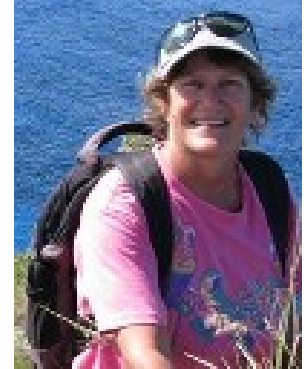


NAV100: Getting the Most Out of OpenCPN

*Presented by Sherry McCampbell
s/v Soggy Paws*



Version 1.7 (May 2023) – With Thanks to Terry Sargent s/v Valhalla

Contents

- [About Us](#)
- [About OpenCPN](#)
- [Installing OpenCPN](#)
- [Finding the Manual](#)
- [Adding Charts](#) (local files)
- [Adding Charts](#) (Chart Downloader)
- [Adding Chart Groups](#)
- [Showing Tides](#)
- [Connection to GPS & AIS](#)
- [Routes](#)
- [Tracks](#)
- [Waypoints](#)
- [Layers](#)
- [Adding Functionality](#)
with Plugins
 - [Grib Files](#)
 - [Climatology](#)
 - [Radar](#)
 - [Weather Routing](#)
 - Chart Downloader



St Francis 44

<http://svsoggypaws.com> ³

Copyright Dave McCampbell

ASIA

SV Soggy Paws Florida to the Philippines

NORTH AMERICA

PACIFIC OCEAN

MELBOURNE 2007
Rio Dulce

Colombia

Philippines
2015-2022
Yap Truk

DAVAO

Palau

F.S.M.

Pohnpei

2014
Marshall Islands

2013
Tarawa

Samoas

Tahiti

Marquesas

Tuamotus

Fiji

Tonga

French Polynesia

Gambiers

2008-09
Panama
Galapagos

Ecuador

SOUTH AMERICA

2010
Easter Island

Pitcairn Island

Juan Fernandez

AUSTRALIA

Across the Pacific

~30,000 nm





South East Asia 2015–2022

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 Overview

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 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!

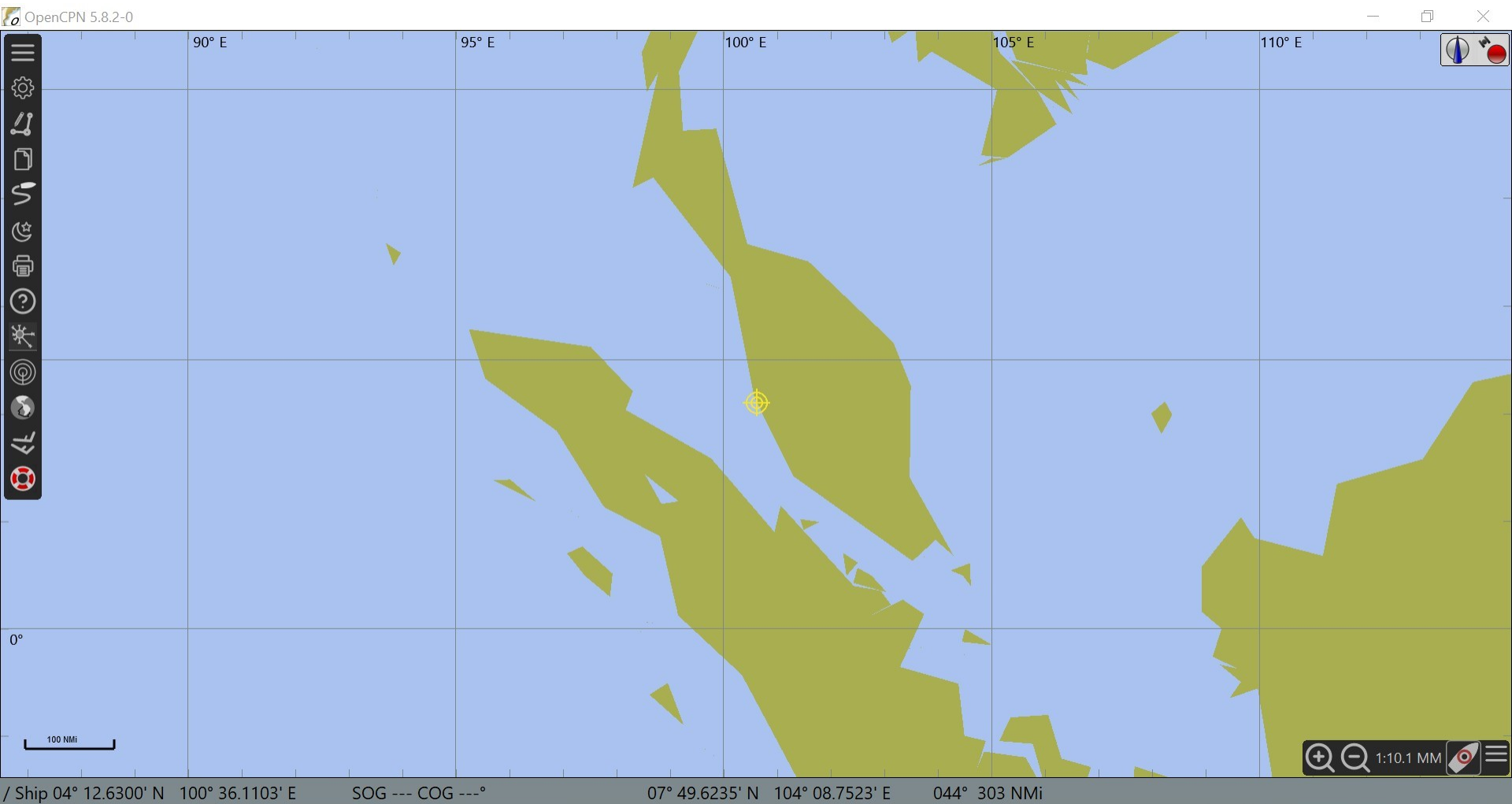
ChartFile: C:/Users/sherr/Documents/Charts/Indonesia SP/HalmaheraMorotai/BacanSW.Z16-Z16.mbtiles
Name: BacanSW.Z16-Z16 20220211135723
Scale: 1:15000
ID:
Depth Units:
Soundings:
Datum: WGS84
Projection: Web Mercator (EPSG:3857)
Source Edition:
Updated: 2000-01-01

mbtiles Chart KAP Chart CM93 "Background" Chart

SOG --- kts COG ---° 01° 02.2815' S 126° 16.8644' E 095° 3196 NMi

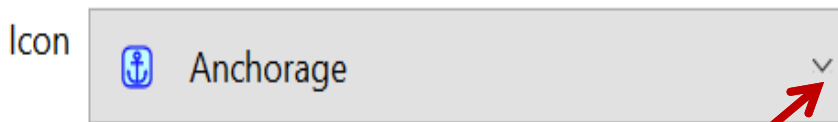
Zoom in and out... + and - keys, or mouse scroll wheel

But Wait... Mine Looks Like This!

