on chart to pop up the AIS Target List
- Note details of ships in the list



Name	Call	MMSI ▲	Class	Type	Nav Status	Brg	Range	CoG	SoG
CALA PIANA	PJBW	306338000	A	Unknown	Undefined	-	-	-	-
Unknown		308462000	A	Unknown	Moored	002	5.73	226	0.0
AUTUMN WAVE	C6LF9	308668000	A	Unknown	Undefined	-	-	-	-
SASANQUA	3FFV3	352256000	A	Cargo Ship	Undefined	-	-	-	-
<b>WILD COSMOS</b>	<b>3FJV8</b>	<b>355694000</b>	<b>A</b>	<b>Cargo Ship</b>	<b>Underway</b>	<b>291</b>	<b>2.57</b>	<b>081</b>	<b>8.8</b>
Unknown		357094000	A	Unknown	At Anchor	250	3.05	112	0.0
Unknown		357322000	A	Unknown	Moored	279	3.52	254	0.1
QING HE	VRCD2	477296500	A	Cargo Ship	Undefined	-	-	-	-
Unknown		477866500	A	Unknown	Moored	235	3.68	211	0.0
Unknown		574240000	A	Unknown	Moored	246	3.56	286	0.0
Unknown		574400000	A	Unknown	Moored	244	3.60	000	0.0

Target info  
Center View  
Limit range: NM  
40  
Target Count  
11

# Working with AIS in OpenCPN



Optional AIS Radar View Plugin  
(May have been removed in 5.8)



# Working with AIS in OpenCPN

Options

03:19:39

Display Connections Charts **Ships** User Interface Plugins

Own Ship **AIS Targets**

CPA Calculation

- No CPA Calculation if target range is greater than (NMI) 15.0
- Warn if CPA less than (NMI) 0.3
- ...and TCPA is less than (min) 3

Lost Targets

- Mark targets as lost after (min) 8
- Remove lost targets after (min) 10

Display

- Show target COG predictor arrow, length (min) 5
- Show target tracks, length (min) 20
- Hide anchored/moored targets, speed max (kn) 0.2
- Show area notices (from AIS binary messages)
- Show AIS targets real size

Rollover

\*Ship Name\* MMSI (Call Sign)

- [Class] Type (Status)
- SOG COG
- CPA TCPA

CPA/TCPA Alerts

- Show CPA/TCPA Alert Dialog

Select Alert Sound

Ok Cancel Apply

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

For more help, see the  
OpenCPN manual!

# 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
- 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)

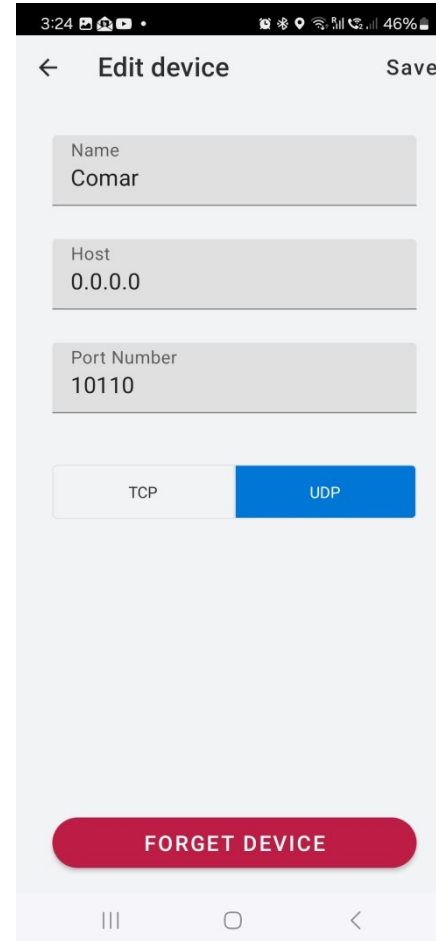
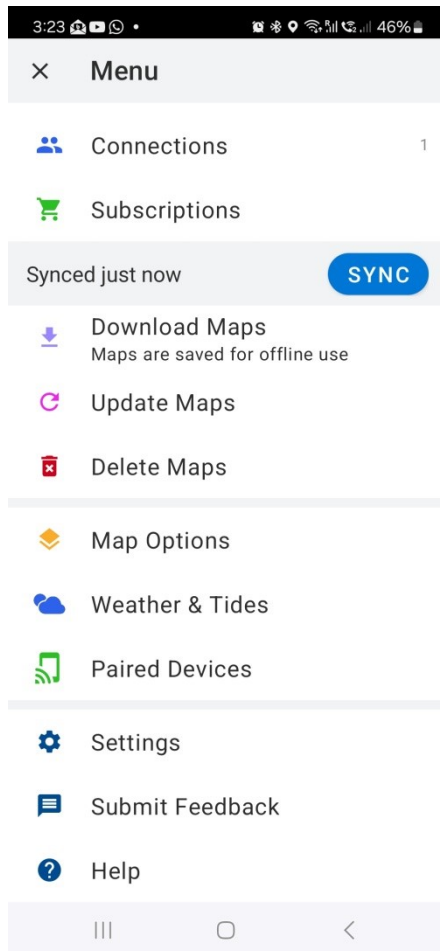
Show NMEA Debug Window  
 Format uploads for Furuno GP3X  
 Use Garmin GRMN (Host) mode for uploads  
 Use magnetic bearings in output sentence APB  
 NMEA0183 Talker ID

Adjust communication priorities...

Data Connections

<input checked="" type="checkbox"/>	Enable	Type	Direction	Protocol	Serial Port	Baudrate	<b>AIS</b>
	Serial	Input	NMEA 0183	COM4	38400		
Comment: Watchmate AIS							
<input type="checkbox"/>	Enable	Type	Direction	Protocol	Serial Port	Baudrate	<b>Garmin Hand Held (Backup)</b>
	Serial	Input	NMEA 0183	Garmin-USB	4800		
Comment: Garmin USB Spanner Mode							
<input checked="" type="checkbox"/>	Enable	Type	Direction	Protocol	Serial Port	Baudrate	<b>Raymarine Instruments</b>
	Serial	Input	NMEA 0183	COM3	4800		
Comment: NMEA Instruments							
<input checked="" type="checkbox"/>	Enable	Type	Direction	Protocol	Network Address	Network Port	<b>AIS to Marine Traffic</b>
	Network	Output	UDP N0183	5.9.207.224	11305		
Comment: Marine Traffic Broadcast							
<input checked="" type="checkbox"/>	Enable	Type	Direction	Protocol	Network Address	Network Port	<b>Everything to Local Network</b>
	Network	Output	UDP N0183	192.168.6.255	10110		
Comment: Local NMEA Broadcast							
<input type="checkbox"/>	Enable	Type	Direction	Protocol	Network Address	Network Port	<b>Get data from Another computer</b>
	Network	Input	UDP N0183	0.0.0.0	10110		
Comment: Receive data via network							

# Navionics Setup on Phone/Tablet

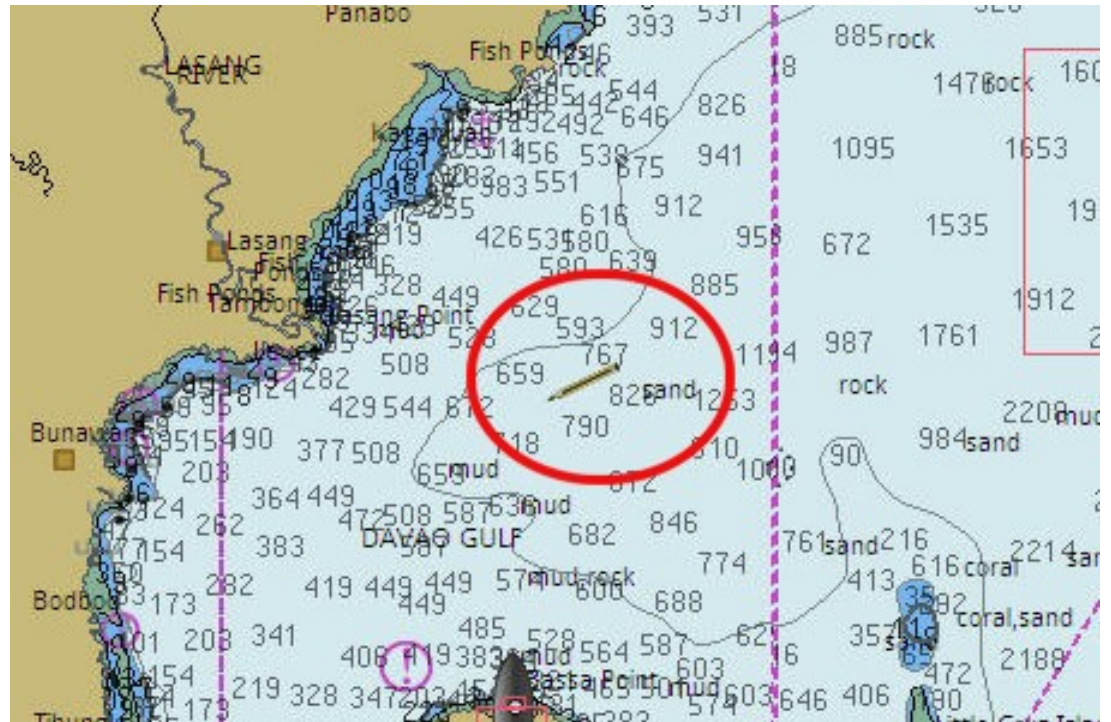


# Routes

## Create a Route



Select "Create Route"