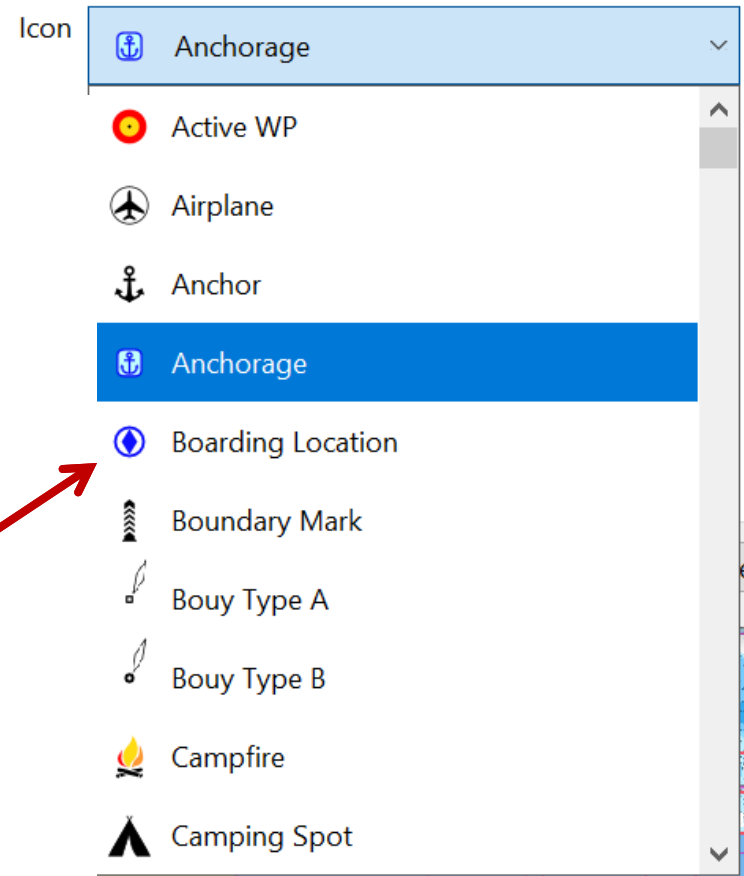


Terminology

Drop-down box

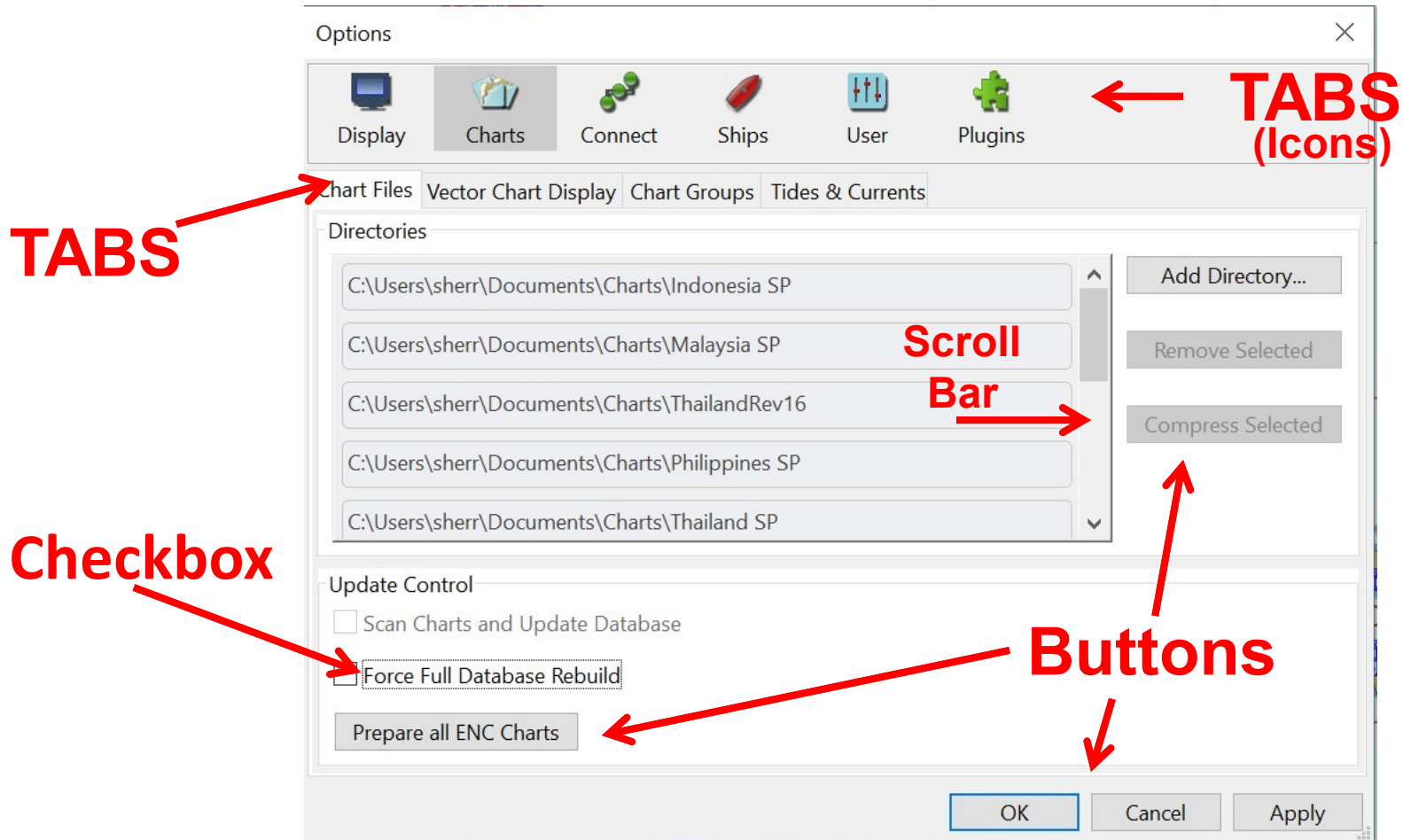


- Click the down arrow
- A selection box opens



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

[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](#)
 - [GPS Setup](#)
 - [Chart Installation](#)
 - [Setting Options](#)
 - [Marks and Routes](#)
 - [Touch Screen Tablets](#)
 - [Help Fix Bugs!](#)
- [Getting Around](#)
 - [GPS Setup & Status](#)

Adding Charts – Step 1

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



in the Toolbar

2

3

4

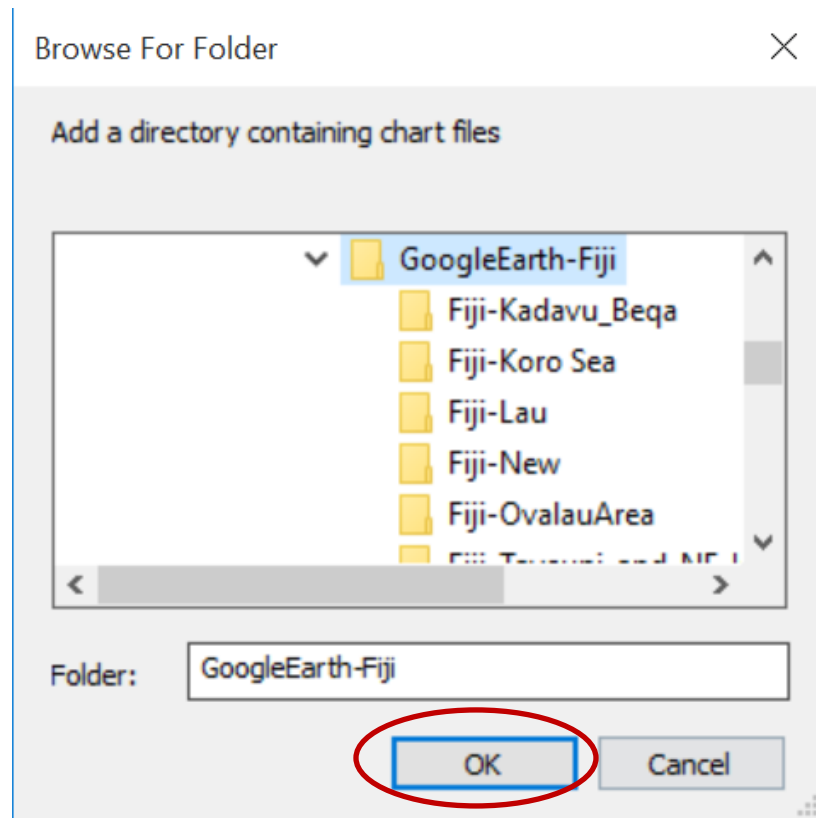
Charts that are already installed

The screenshot shows the 'Options' dialog box with the 'Charts' tab selected. The 'Chart Files' sub-tab is also selected. The 'Directories' list contains five entries: 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. The 'Update Control' section has two unchecked checkboxes: 'Scan Charts and Update Database' and 'Force Full Database Rebuild'. A 'Prepare all ENC Charts' button is visible at the bottom. The 'OK', 'Cancel', and 'Apply' buttons are at the bottom right.

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

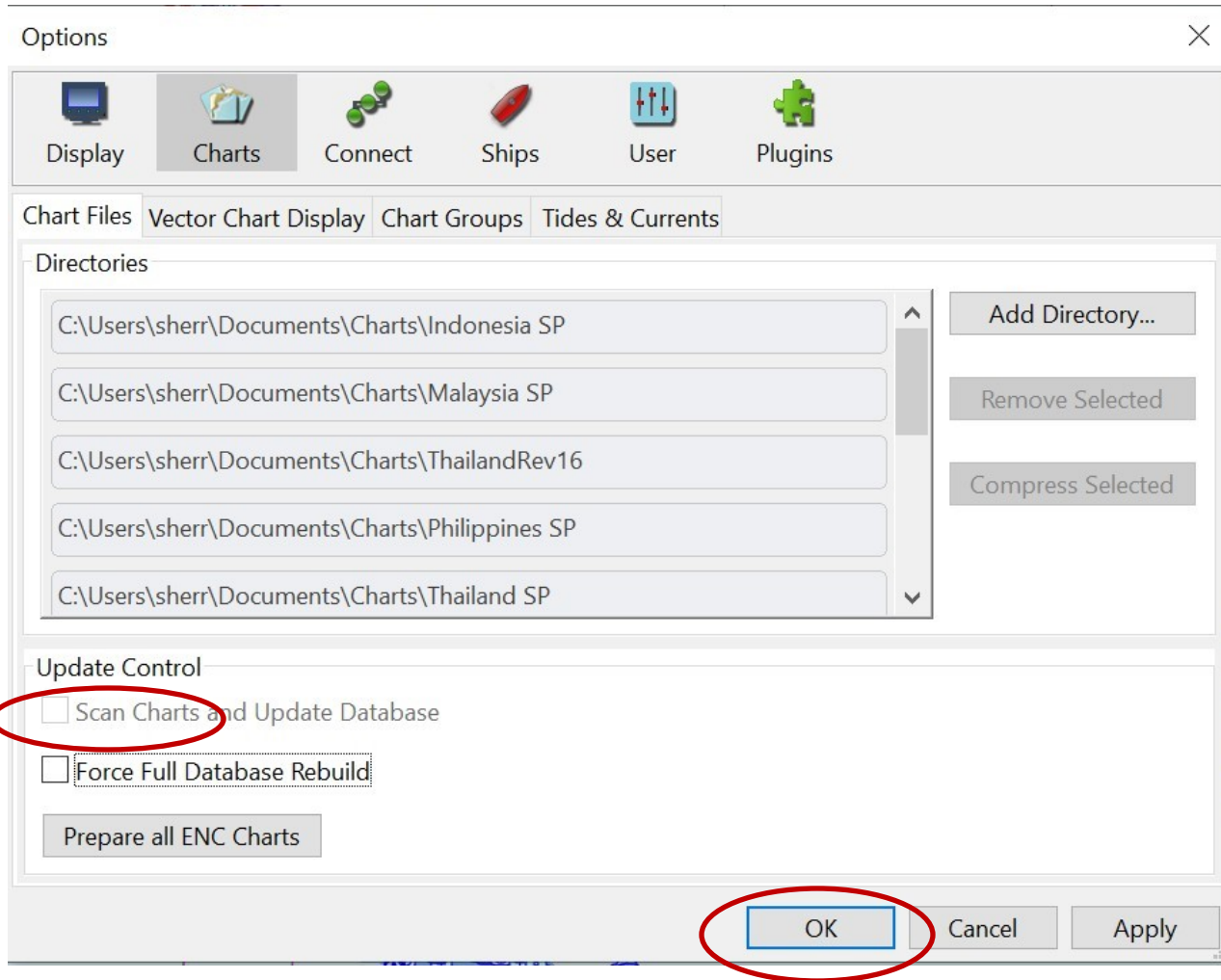
The more charts you load, the more resources OpenCPN takes on your system