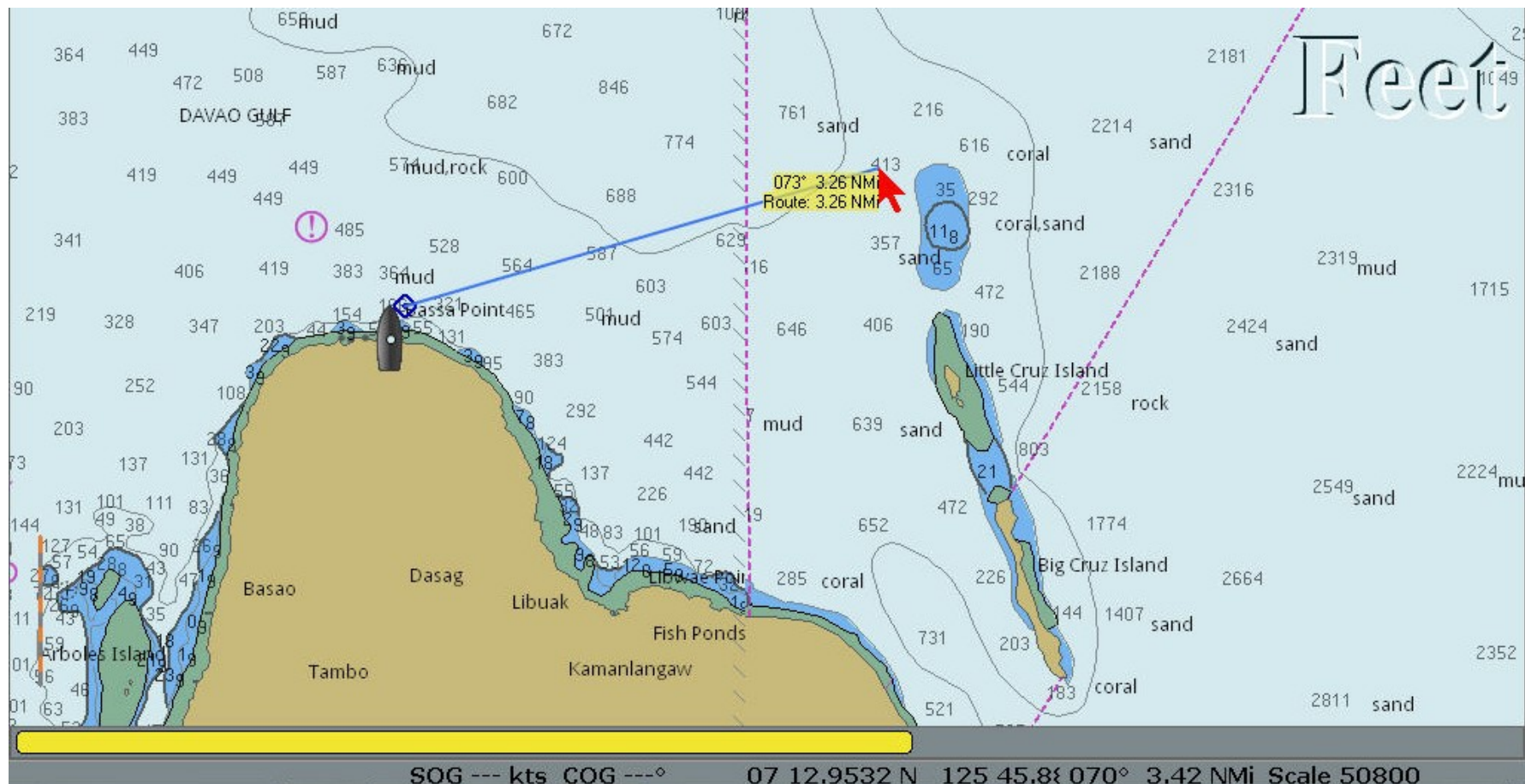


The Cursor turns into a pencil shape

# Routes

## Create a Route

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

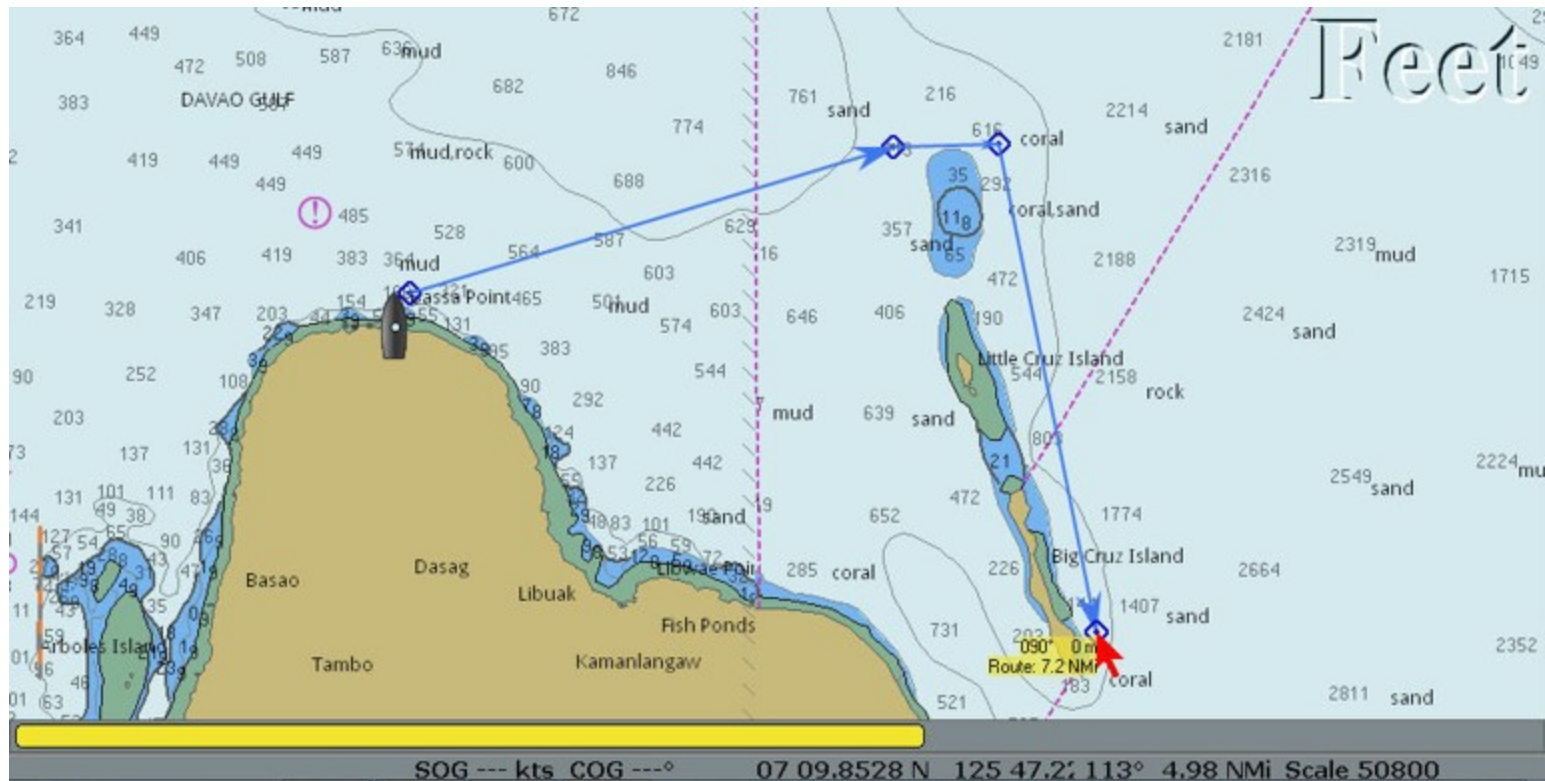




# Routes

## Create a Route

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

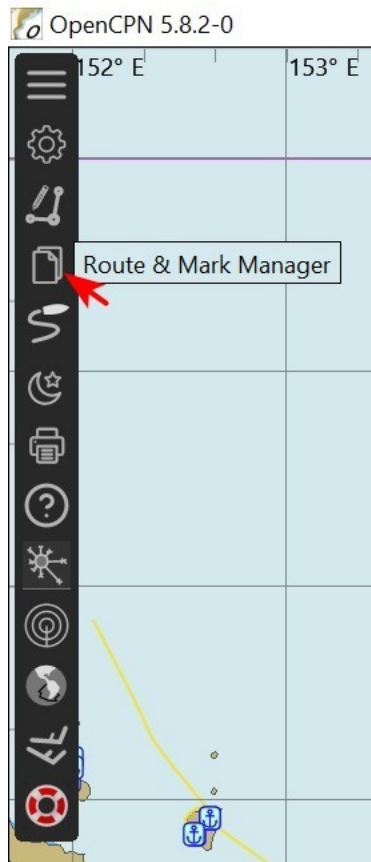




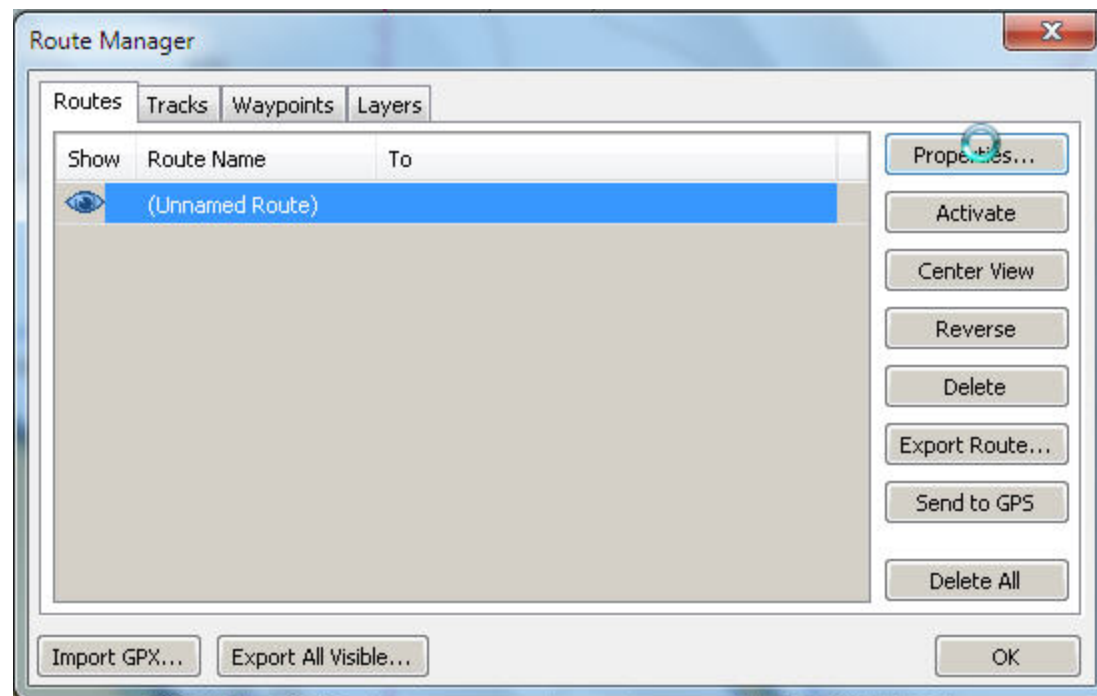
# Routes

## 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

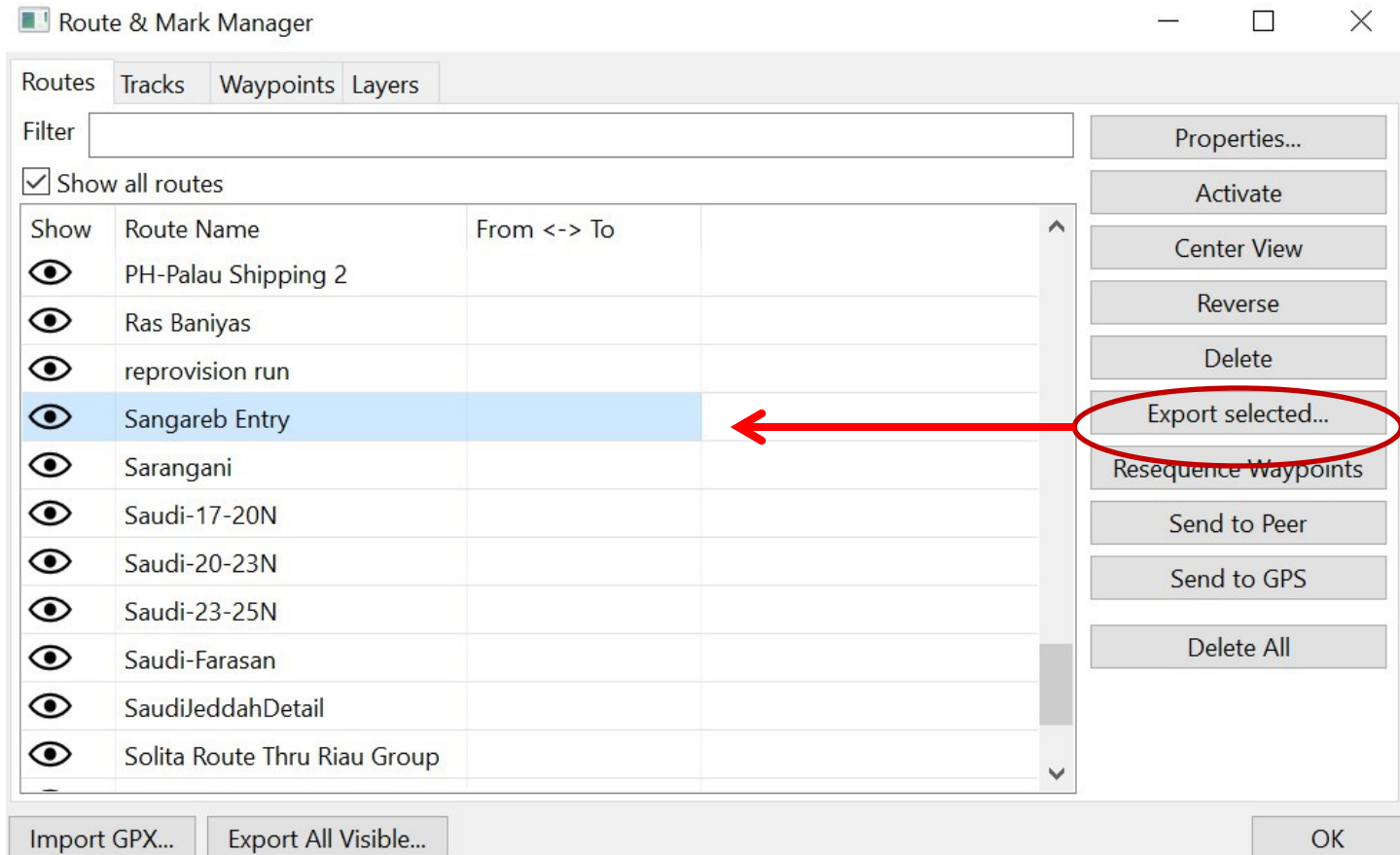
L...	To way...	Dista...	Bear...	Total Dist...	Latitude	Longitu...	ETE	ETA	Spe...	Next tide ...	Description	Course	ETD
---	FEND1	1684....	288 °T	0.0 NMi	22° 53.4'...	036° 18...	11d 16...	Start: 5/12/2...	6			248 °T	
1	FEND2	0.4 N...	248 °T	0.4 NMi	22° 53.3'...	036° 18...	3M 58S	5/12/2023 1...	6			334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

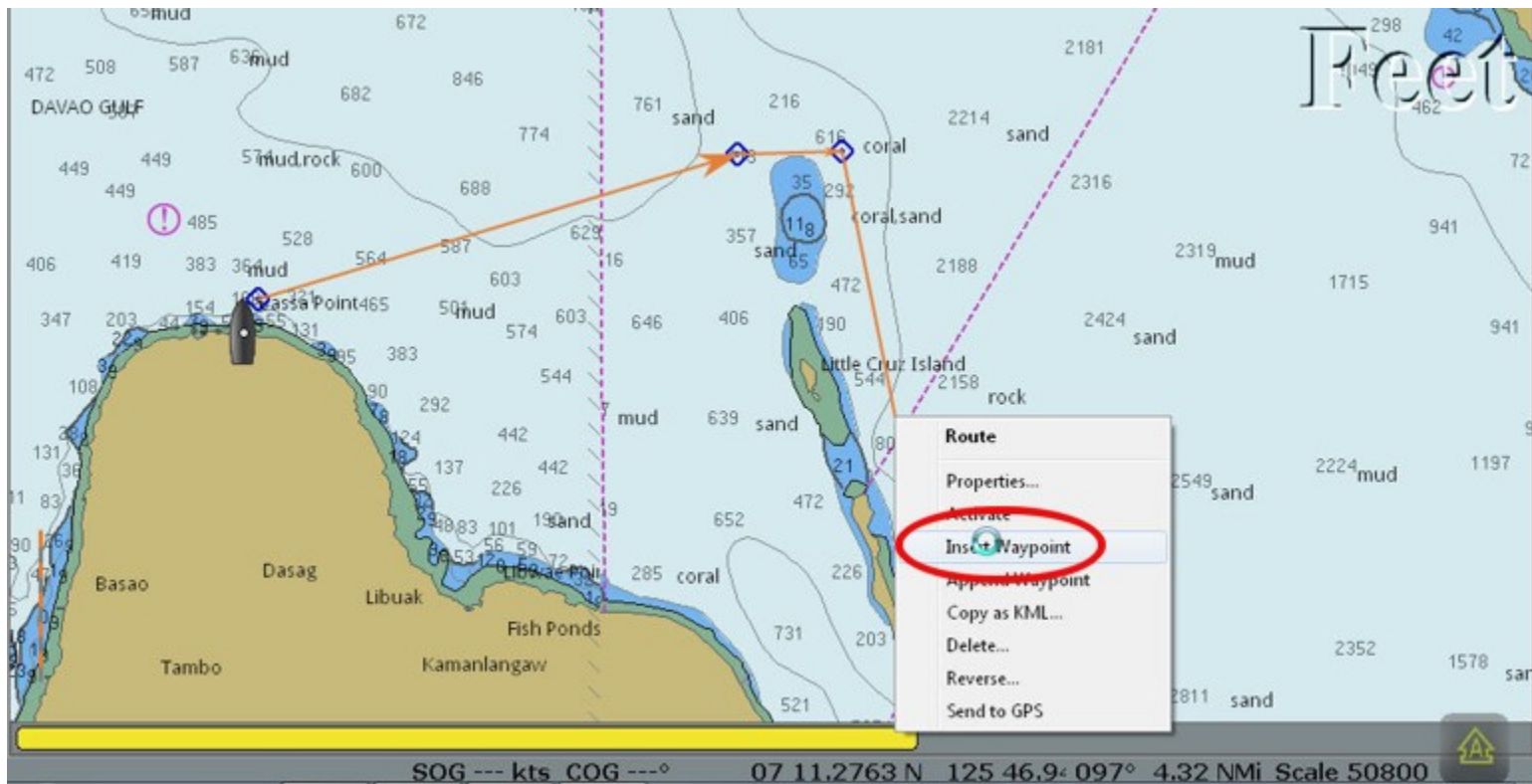
- To save a route outside of OpenCPN (for backup, to share with others)
  - Highlight route
  - Click Export Selected and Save as a file



# Routes

## Change a Route

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



# Routes

## Change a Route

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





# Routes

## Change a Route

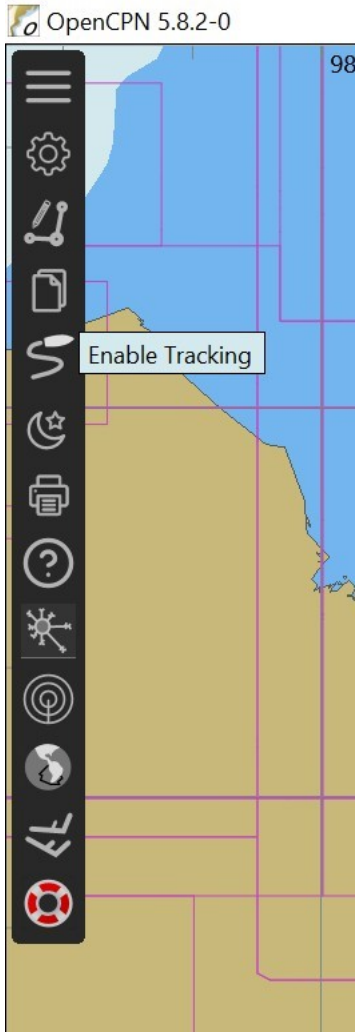
If you can't drag a waypoint, check settings

The screenshot shows the 'Options' dialog box with the 'Routes/Points' tab selected. The 'Ships' icon is highlighted in the top toolbar. The 'New Routes' section includes a 'Waypoint default icon' dropdown set to 'Diamond', a 'Waypoint Arrival Circle Radius (NMi)' text box with '0.050', and an unchecked checkbox for 'Advance route waypoint on arrival only'. The 'New Waypoints' section includes a 'Waypoint default icon' dropdown set to 'Anchorage', a checked checkbox for 'Show waypoints only at a chartscale greater than 1:' with a text box containing '5000000', an unchecked checkbox for 'Override the settings for chartscale based visibility and show always', and a 'Waypoint range rings' dropdown set to 'None'. The 'Control Options' section at the bottom has a circled and red-arrowed 'Lock Waypoints (Unless waypoint property dialog visible)' checkbox, and a checked checkbox for 'Confirm deletion of tracks and routes'. The 'OK', 'Cancel', and 'Apply' buttons are at the bottom right.

# Tracks

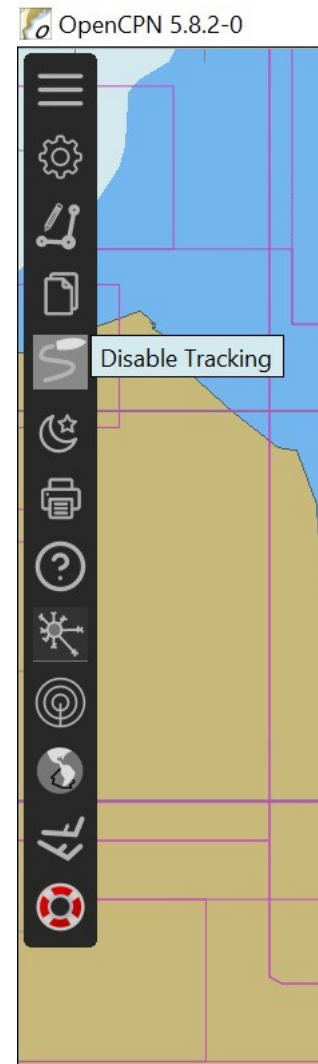
Click on the Tracking Icon to activate tracking

Creating a Track



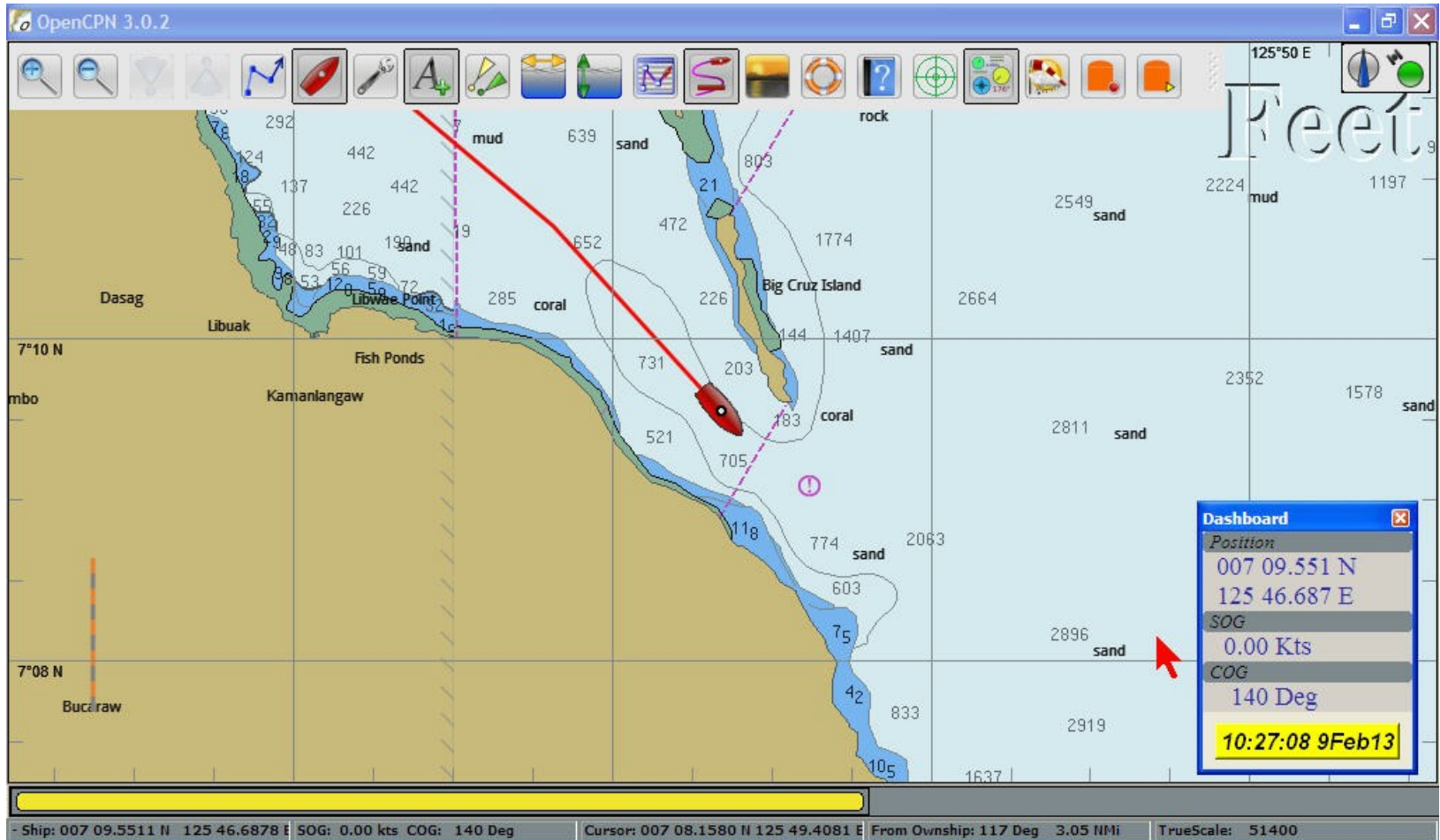
Now it is highlighted  
Click again to Disable

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

**Route Manager**

Track name	Length
2013-02-09 02:24:02	4.97

Buttons: Start Track, Properties, Delete, Export Track..., Refresh track, Delete All

Buttons: Import GPX..., Export All..., OK

**Dashboard**

Position  
007 09.551 N  
125 46.687 E

SOG  
0.00 Kts

COG  
140 Deg

10:27:41 9Feb13

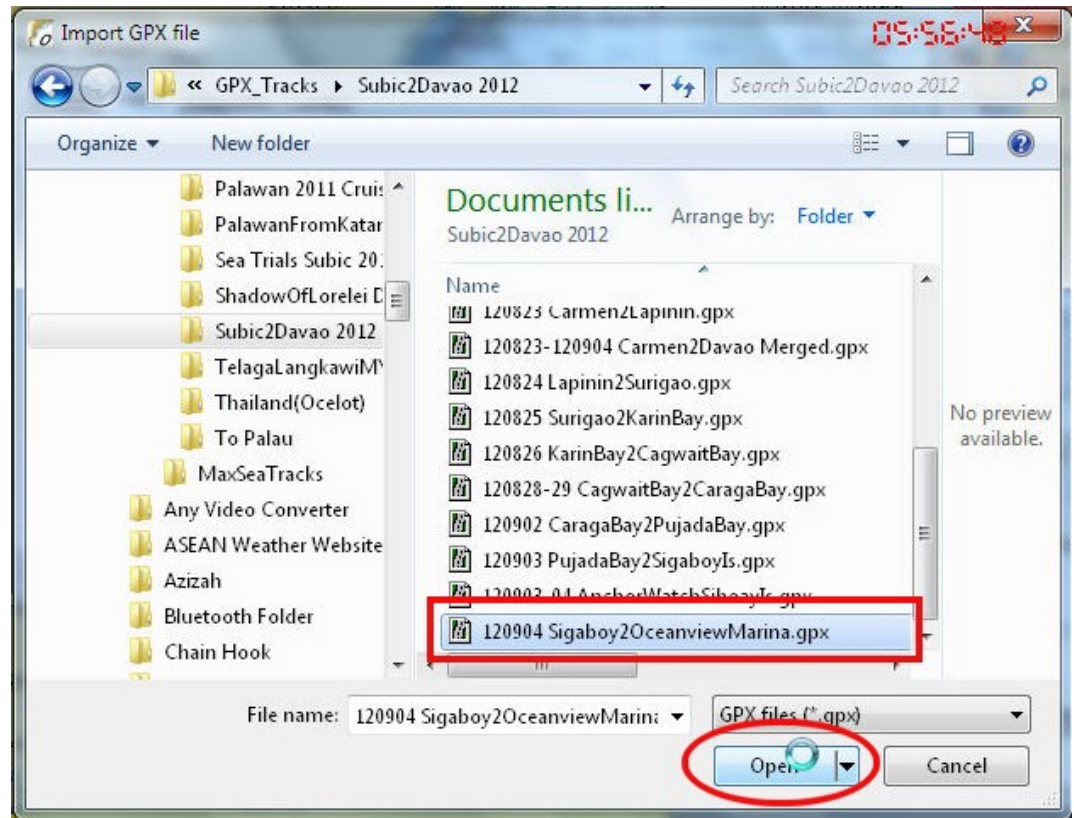
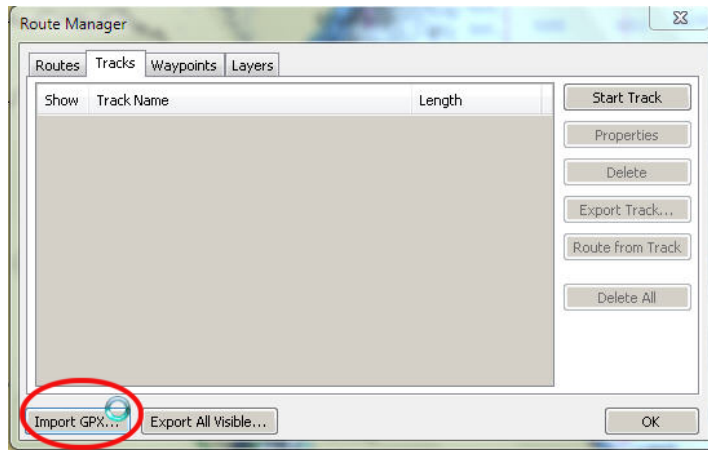
Ships: 007 09.5511 N 125 46.6878 | SOG: 0.00 kts COG: 140 Deg | Cursor: 007 11.1966 N 125 46.6088 E | From Ownship: 357 Deg 1.65 Mm | TrueScale: 51400

# Importing Tracks

## Route Manager

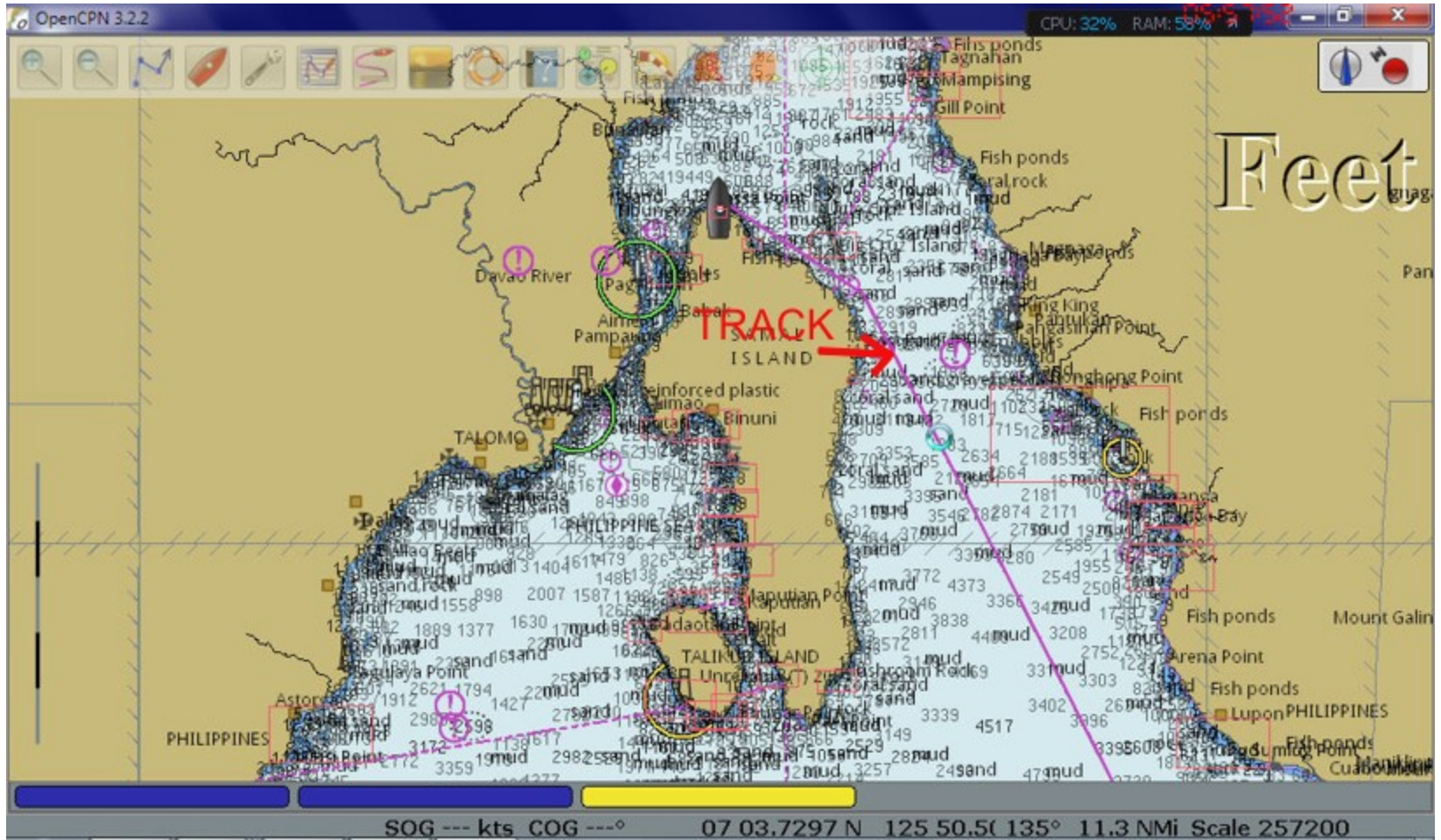
- Select Tracks tab
- Click on Import

Navigate to saved tracks location  
Click Open



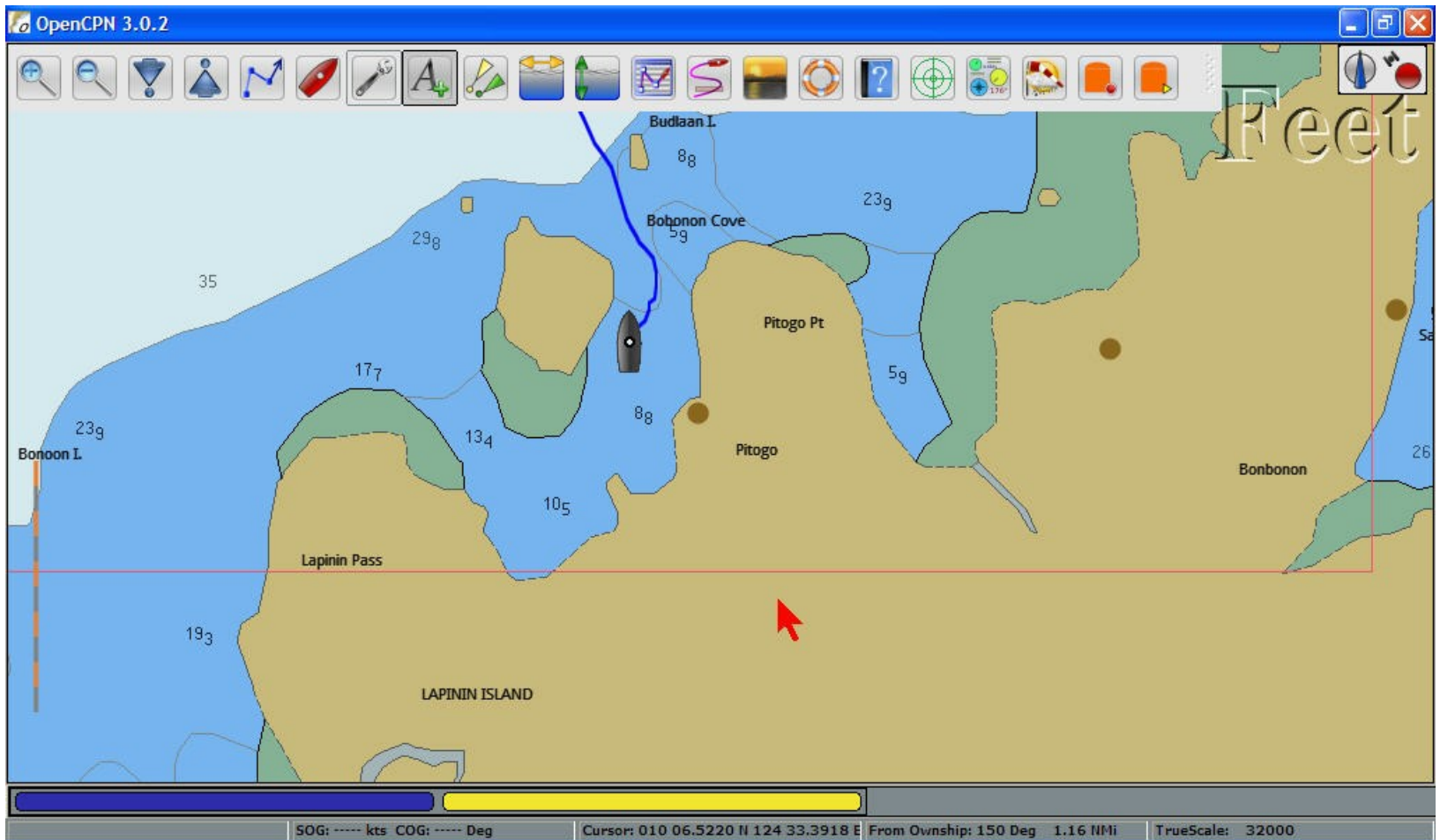


# Importing Tracks



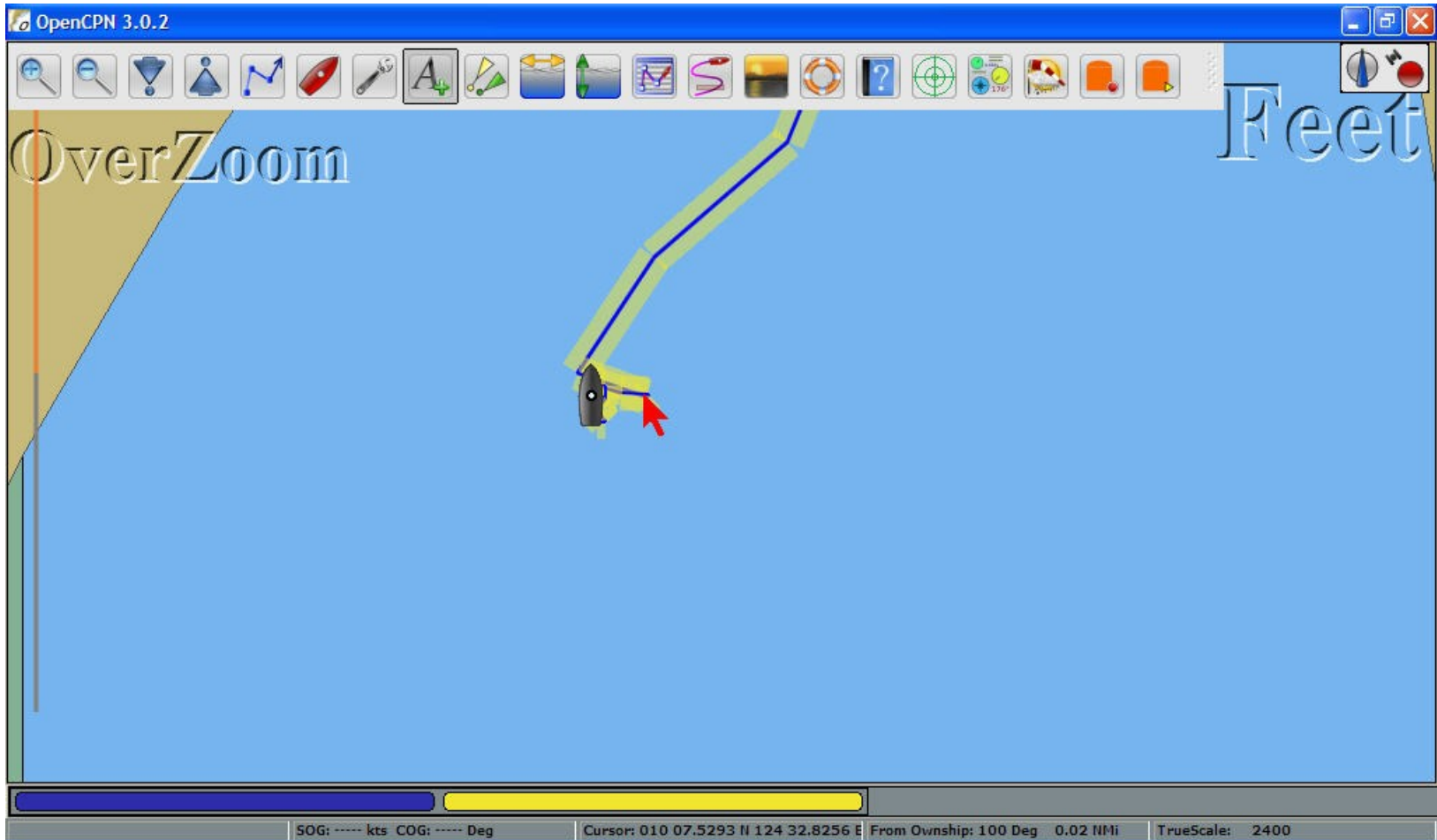
# Saving Waypoints (Marks)