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

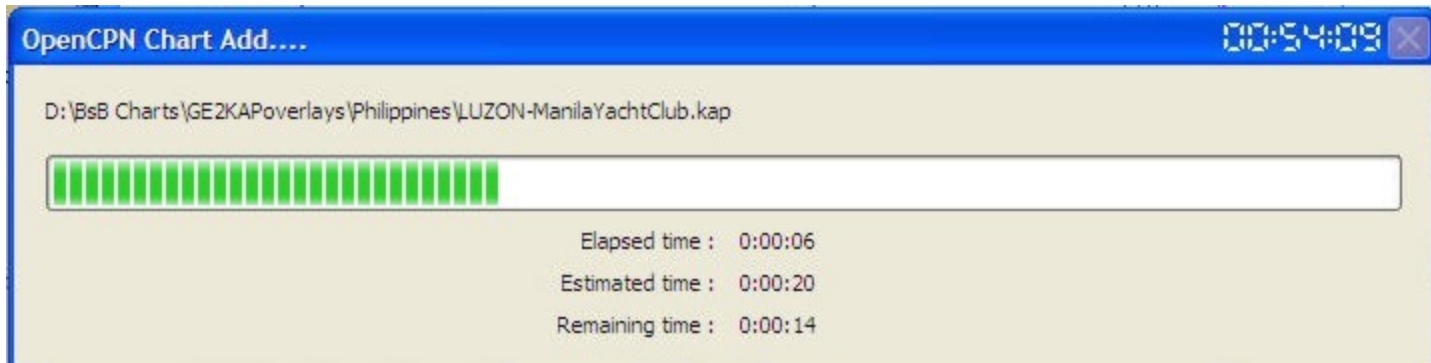
Adding Charts – Step 3

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
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/chartsource.html>