Shown below is the arrival at an anchorage



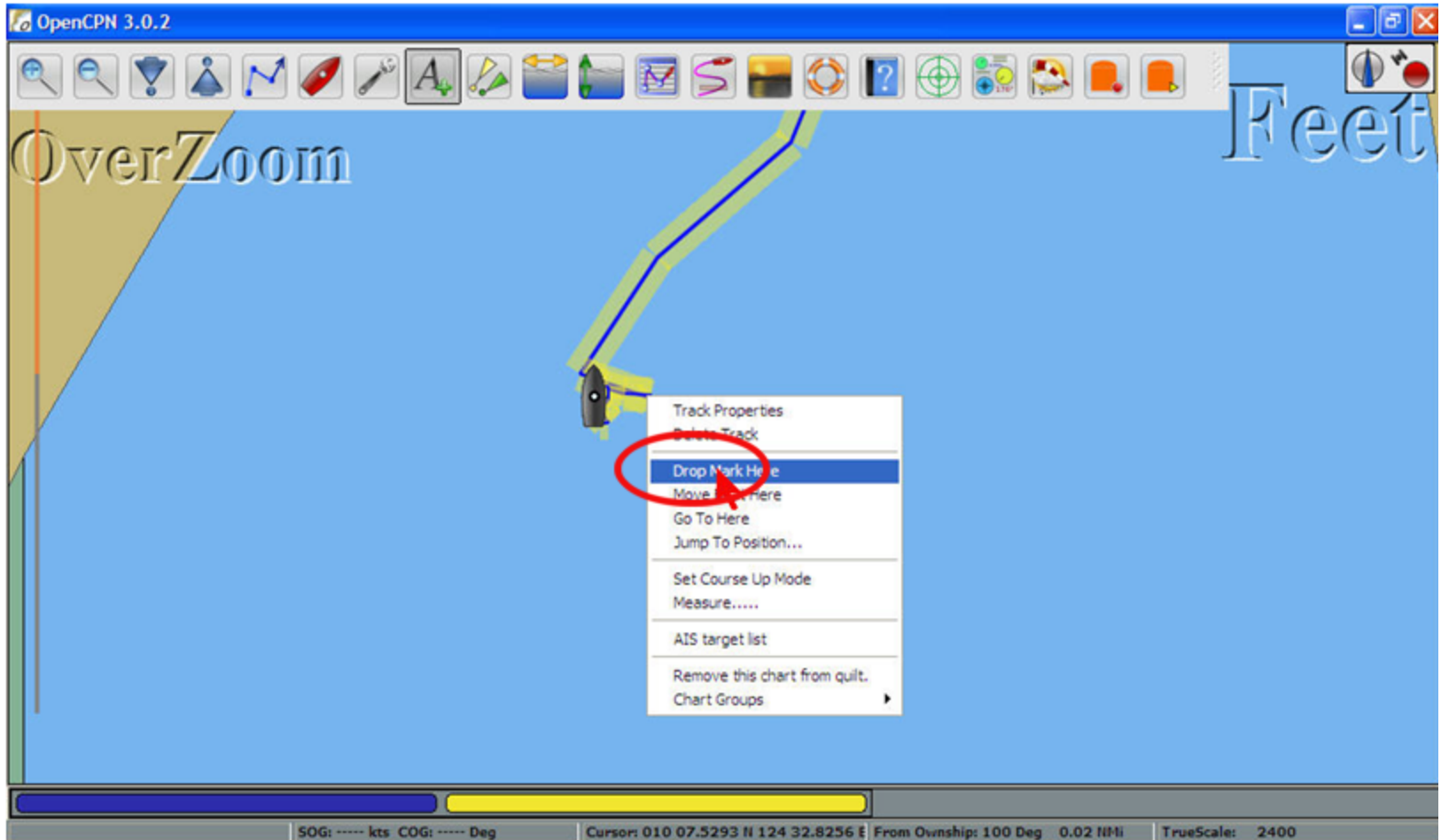
# Saving Waypoints (Marks)

Zoom in to see where the anchor was dropped



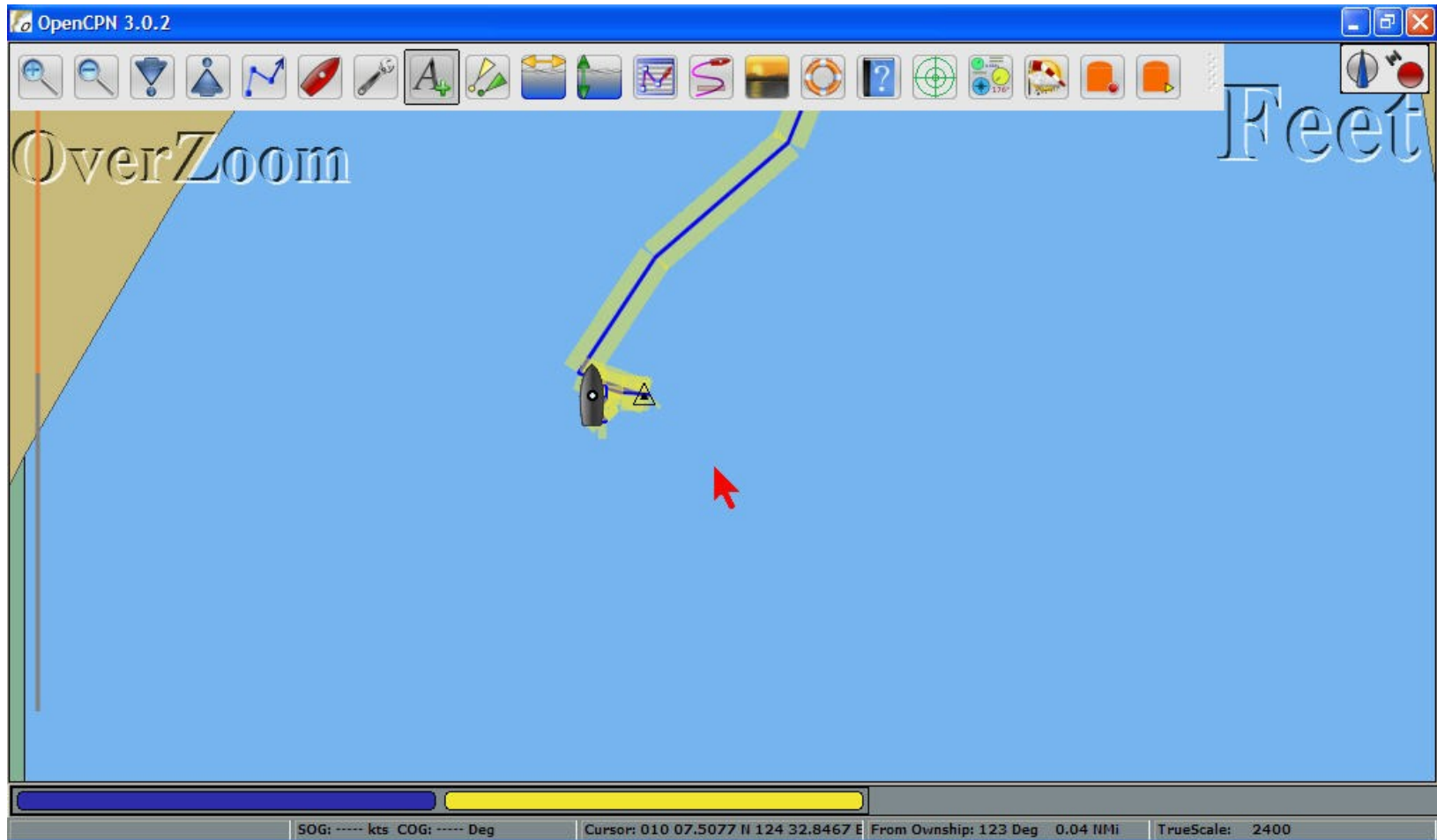
# Saving Waypoints (Marks)

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



# Saving Waypoints (Marks)

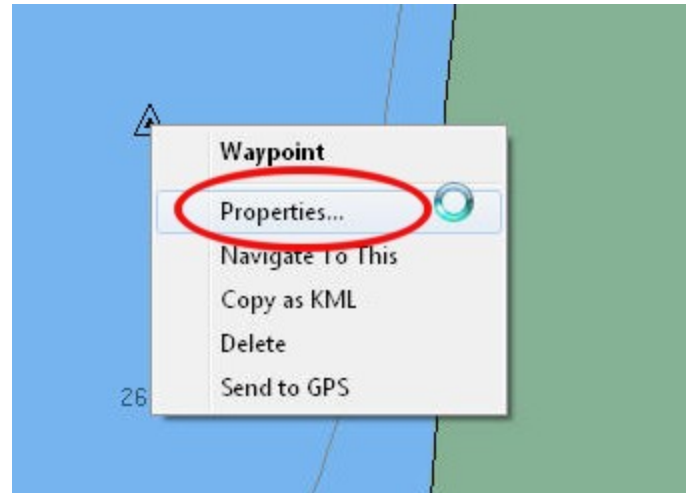
A MARK APPEARS AT THE SELECTED POINT  
(Which mark type depends on your mark defaults)





# 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 screenshot shows the 'Waypoint Properties' dialog box with the 'Basic' tab selected. The dialog has three tabs: 'Basic', 'Description', and 'Extended'. The 'Basic' tab contains the following fields and controls:

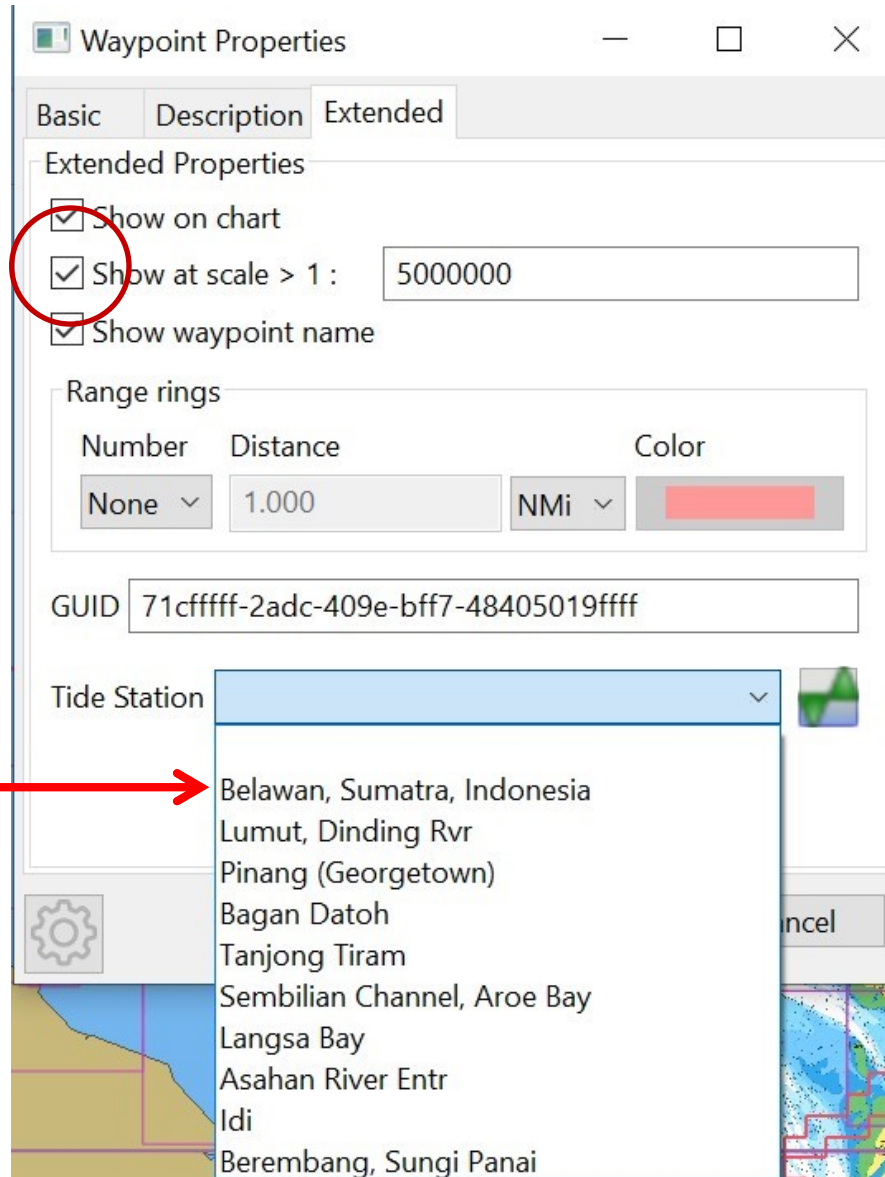
- Name:** A text input field containing 'GIVE ME A NAME PLEASE'.
- Show name:** A checked checkbox.
- Icon:** A dropdown menu showing an anchor icon and the text 'Anchorage'.
- Latitude:** A text input field containing '04° 35.2590' N'.
- Longitude:** A text input field containing '099° 32.2891' E'.
- 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 three-dot menu button.
- Links:** A section header with a downward arrow button below it.

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

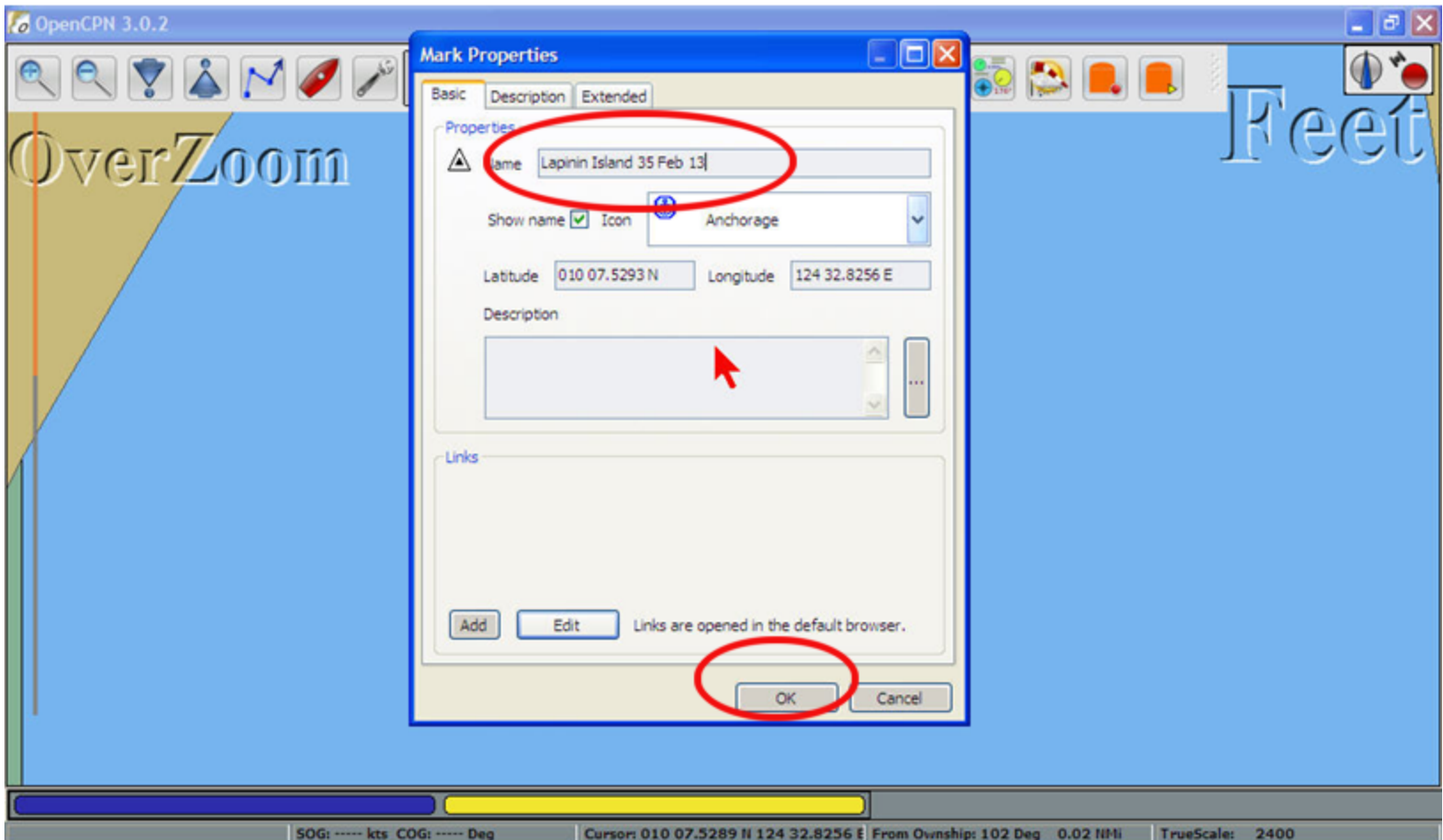
Hide waypoints  
On zoom out  
(set as default  
For new wpts)

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

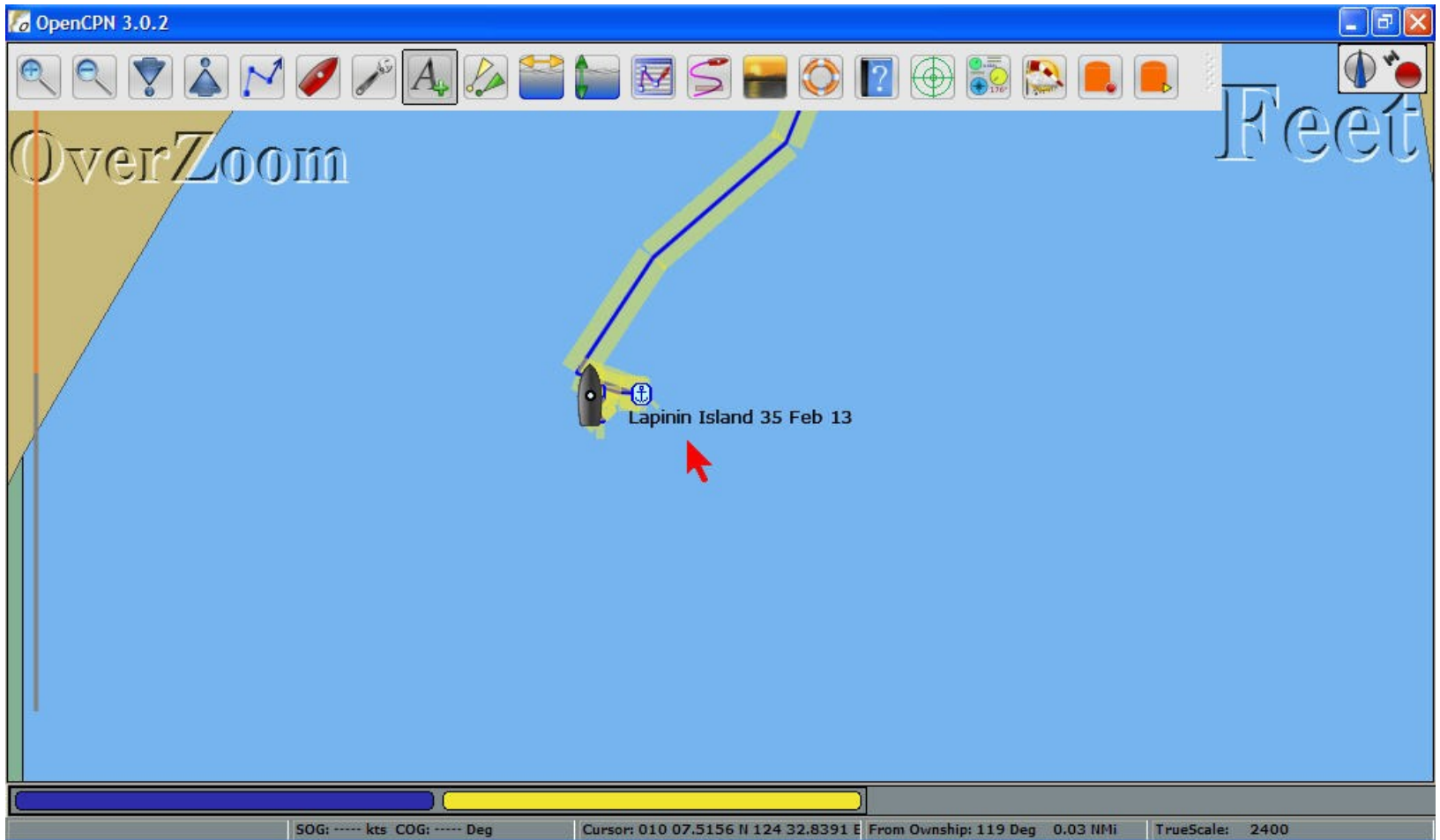


# Changing Waypoints (Marks)

Also change name, and add a short description



# Changing Waypoints (Marks)





# Saving Waypoints (Marks)

Waypoints can be manipulated just like routes and tracks

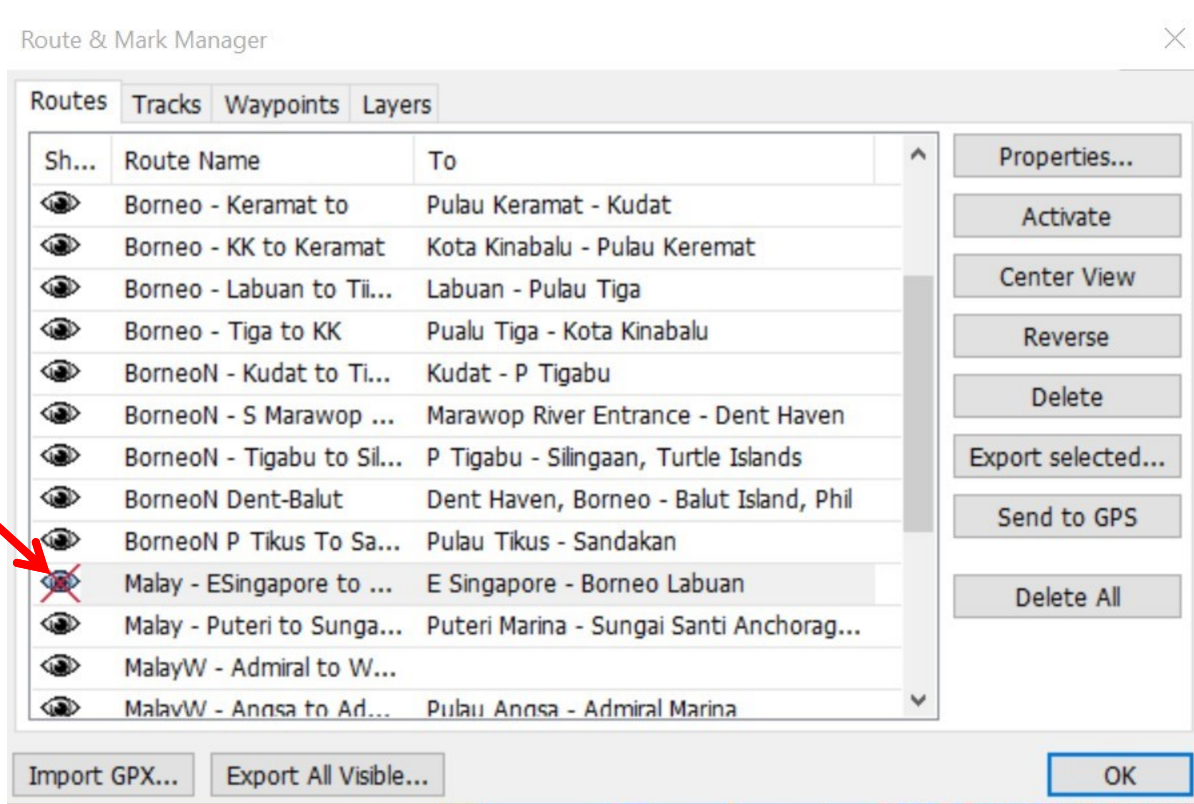
- Export to file
- Import from file

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

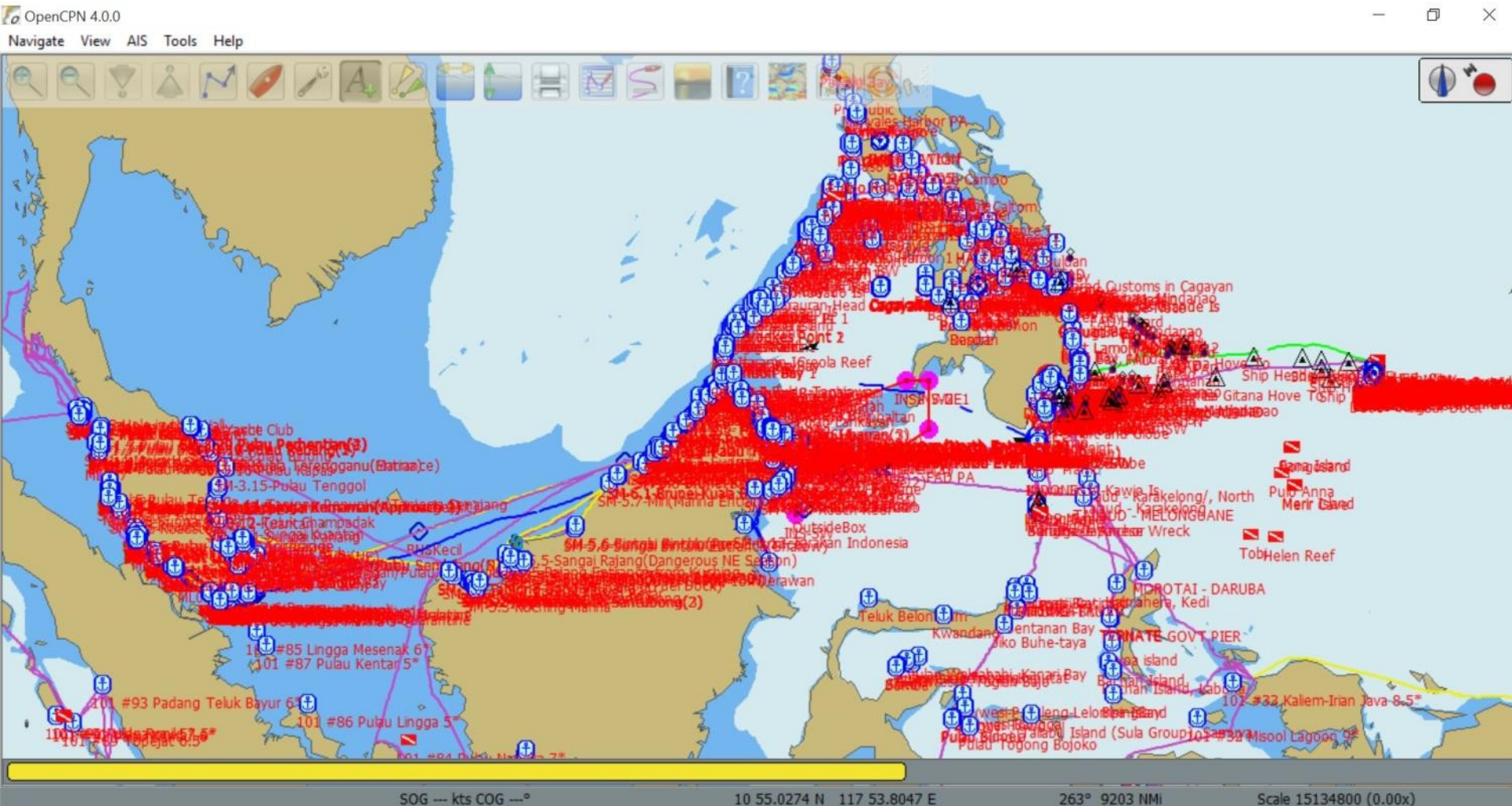
**Hidden Route**



# 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

Route & Mark Manager

Routes Tracks Marks Layers

Filter

Show all layers

	Layer Name	No. of items	Layer type
<input type="checkbox"/>	PNG Solomons	0	Persistent
<input type="checkbox"/>	Raja Ampat Dinghy	16	Persistent
<input type="checkbox"/>	Red Sea Major Ports	17	Persistent
<input type="checkbox"/>	Red Sea Planning Routes-S...	5	Persistent
<input type="checkbox"/>	Red Sea Routes-Complexit...	0	Persistent
<input type="checkbox"/>	Red Sea Tracks	16	Persistent
<input checked="" type="checkbox"/>	Red Sea Waypoints	287	Persistent
<input checked="" type="checkbox"/>	Red Sea-Bebe-From Thaila...	68	Persistent
<input type="checkbox"/>	Screensaver Track 2017	1468	Persistent
<input type="checkbox"/>	Screensaver Track 2018	898	Persistent
<input type="checkbox"/>	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**

Route & Mark Manager

Routes Tracks Marks Layers

Filter

Show all layers

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

**Import into  
your data**

Create Temporary layer

Create Persistent layer

Delete

Show on chart

Show WPT names

List contents

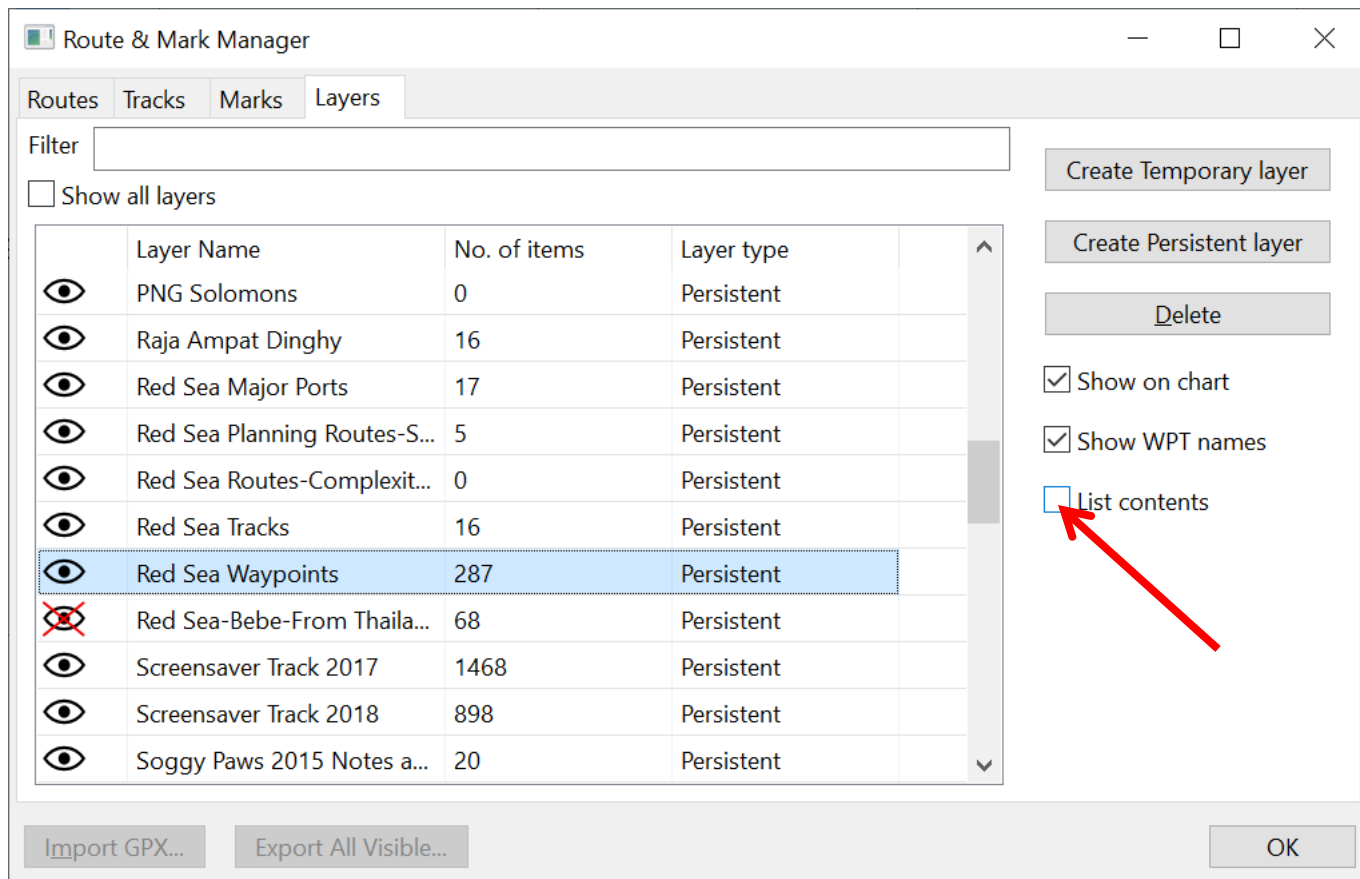
Import GPX...

Export All Visible...