The Chart Downloader

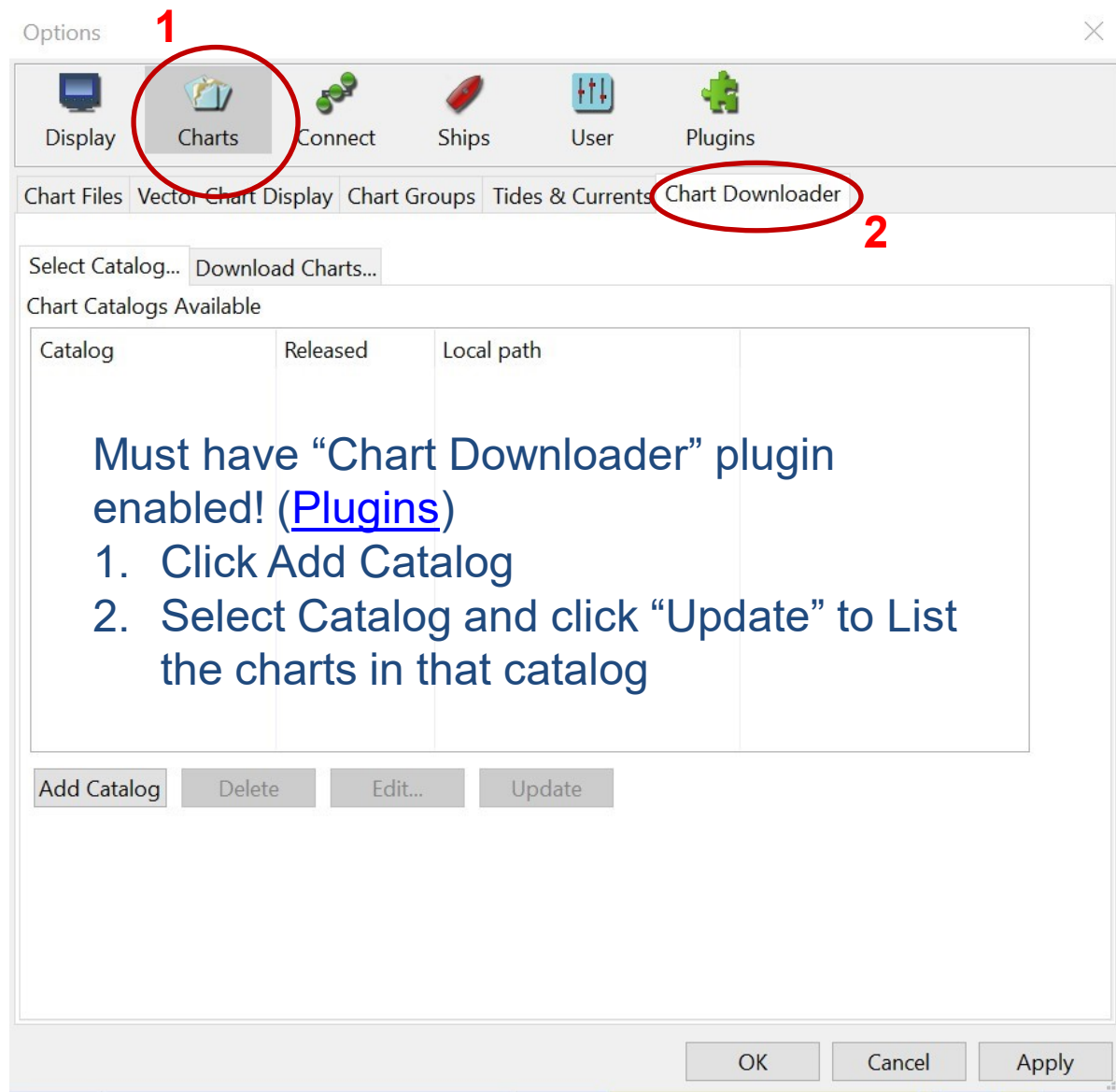


Chart Downloader-Add Catalog

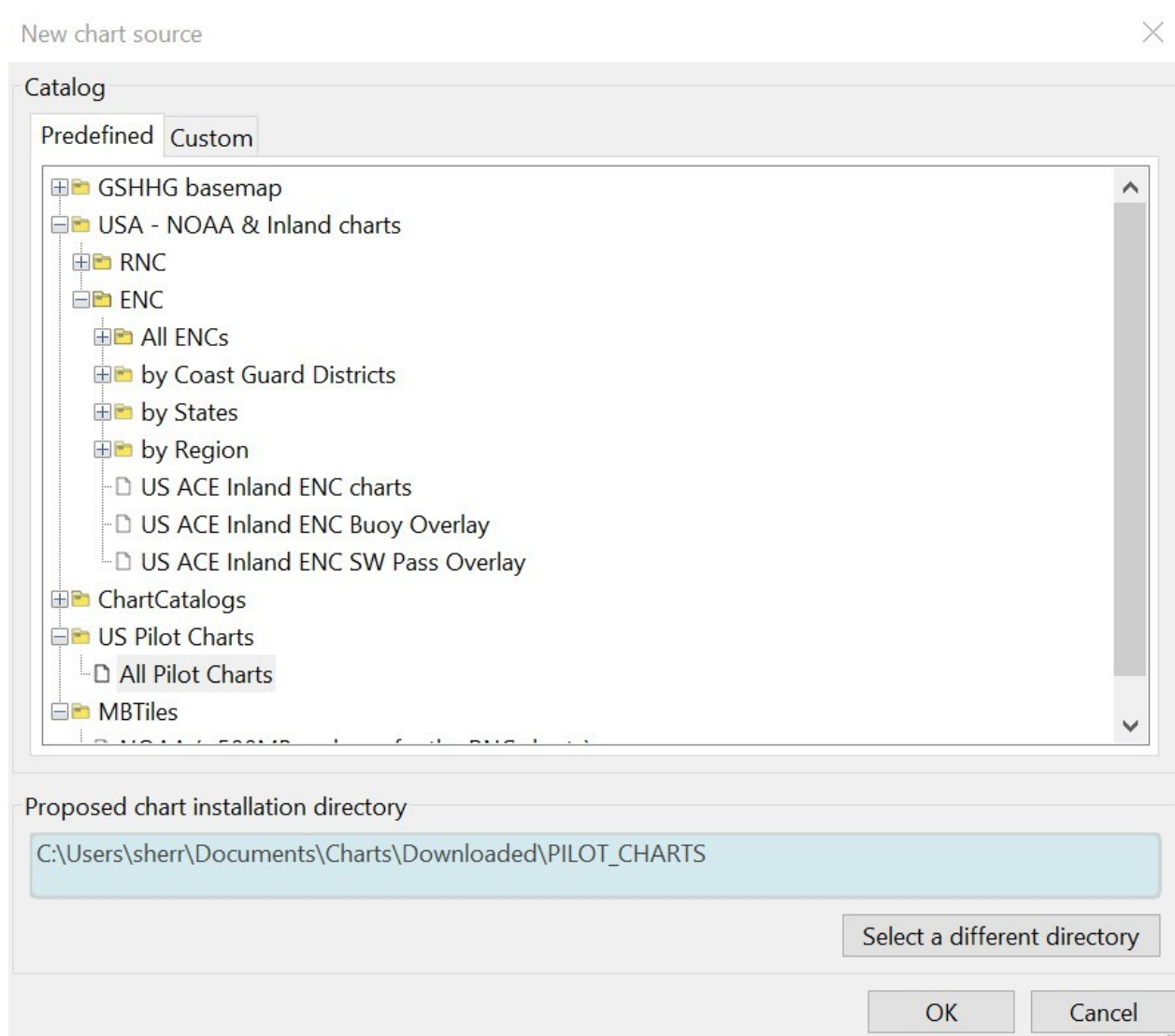
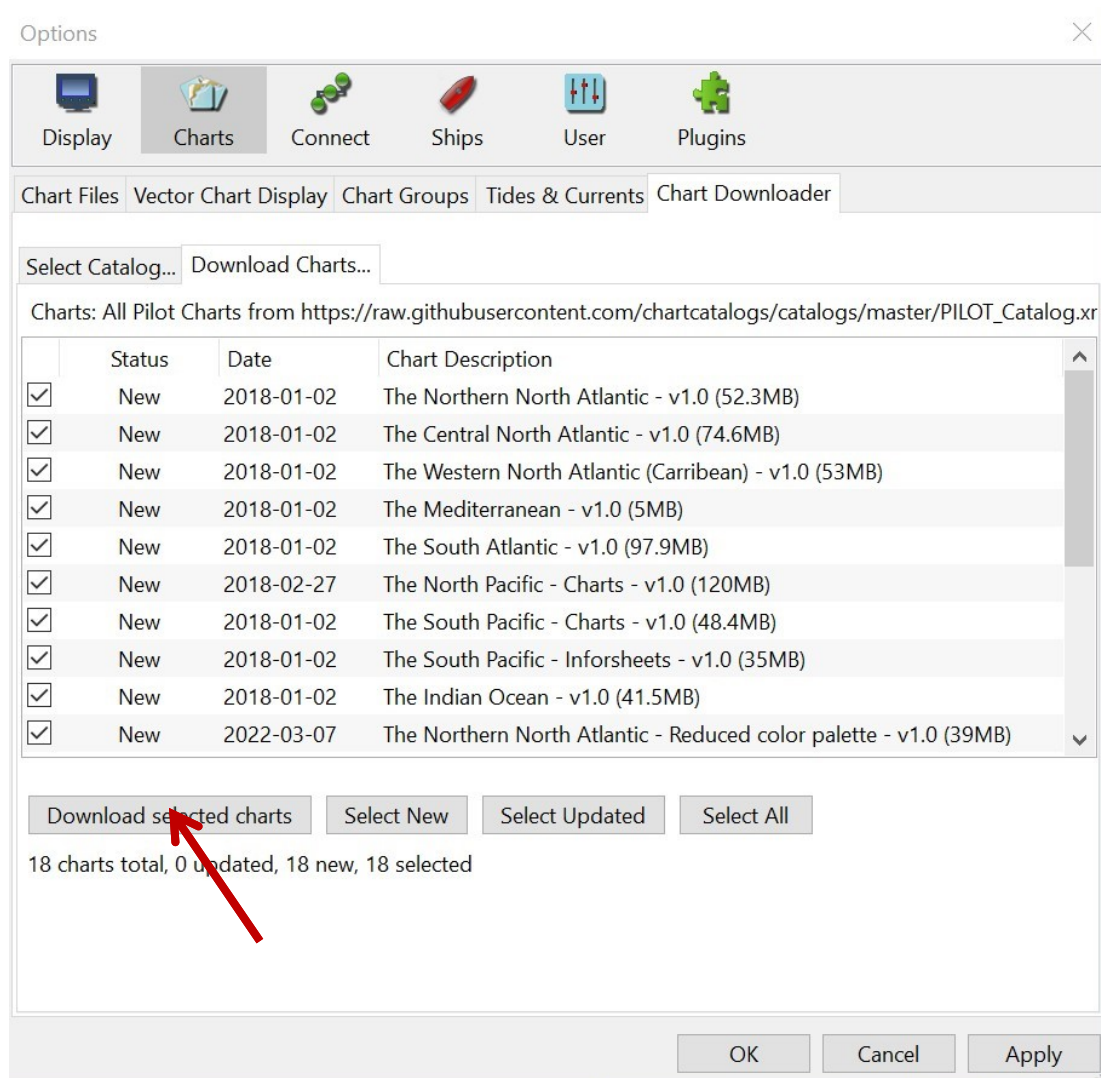
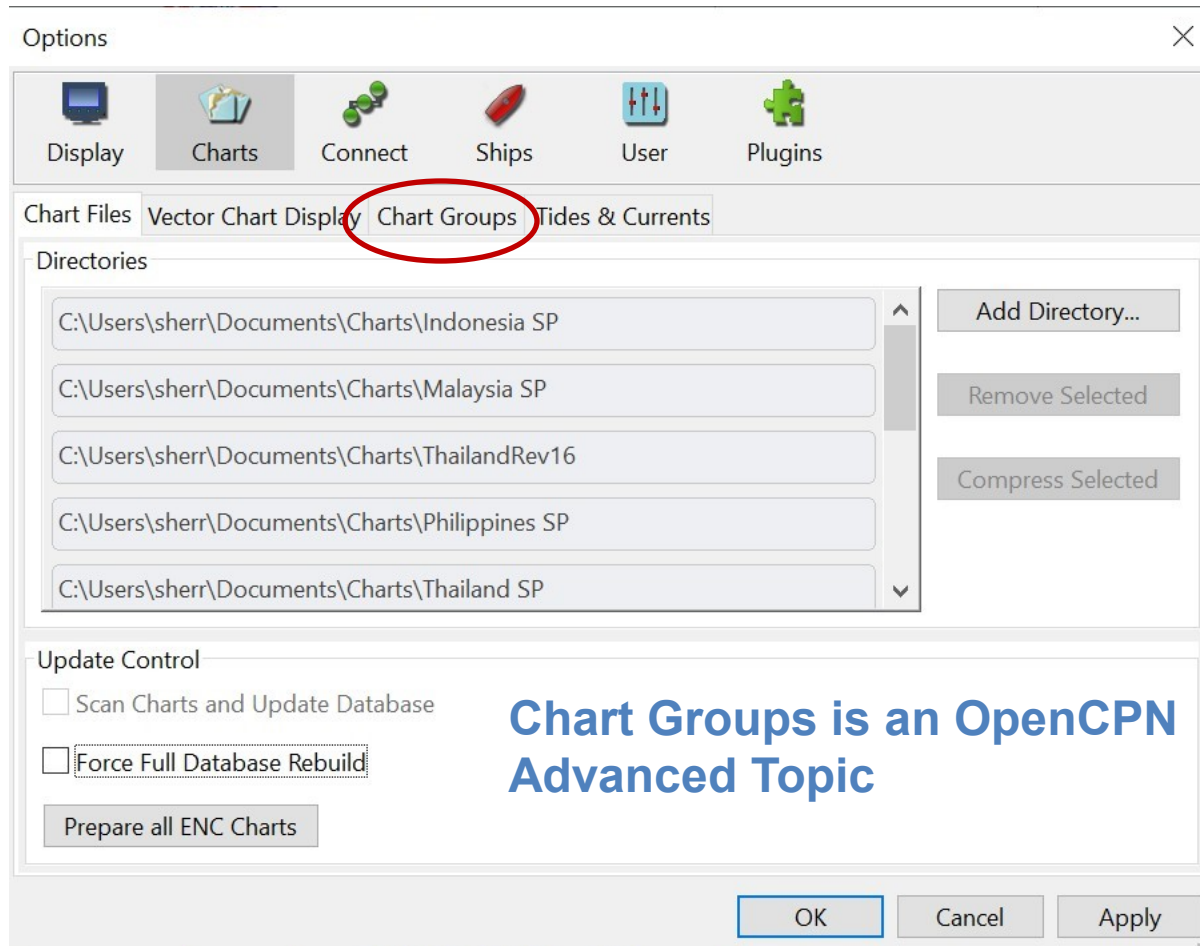


Chart Downloader-Add Charts

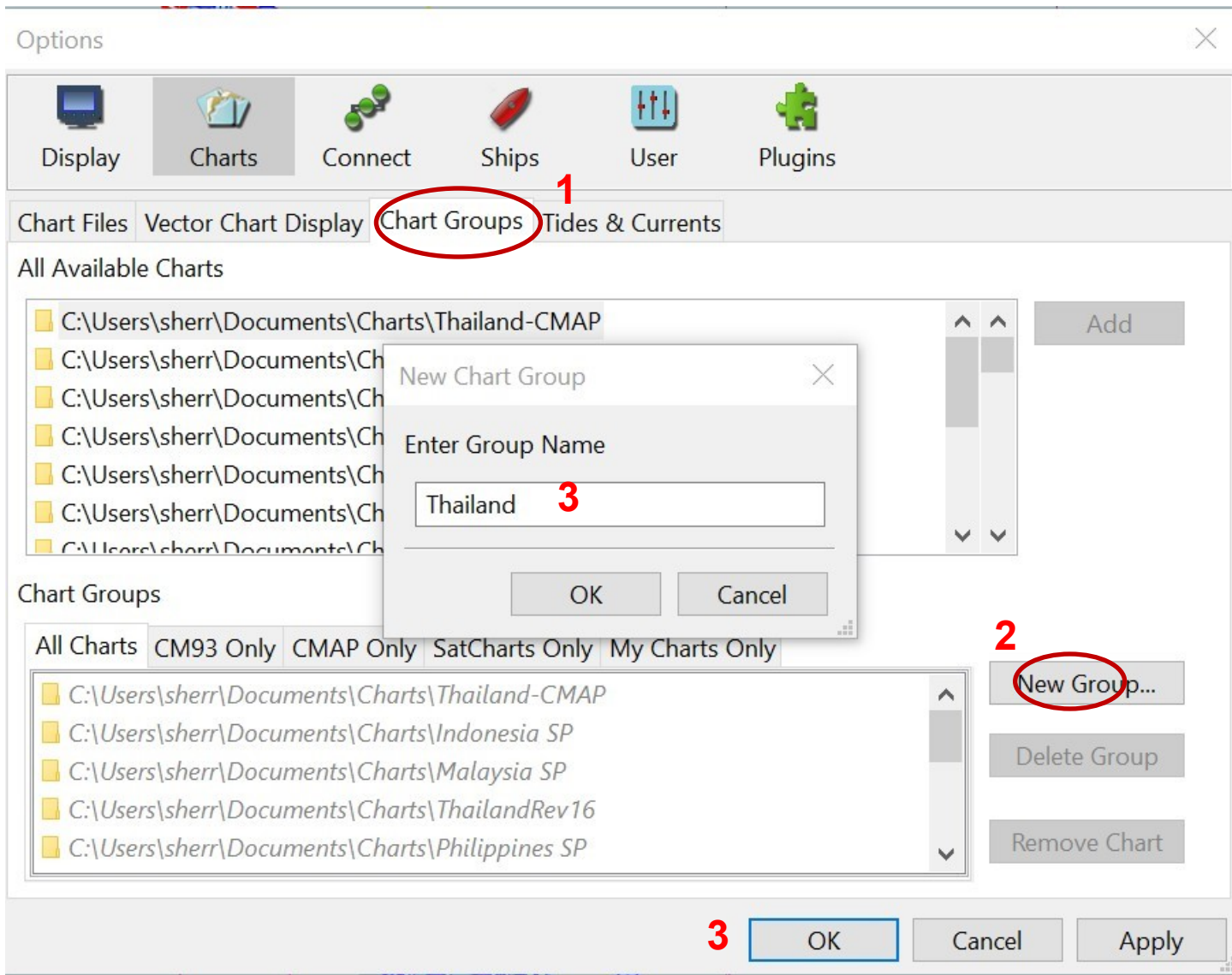


Managing Charts

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

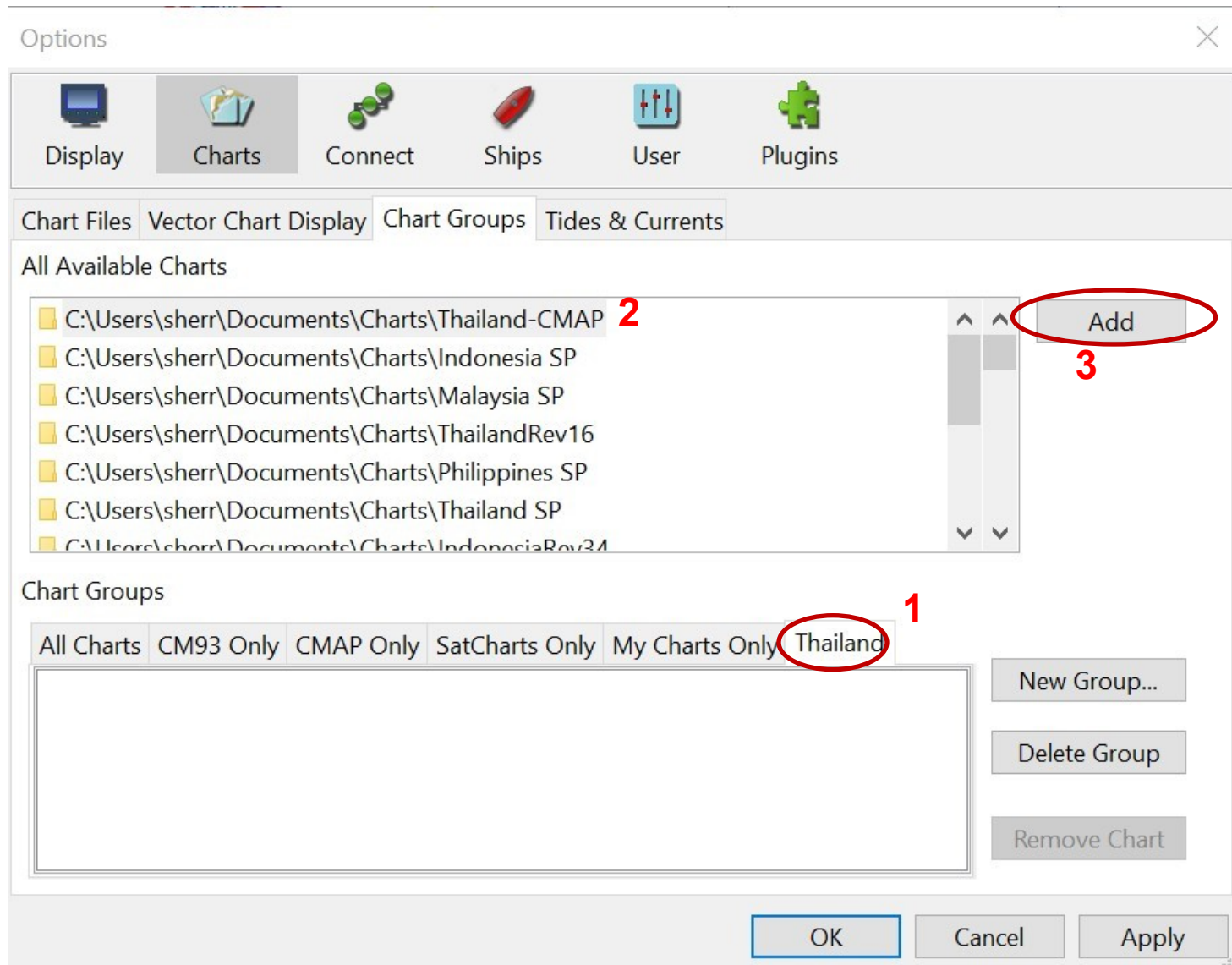


Creating Chart Groups

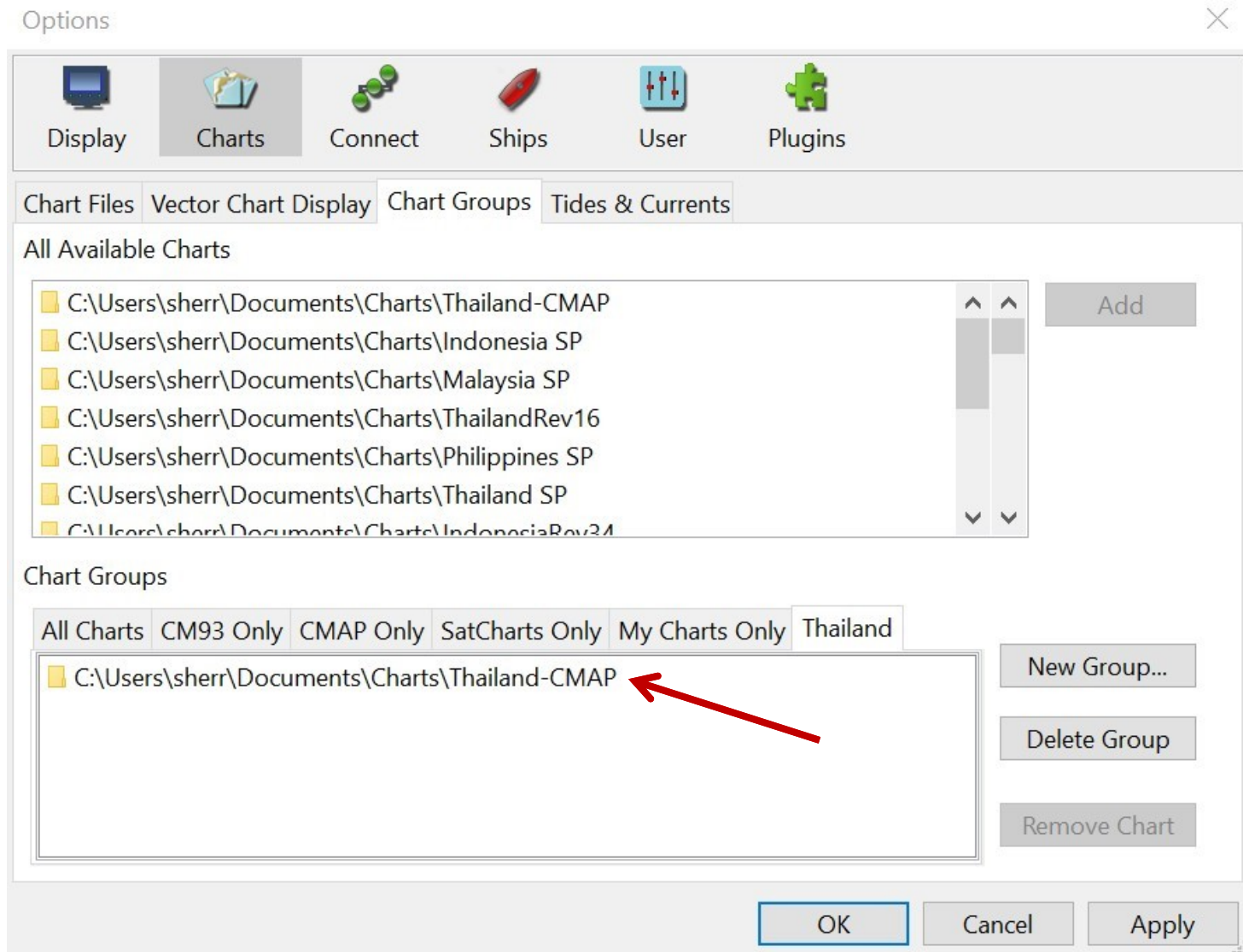


You must do Step 3 before proceeding with adding charts to the group²⁶

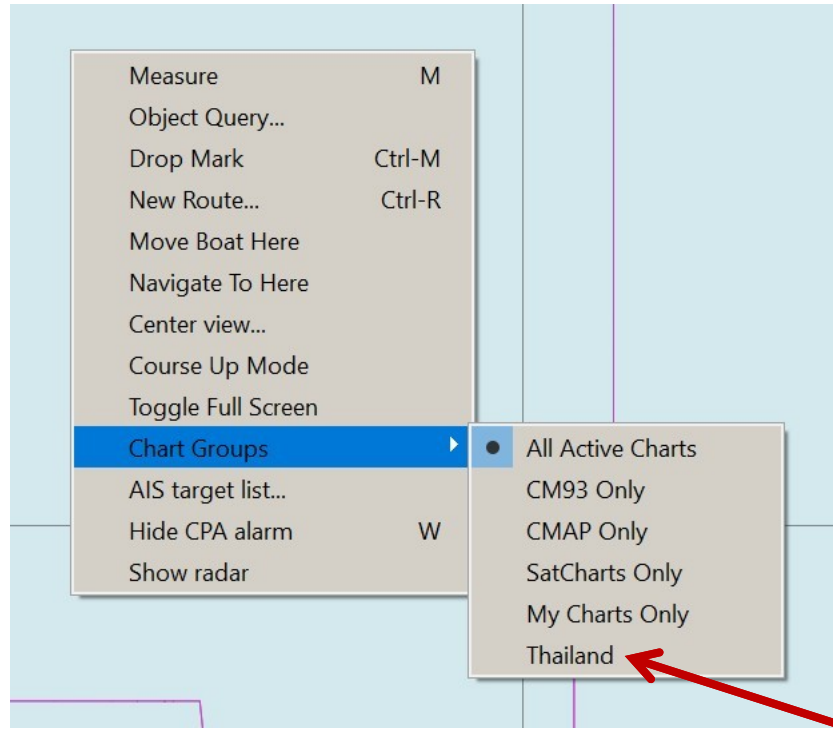