OK 90

# 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

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

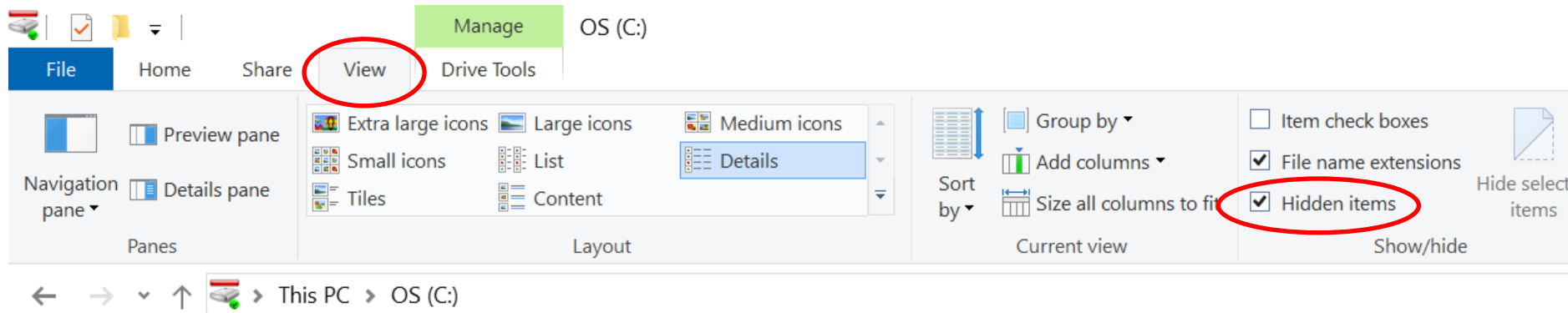
To share ALL your info with someone else, copy navobj.xml somewhere else, and rename it Whatever.gpx

# 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 20 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](https://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

Options ×

Display   Charts   Connect   Ships   User   **Plugins**

**WMM**  Enabled ⚙  
World Magnetic Model PlugIn for OpenCPN

**Dashboard**  Enabled ⚙  
Dashboard PlugIn for OpenCPN

**WeatherFax** 1.9.56.0  Enabled ☑  
Open fax image, decode audio fax, chart overlay

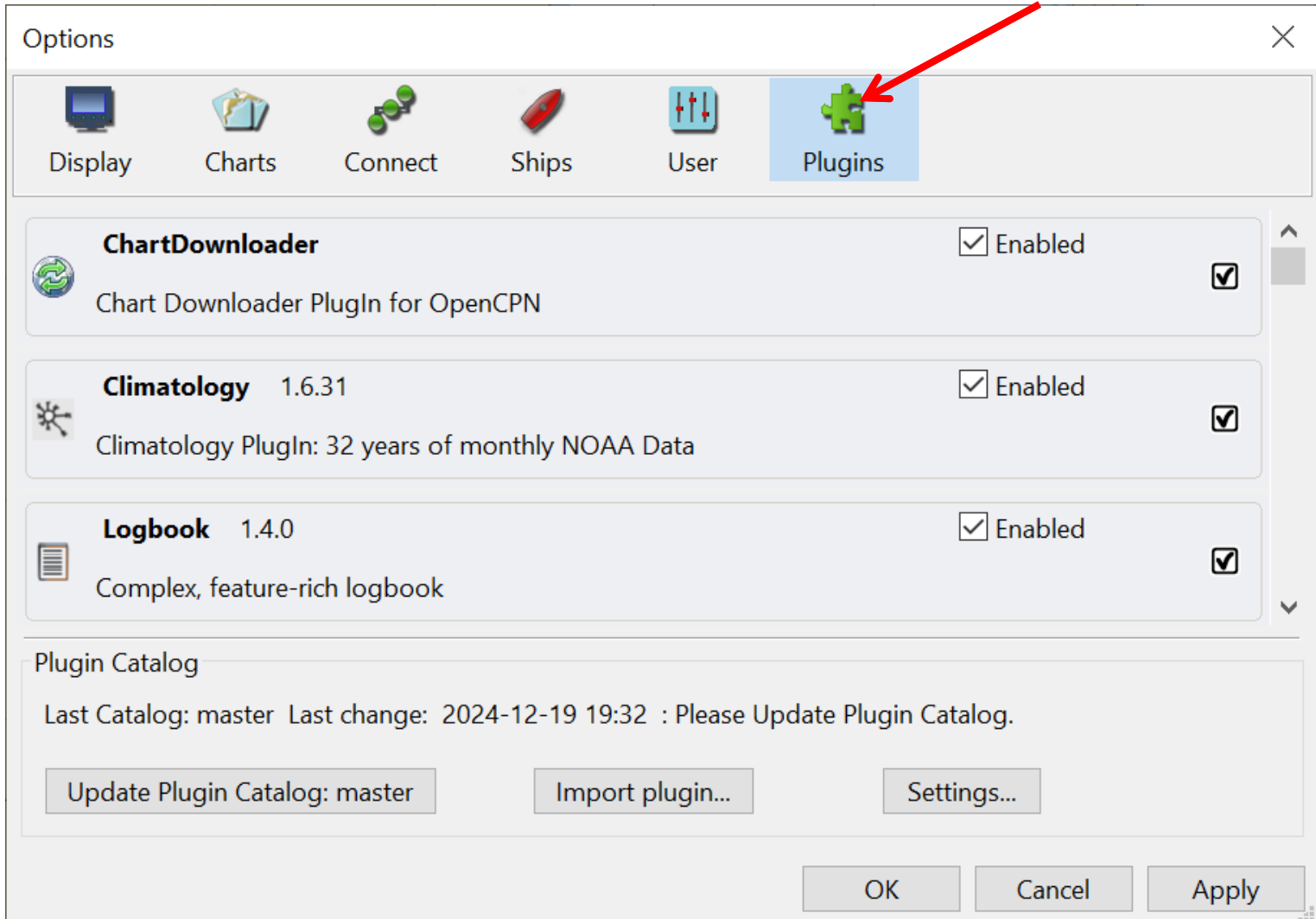
Plugin Catalog  
Last Catalog: master Last change: 2023-05-02 14:33 : Please Update Plugin Catalog.

**Update Plugin Catalog: master**   Import plugin...   Settings...

**1**   OK   Cancel   Apply



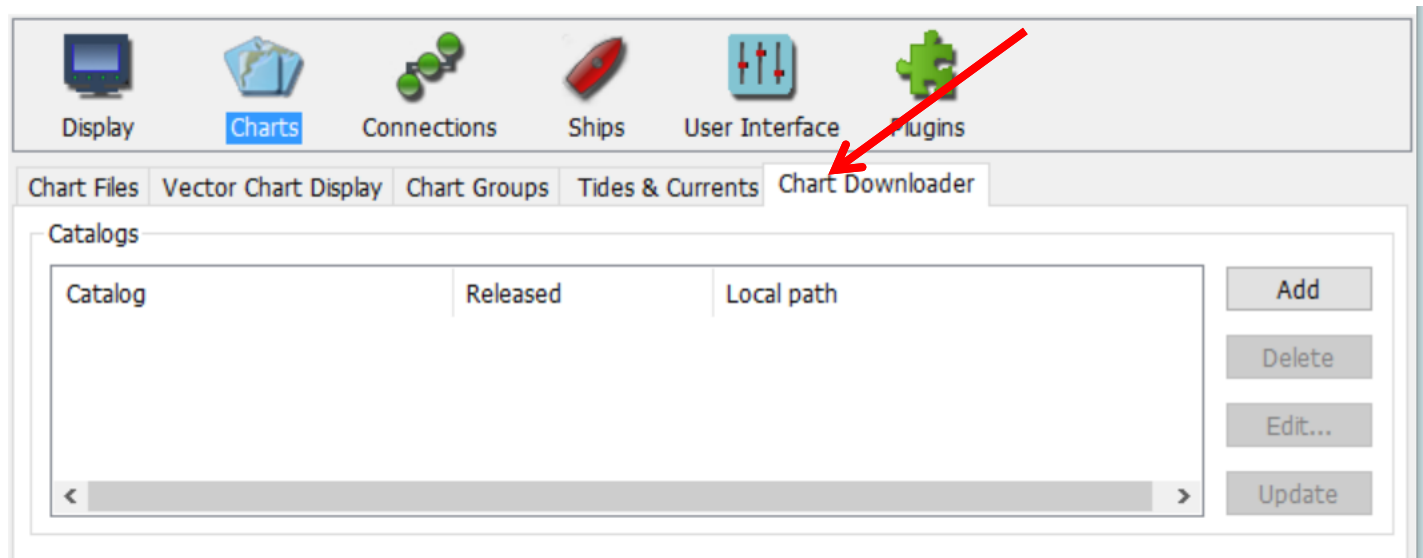
# Enable Plugin and Set Preferences



# 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

The screenshot shows the 'Options' dialog box in OpenCPN. The 'Plugins' tab is selected, showing a list of installed plugins. The 'GRIB 2.3' plugin is highlighted, and its 'Preferences' window is open. The 'GRIB 2.3' plugin is described as 'GRIB PlugIn for OpenCPN' that provides basic GRIB file overlay and a request function to get data. The supported GRIB data includes wind direction and speed, wind gust, surface pressure, rainfall, cloud cover, significant wave height, air surface temperature, sea surface temperature, surface current direction, Convective Available Potential, and wind, altitude, temperature.

**Options Dialog Box:**

- Display
- Charts
- Connections
- Ships
- User Interface
- Plugins**

**GRIB 2.3 Preferences:**

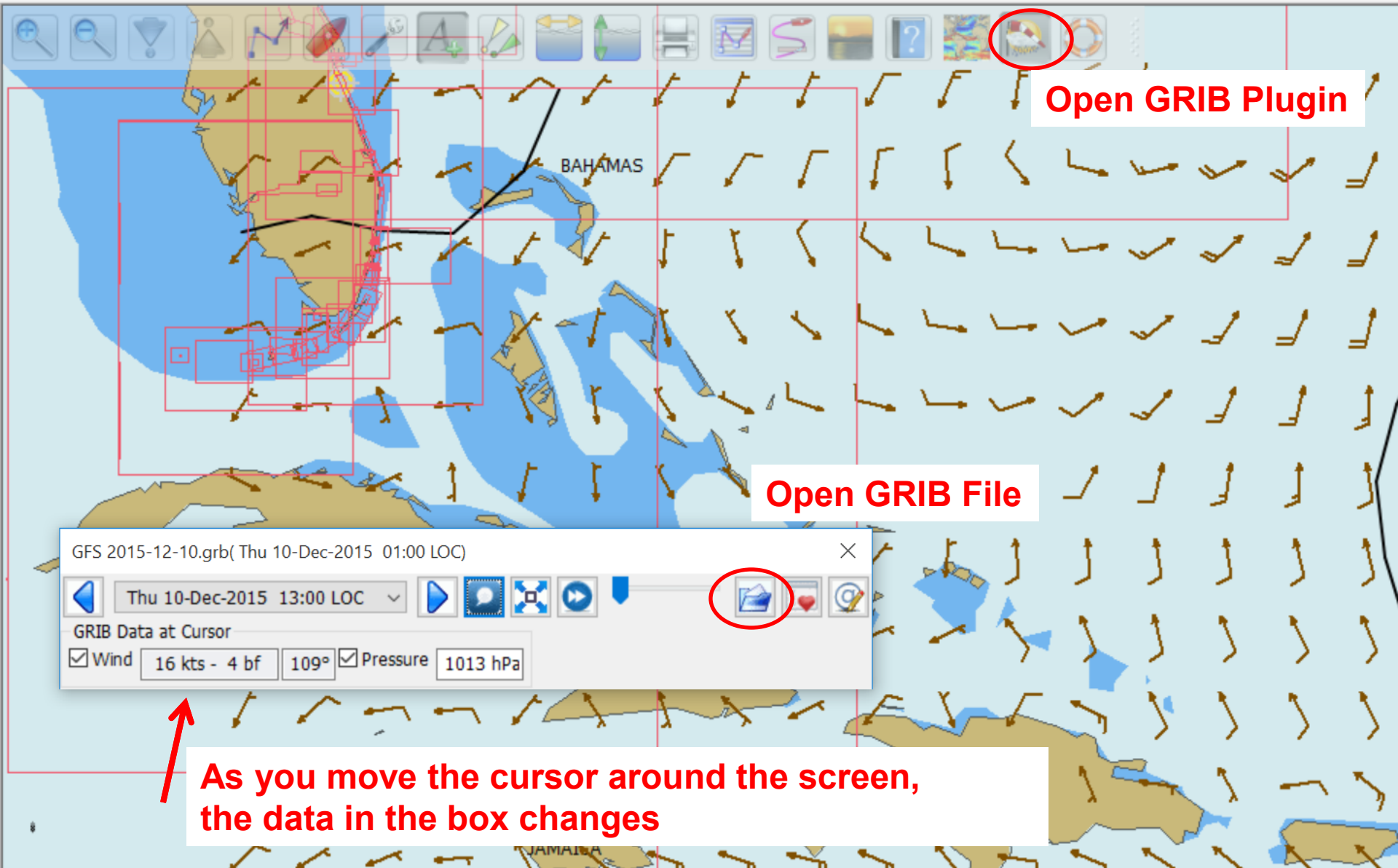
- Use High Definition Graphics
- Use Gradual Colors
- Copy First Cumulative Missing Record
- Copy Missing Wave Records
- Load File Options
  - Load the More Recent File in Directory
  - Load the Last Opened File
- Start Options
  - Start at the first forecast in GRIB file
  - Start at the nearest forecast to current time
  - Authorize Interpolation to start at current time
- Time Options
  - Local Time
  - UTC

Buttons: OK, Cancel, Apply, Disable

# Open GRIB Plugin

OpenCPN 4.0.0

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

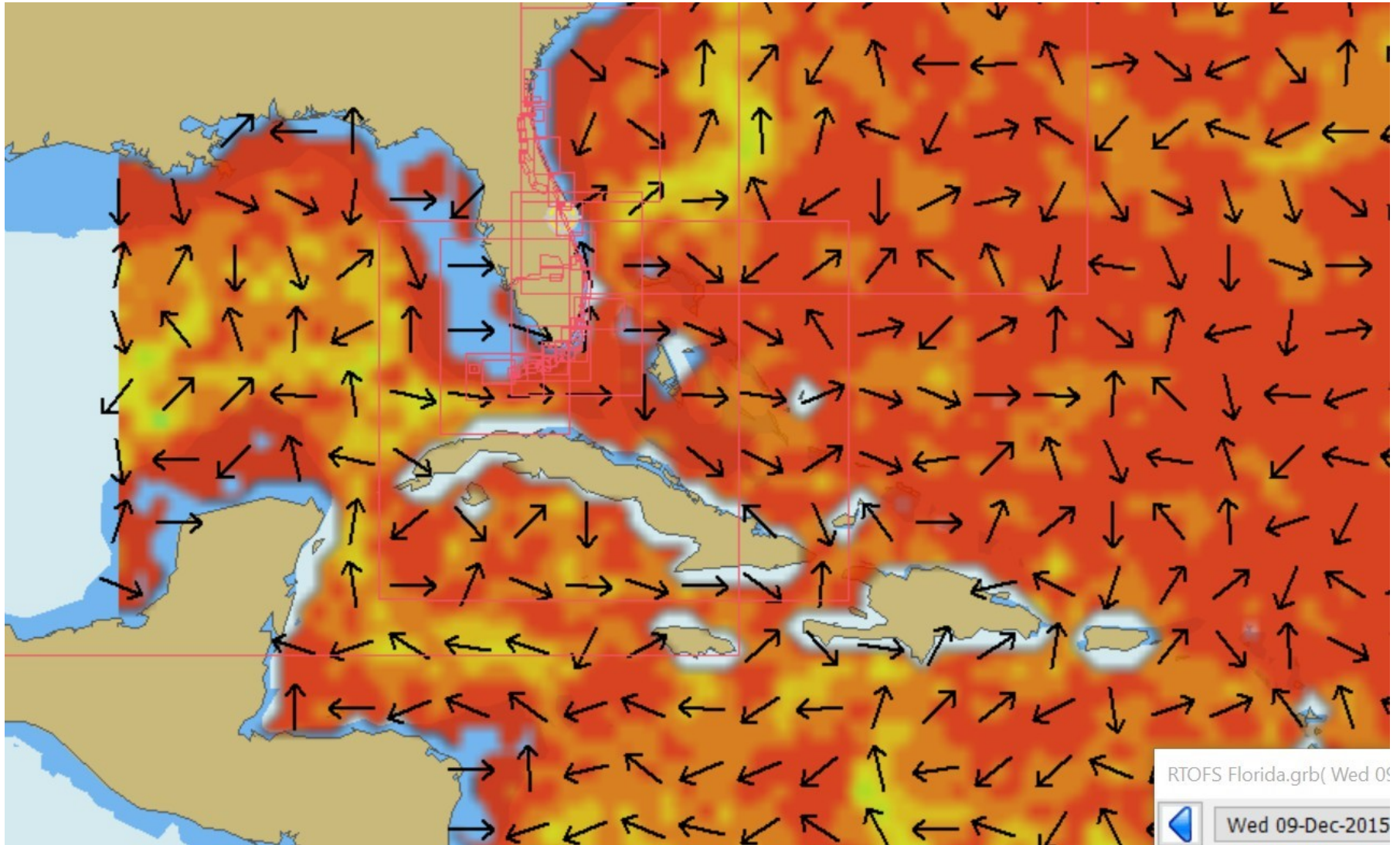
GFS 2015-12-10.grb( Thu 10-Dec-2015 01:00 LOC)

Thu 10-Dec-2015 13:00 LOC

GRIB Data at Cursor

Wind 16 kts - 4 bf 109°  Pressure 1013 hPa

# RTOFS (Current) Display

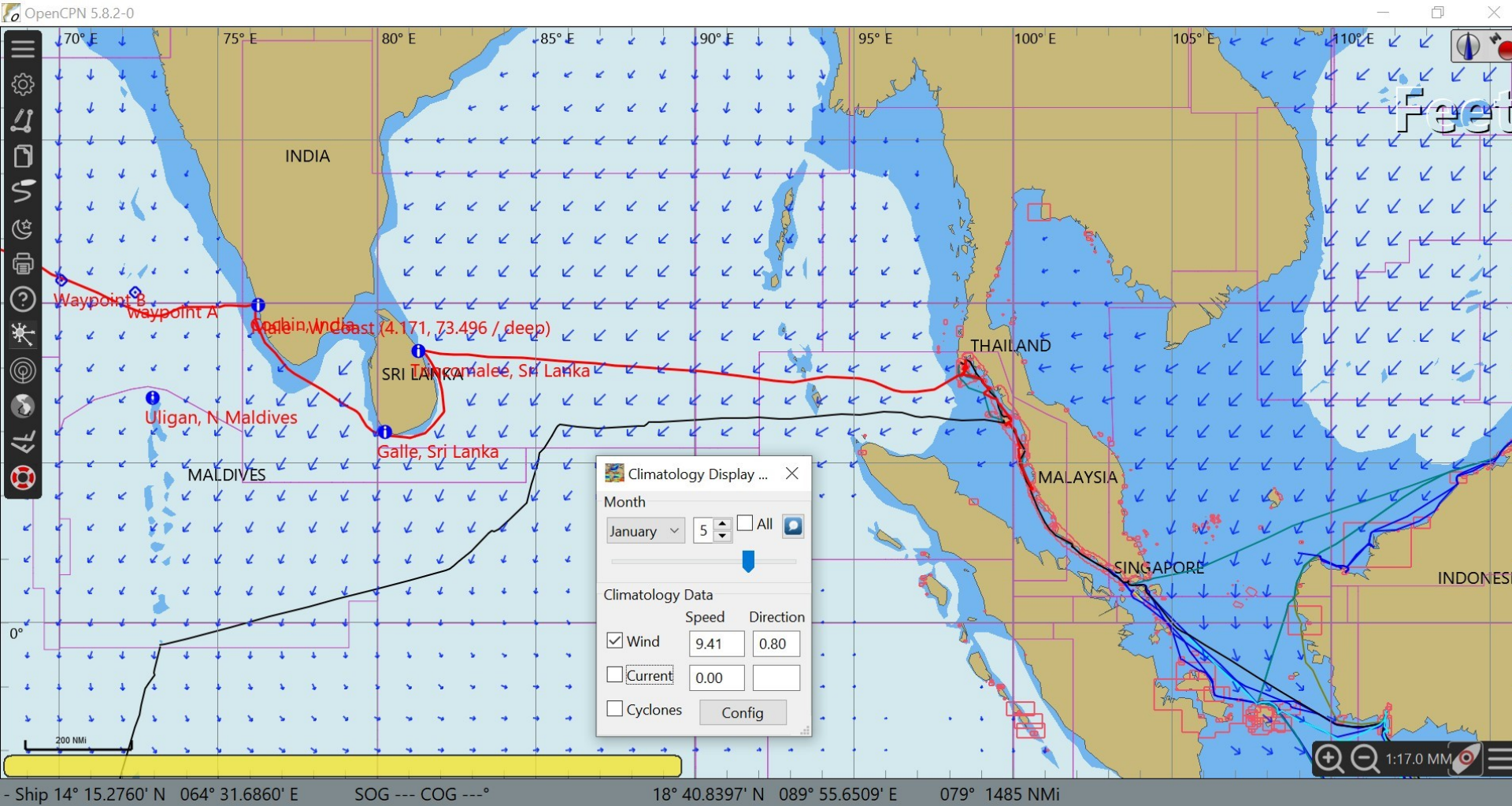


# Climatology Plugin

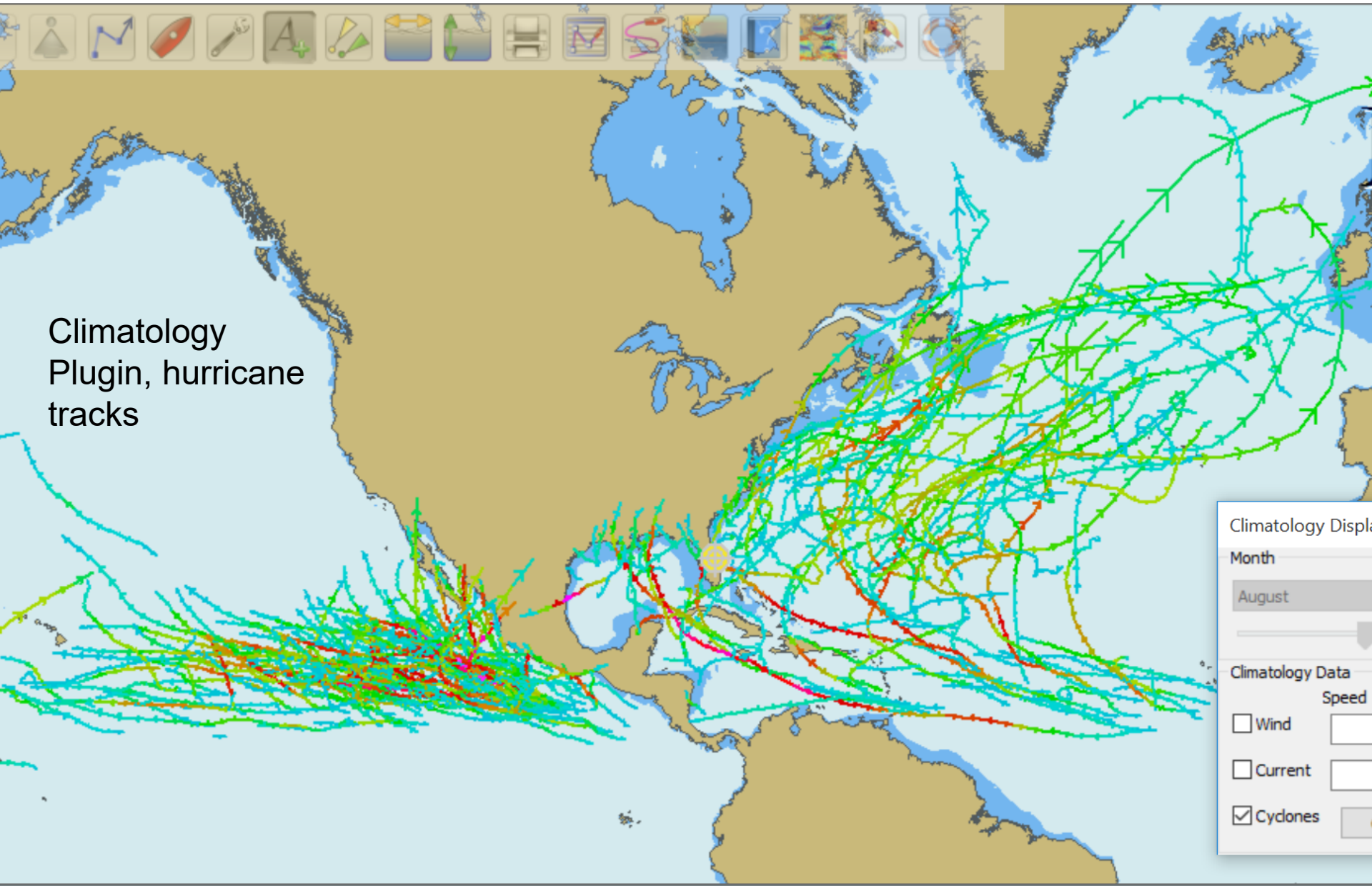
- Pilot charts overlaid on your chart
- Updated with RECENT data
- Wind, currents, and tropical storm tracks
- Traditional wind rose display, or wind barbs



# Climatology for January - Wind



# Where is a Safe Place to Be In August?



Climatology  
Plugin, hurricane  
tracks

Climatology Display

Month

August

Climatology Data

Wind

Current

Cyclones

Speed

# 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

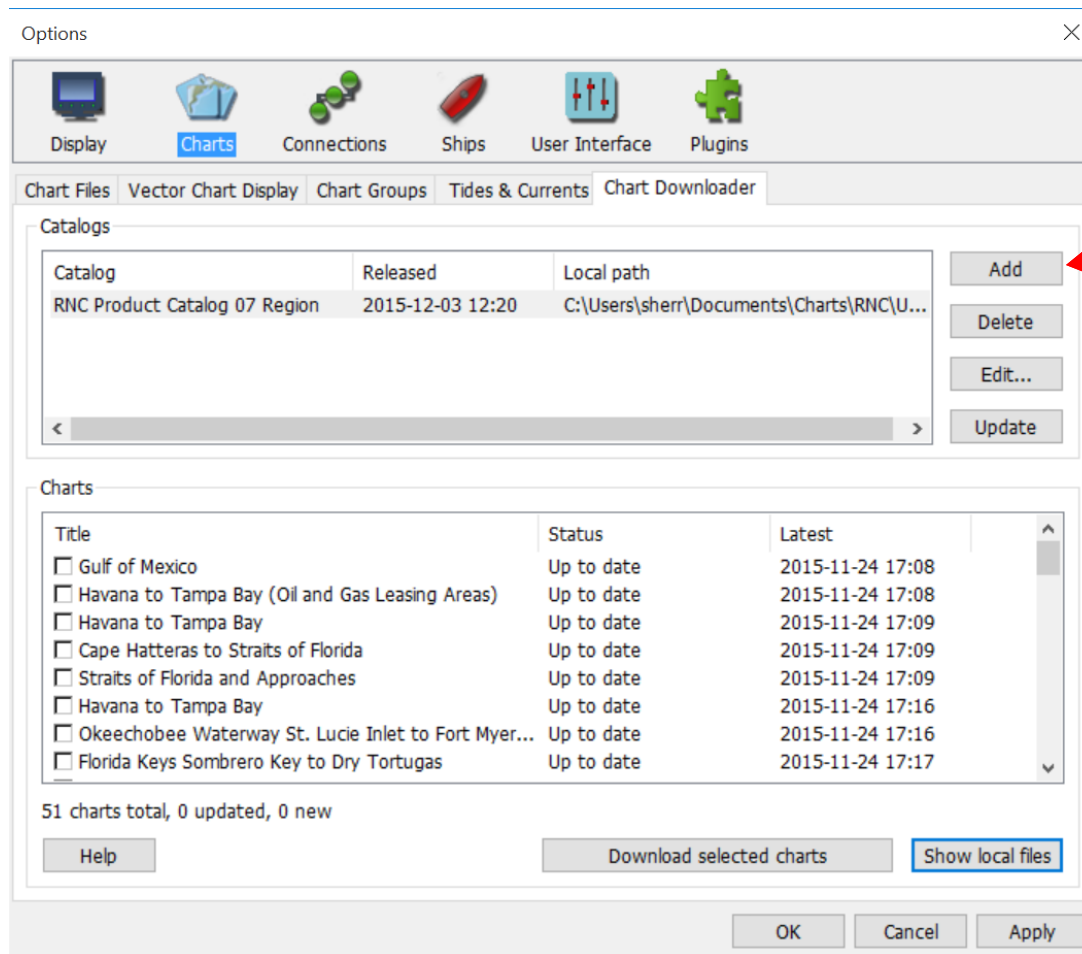
Storm Types:  
 Tropical  Sub Tropical  
 ExtraTropical  Remanent

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

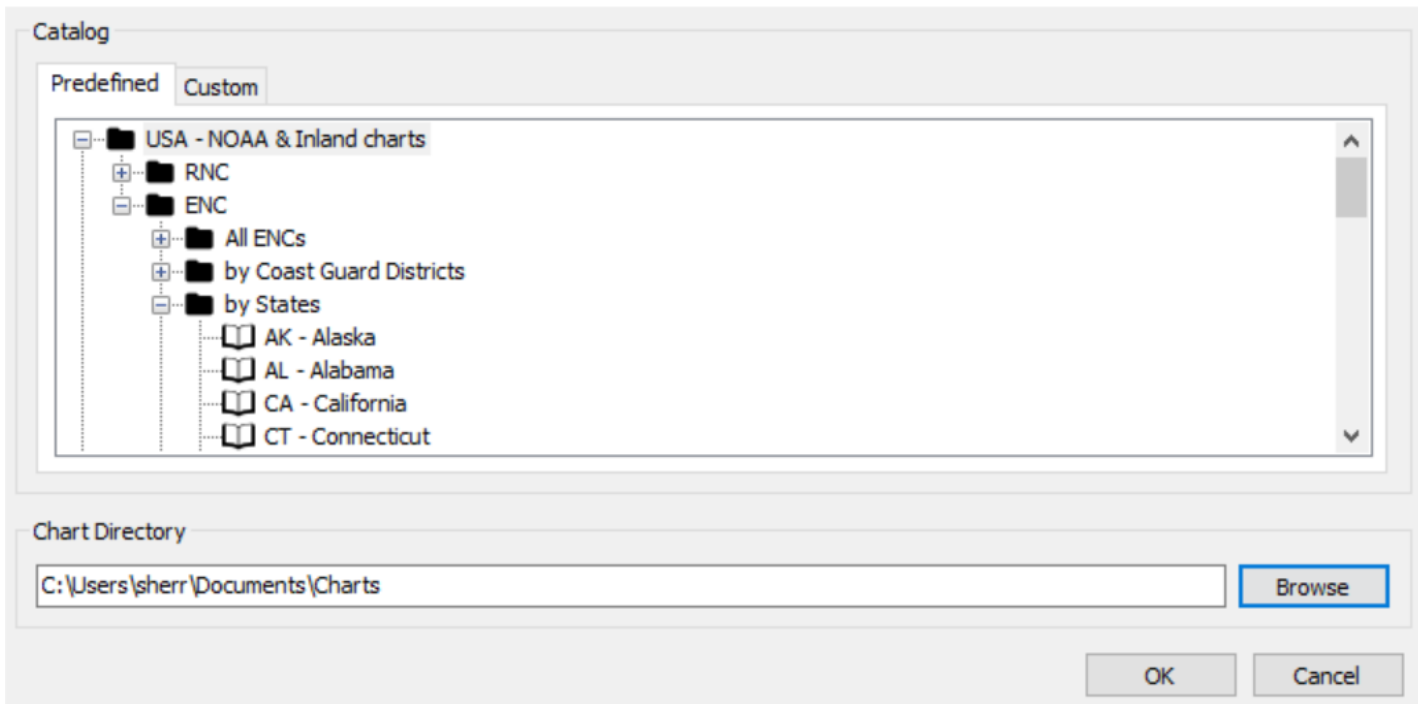
# Chart Downloader Plugin



To download a new chart area

# Select Charts by Region

New chart source



# Update Chart Catalog

Options

Display Charts Connections Ships User Interface Plugins

Chart Files Vector Chart Display Chart Groups Tides & Currents Chart Downloader

Catalogs

Catalog	Released	Local path
RNC Product Catalog 07 Region	2015-12-03 12:20	C:\Users\sherr\Documents\Charts\RNC\U...
HI - Hawaii	(Please update first)	C:\Users\sherr\Documents\Charts\ENC\U...


Add  
Delete  
Edit...  
Update

Charts

Title	Status	Latest
-------	--------	--------

Help Download selected charts Show local files

OK Cancel Apply





# Download Charts

Options

Display **Charts** Connections Ships User Interface Plugins

Chart Files Vector Chart Display Chart Groups Tides & Currents **Chart Downloader**

Catalogs

Catalog	Released	Local path
RNC Product Catalog 07 Region	2015-12-03 12:20	C:\Users\sherr\Documents\Charts\RNC\U...
ENC Product Catalog HI	2015-12-03 17:42	C:\Users\sherr\Documents\Charts\ENC\U...