Adding Charts to a Chart Group



Adding Charts to a Chart Group

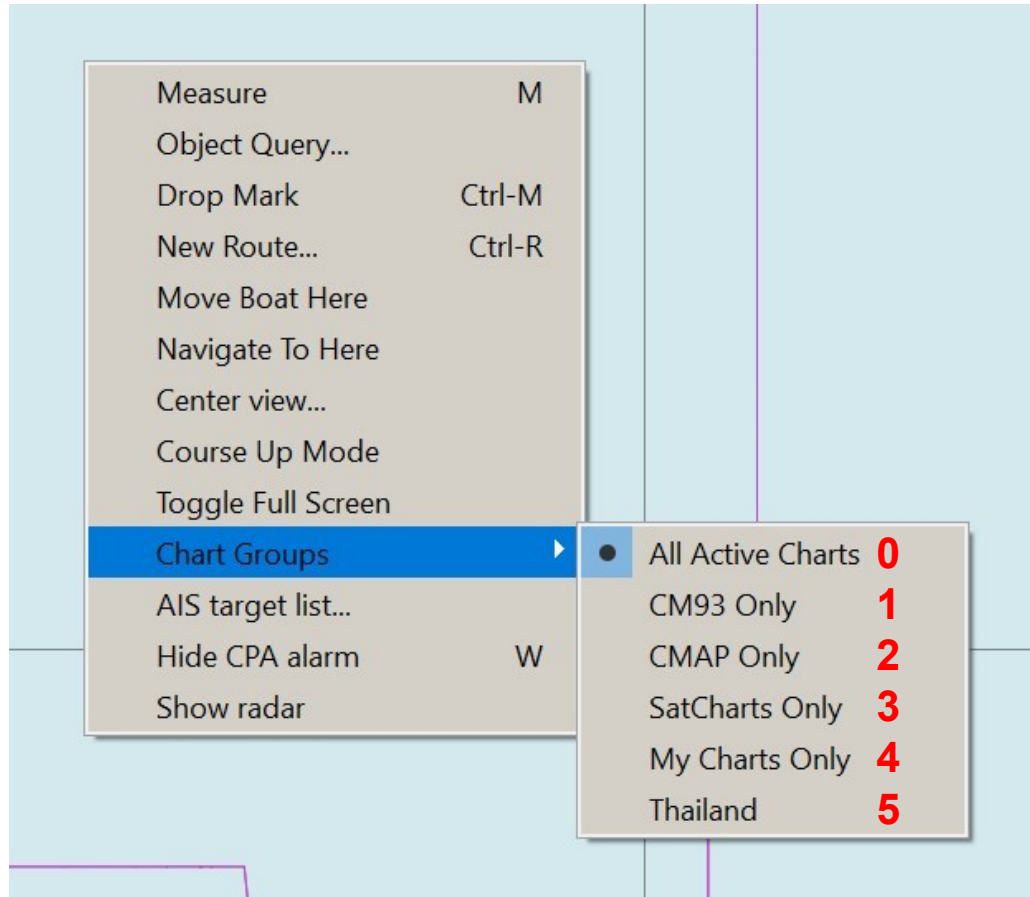


Selecting Chart Groups



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

Selecting Chart Groups



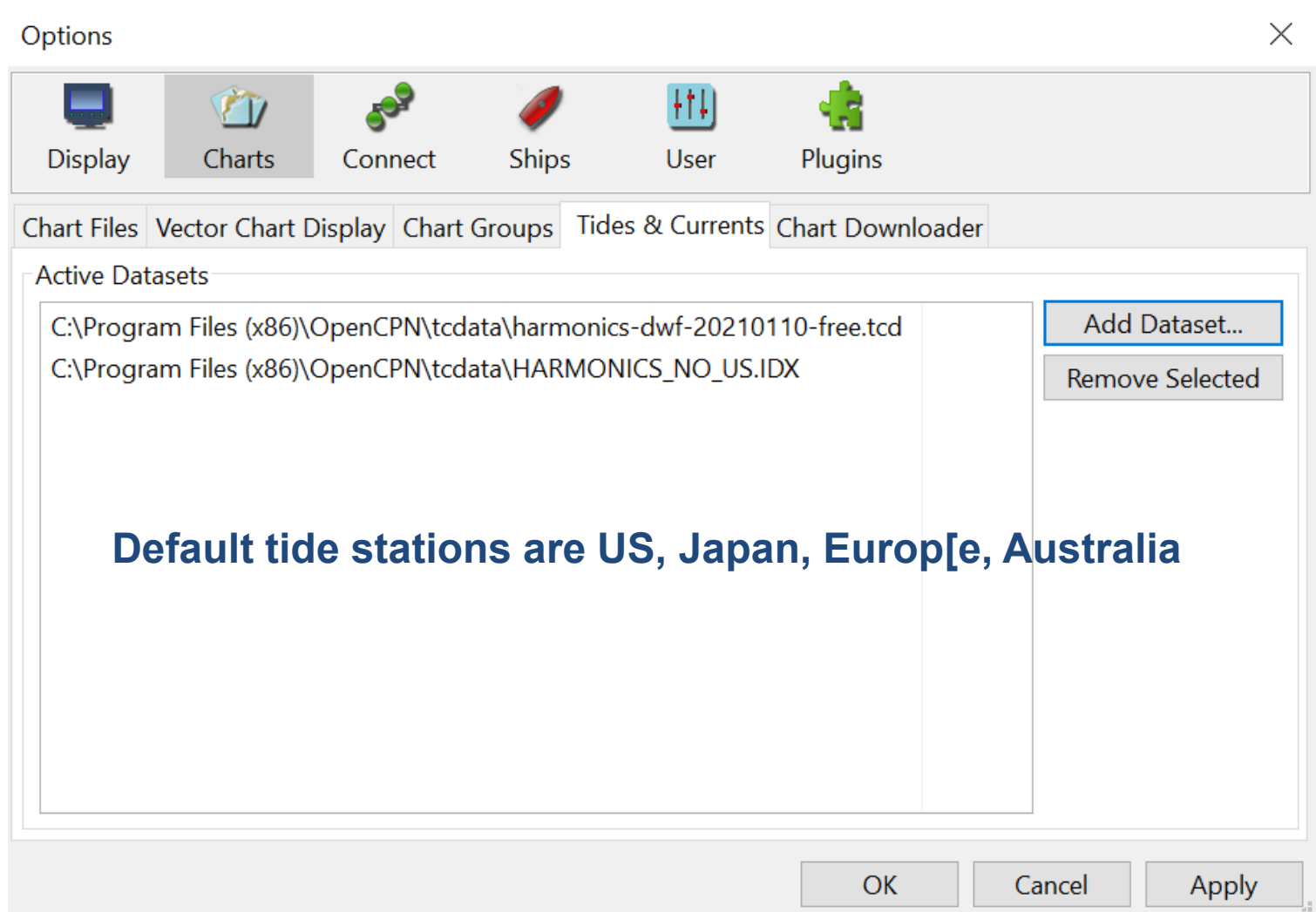
Or, use the number “Hot Key”
(one keystroke selects option)

No need to right-click