Add  
Delete  
Edit...  
Update

Charts

Title	Status	Latest
<input type="checkbox"/> West Pacific; Wake Island, Mariana Islands, Guam	New	2015-02-23 15:54
<input type="checkbox"/> Hawaiian Islands	New	2014-08-12 12:57
<input type="checkbox"/> Hawaii to French Frigate Shoals	New	2015-02-09 13:53
<input type="checkbox"/> North Pacific Ocean (eastern part) Bering Sea Conti...	New	2013-10-23 13:51
<input type="checkbox"/> San Diego to Aleutian Islands and Hawaiian Islands	New	2015-09-24 09:52
<input type="checkbox"/> Hawaiian Islands southern part	New	2015-02-09 13:54
<input type="checkbox"/> Hawaiian Islands northern part	New	2015-01-30 14:35
<input type="checkbox"/> Niihau to French Frigate Shoals;Necker Island;Nihoa	New	2014-02-10 11:52

67 charts total, 0 updated, 67 new

Help Download selected charts Show local files

OK Cancel Apply

**Charts in  
Hawaii  
Catalog**

**Check to  
Download**

# Selected Charts Downloading

Downloading file 7 of 7



Chart: Hawaiian Islands northern part

**URL:** <http://www.charts.noaa.gov/ENCs/US2HA05M.zip>

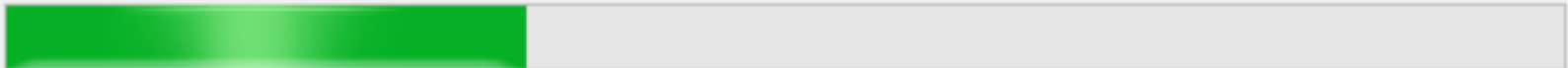
**Speed:** 166.8 kB/s

**Downloaded:** 333.6 kB / 333.6 kB

**Elapsed time:** 00:00:02

**Estimated total time:** 00:00:02

**Estimated remaining time:** 00:00:00

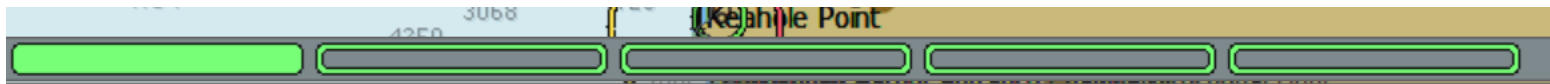


Abort

Pause

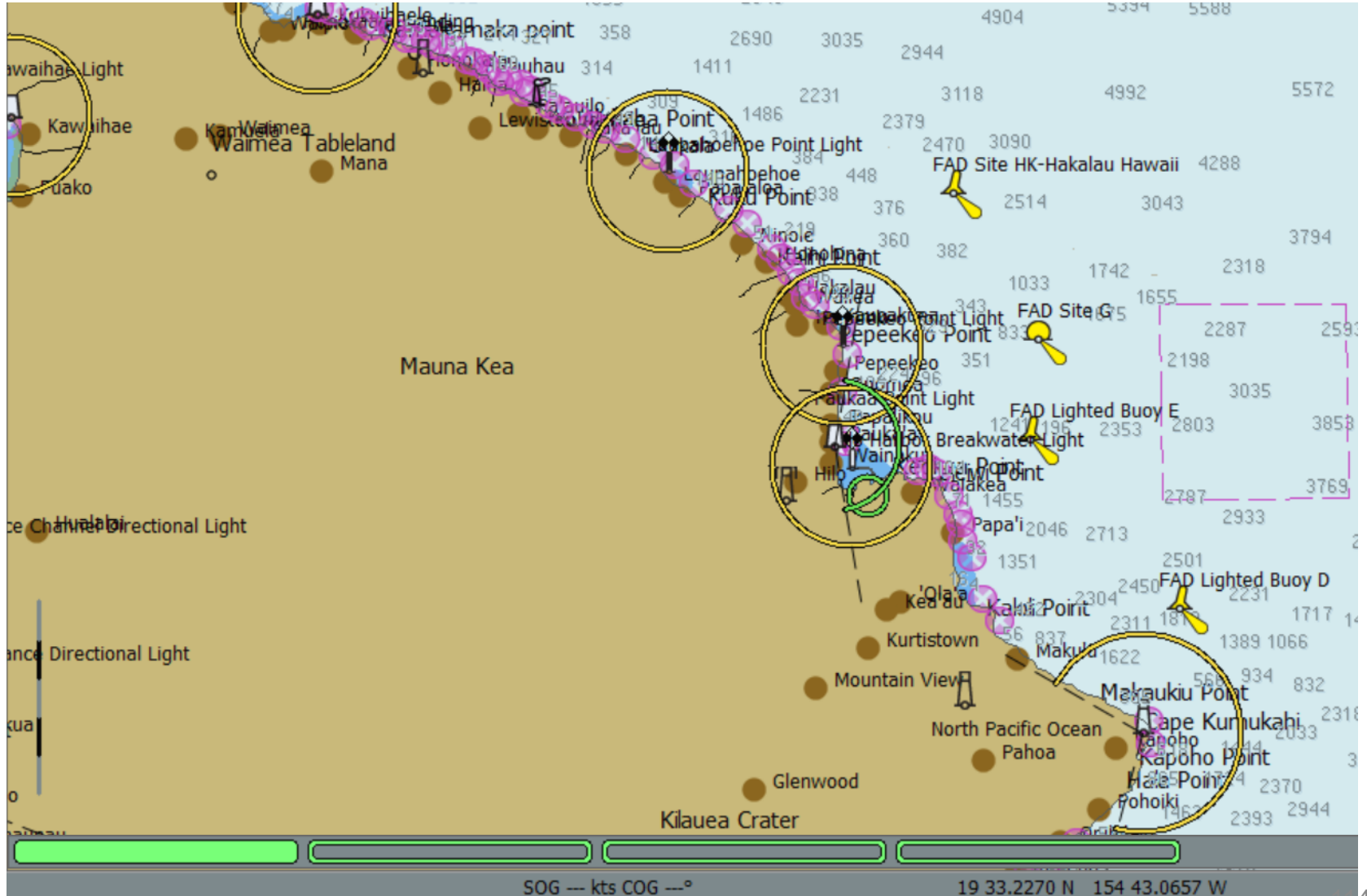
# Note on ENC Charts

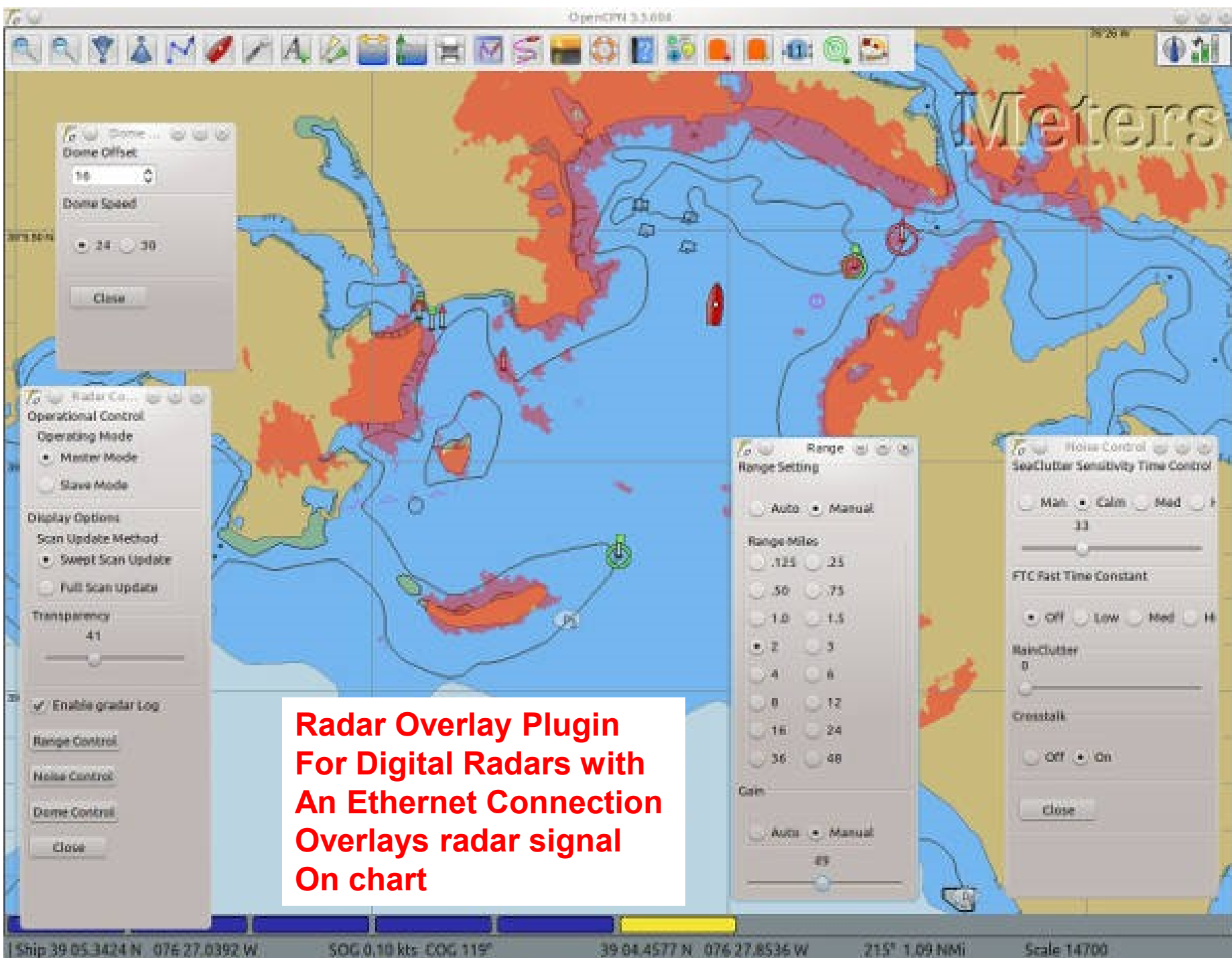
- After Download completes, must add charts using the normal add chart function
- Charts are fully downloaded to your computer and will stay there, even if you delete them in the Chart Downloader
- You can update them using the Update function on the Chart Downloader
- New green bubble at bottom of chart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



(I found this a bit quirky)

# ENC Chart for Hawaii





**Radar Overlay Plugin  
For Digital Radars with  
An Ethernet Connection  
Overlays radar signal  
On chart**

# Weather Routing Plugin

The screenshot displays the Weather Routing Plugin interface, which is used for planning optimized routes based on weather and GRIB data. The interface is organized into several key sections:

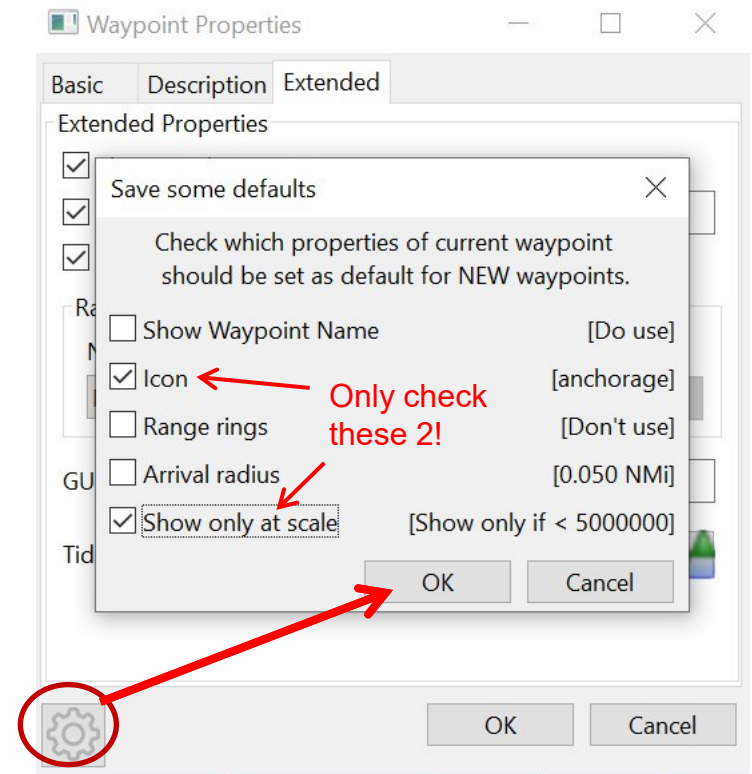
- Left Sidebar (Trip Details):** Contains fields for 'Weather Route', 'DEPART FROM' (Havana), and 'DESTINATION' (Sancti Spiritus). It also shows 'Total Distance' (4125.87), 'Avg Speed' (4.7), and 'Time Estimate' (11 Days 43 Hours 40 Minutes). A table of waypoints is listed below, including columns for Leg, To Waypoint, Distance, Bearing, Latitude, and Longitude.
- Top Center Panel (Wind Rose):** A circular wind rose diagram showing wind frequency and direction for various wind speeds and directions.
- Top Right Panel (Map):** A map view showing the planned route (red line) across the Caribbean Sea, with various weather data overlays.
- Bottom Center Panel (Detailed Map):** A zoomed-in map view of the route, showing the path and associated weather data.
- Bottom Right Panel (Route Manager):** A table with columns for 'Route Name', 'Length', and 'Time'. It lists 'Selected Route' (4125.87) and 'Selected Route' (11 Days 43). Below the table are buttons for 'Route From Track' and 'Route From Track'.

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



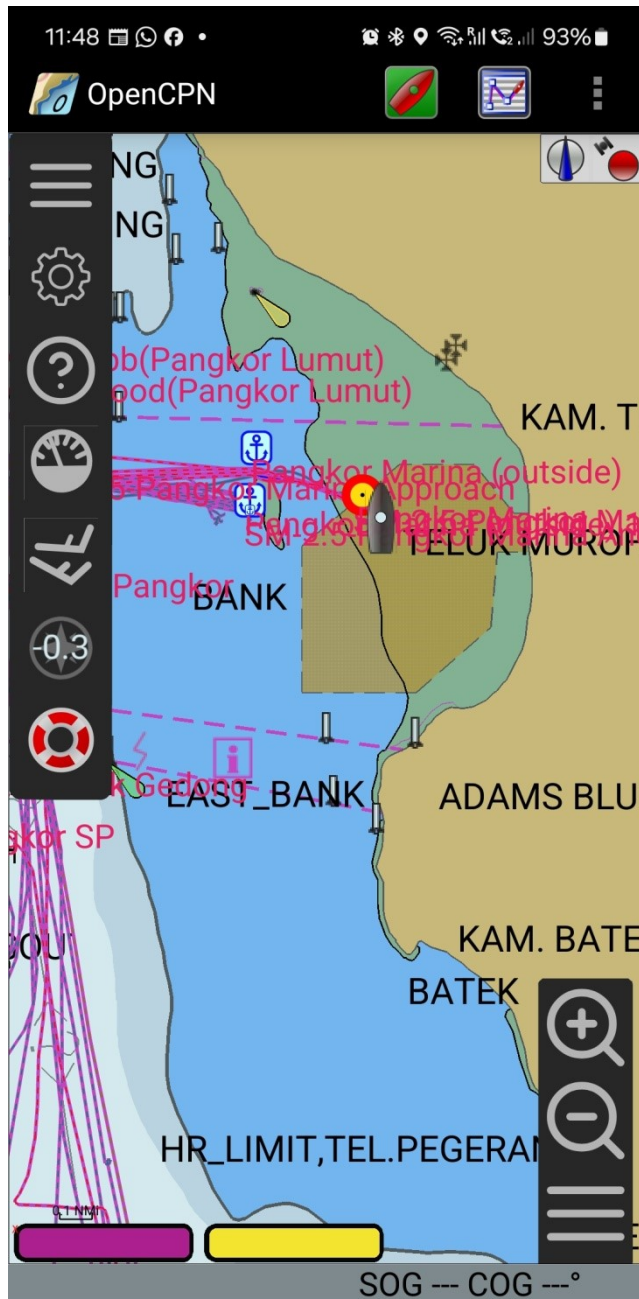
# Tweaks to do on a new install

- Add Tides database (Terrys Topics)
- Change Options / User / Fonts / Marks to Red
- Create a waypoint, change to
  - Anchorage symbol
  - Extended / Check Show at Scale box and enter 5,000,000
  - Use options button in lower left of waypoint window to set the settings for this waypoint as your “default” new waypoint settings.
- Options / Ships and turn off “Highlight Tracks”



# 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



# Primary screen in Android

Click and hold to right click

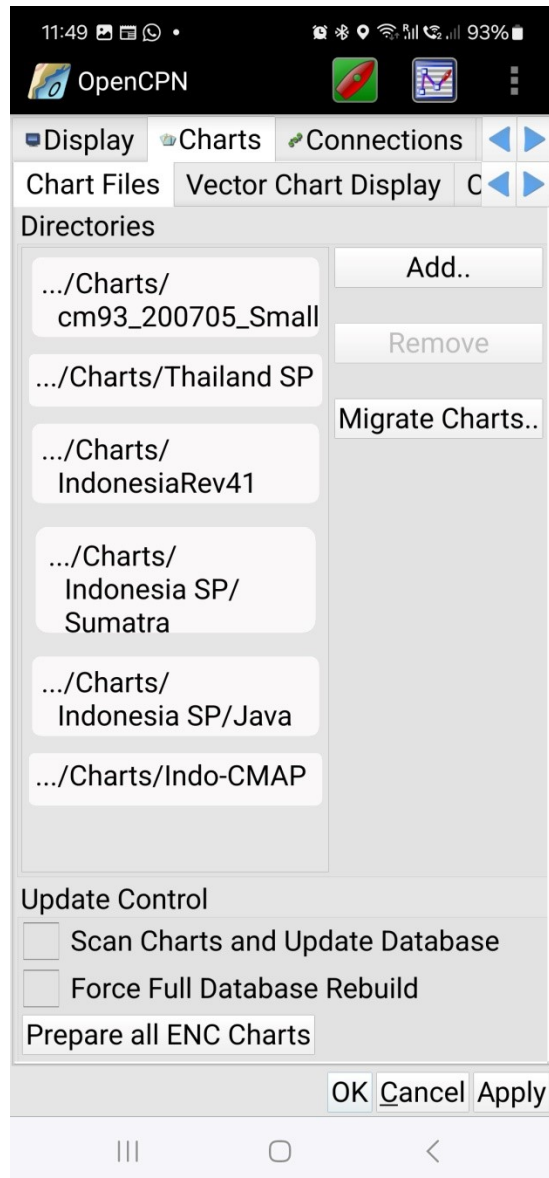
- Pops right-click menu (couldn't get screen shot)
- All the right click functions appropriate to where you are right-clicking

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.

<http://svsoggypaws.com/TerrysTopics.htm>