Typing “5” on the keyboard selects Thailand, 0=All charts

Tides

Options / Charts / Tides & Currents



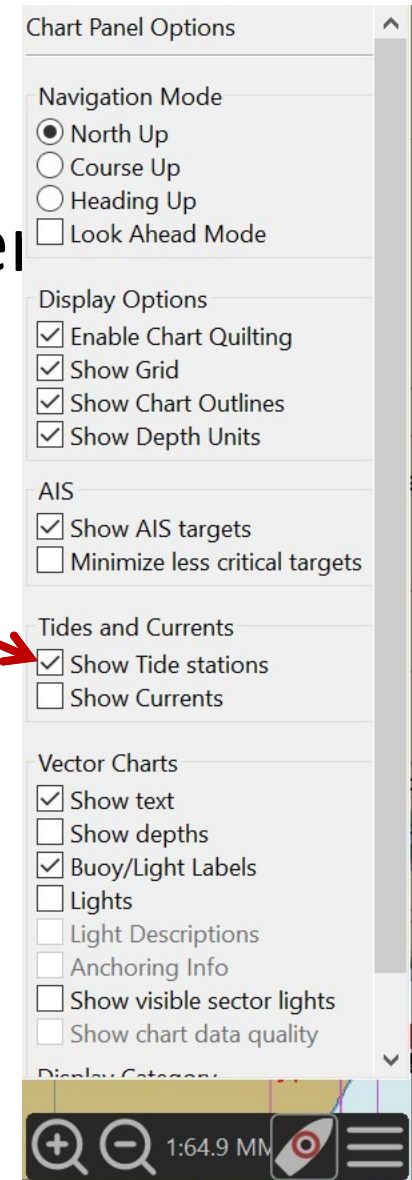
Rest of the World Tides

- 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

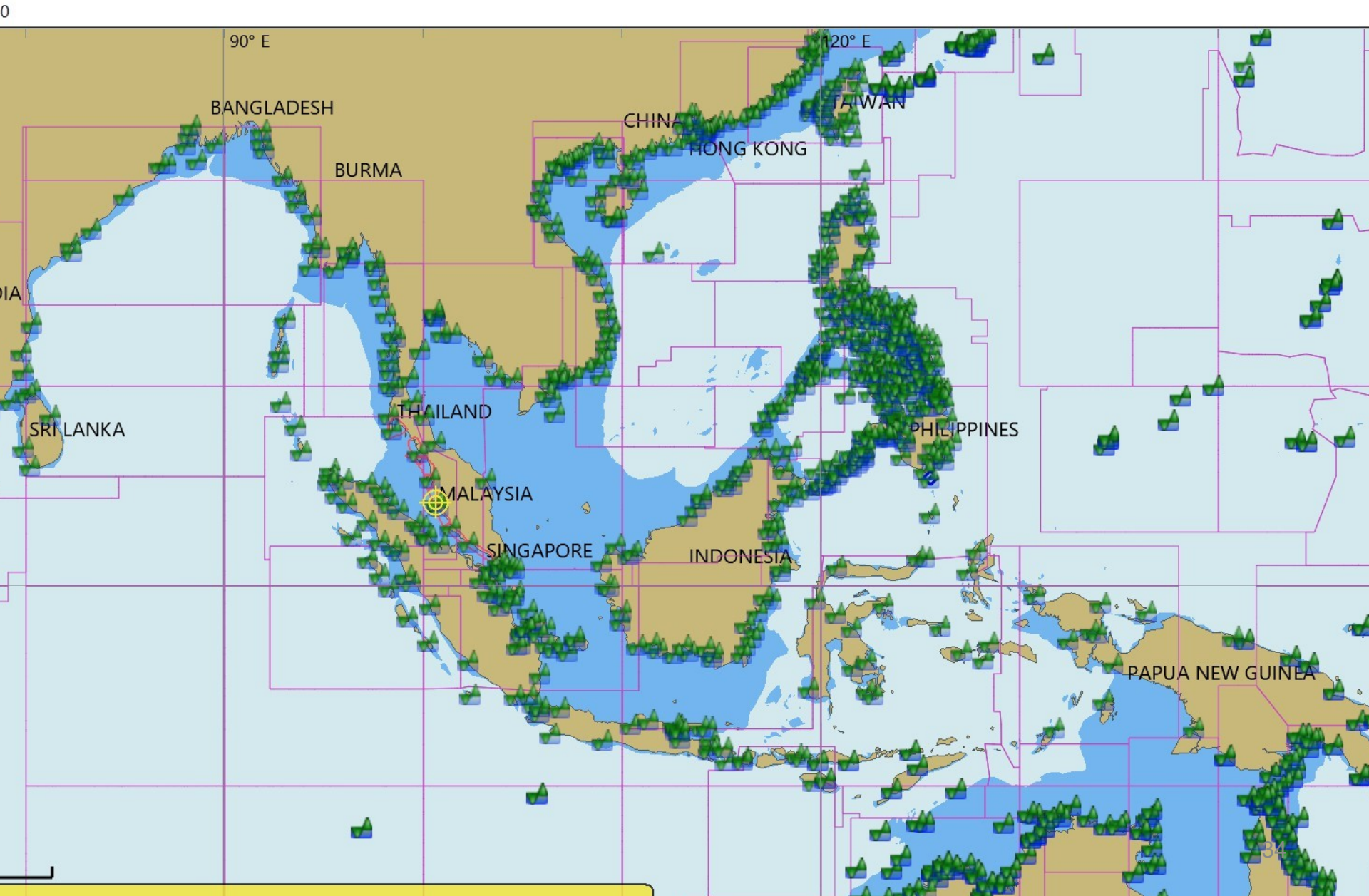
For some reason you will have to re-install tides
Every time you re-install or upgrade OpenCPN

To show the tide stations

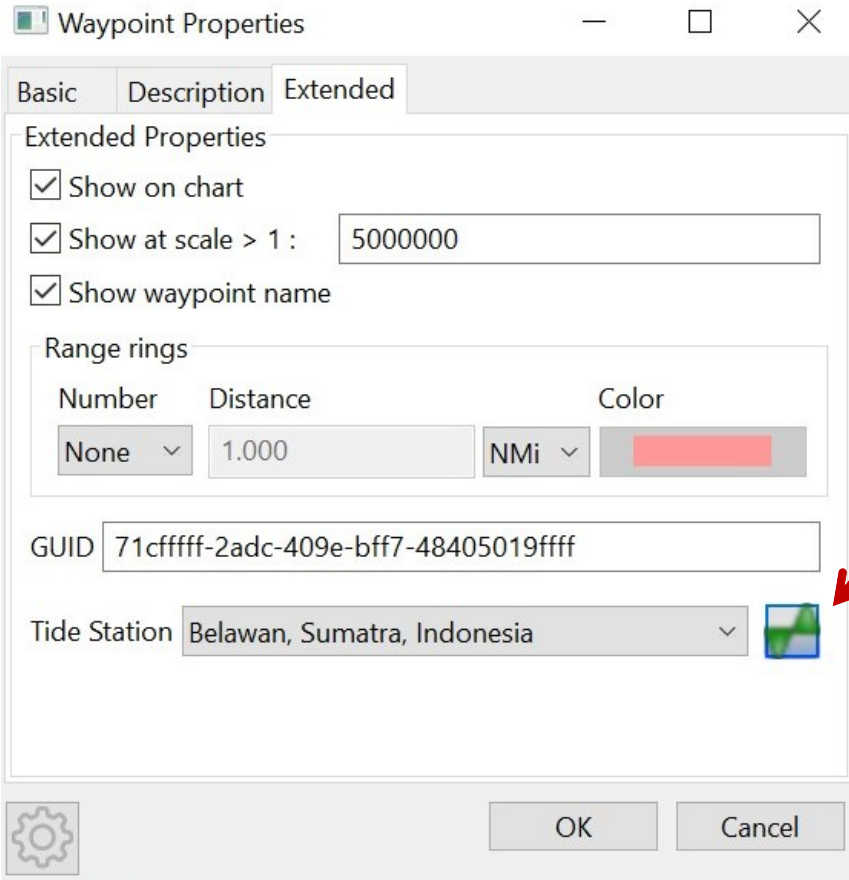
- Click on the “hamburger” in the lower right to show chart options
- Check Show Tide stations



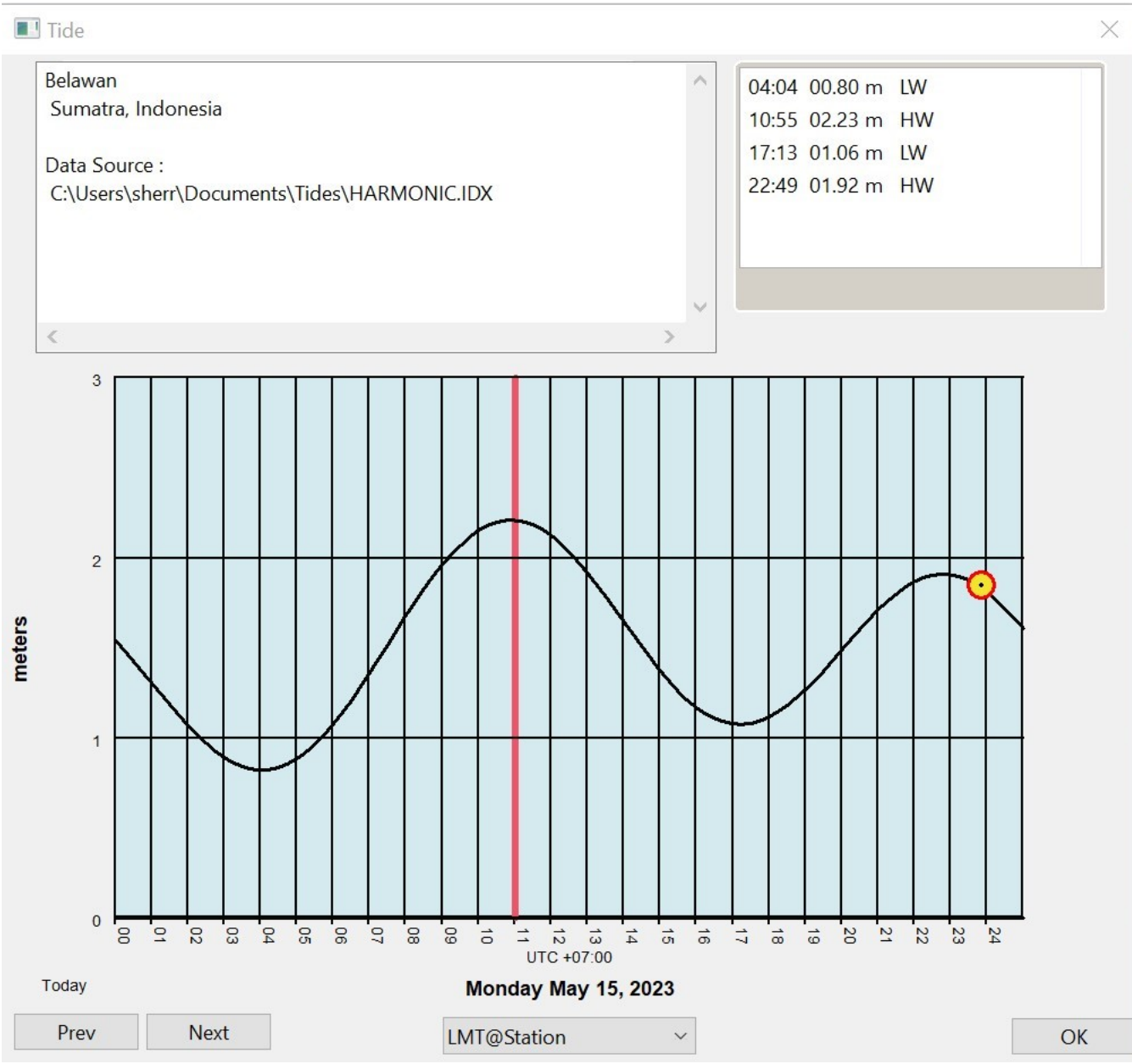
Tide stations all over!



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



Options dialog box with tabs: 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
- Use Garmin GRMN (Host) mode for uploads
- Use magnetic bearings in output sentence ECAPB

Adjust communication priorities...

Data Connections

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

OK Cancel Apply

Special cases, ignore for now!

**Scroll
To add**





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

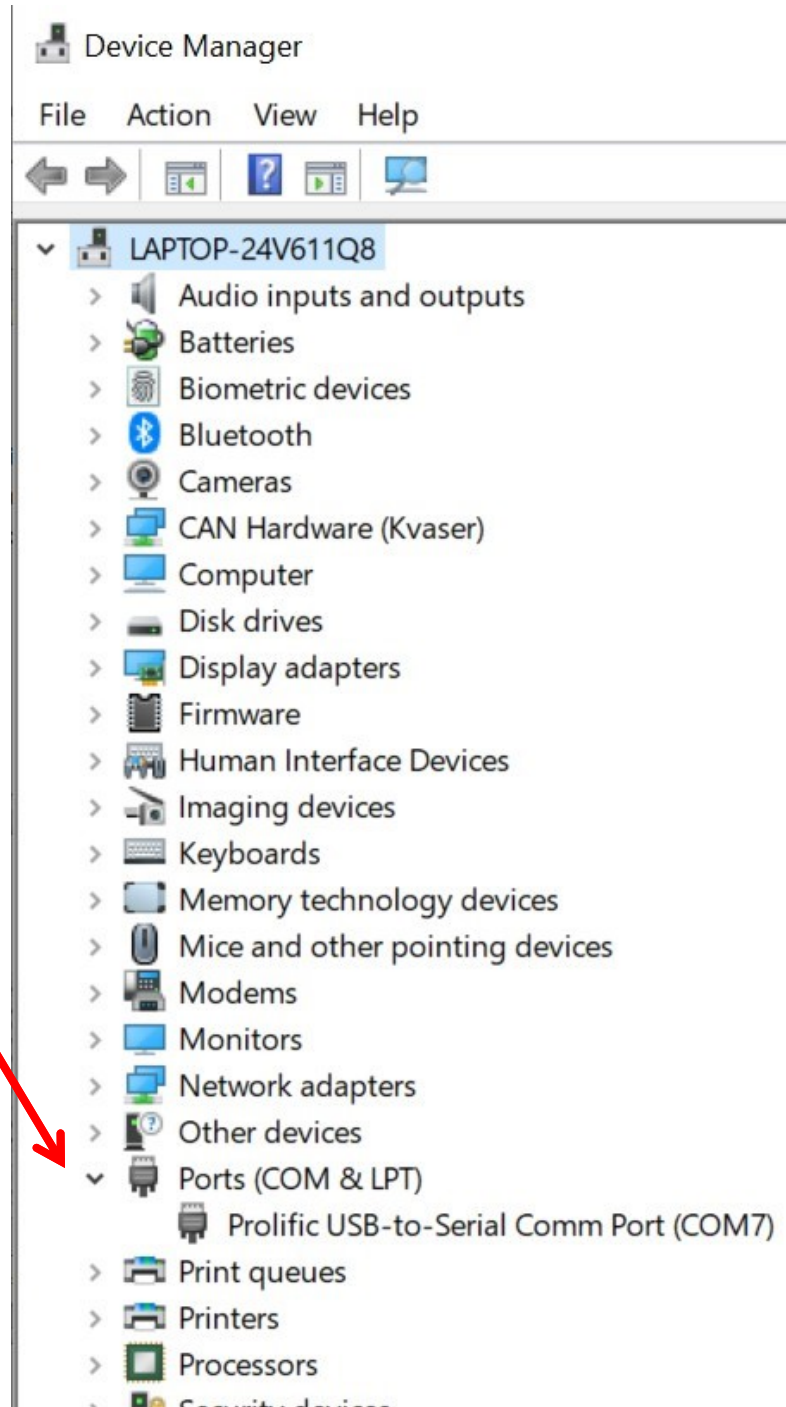
Add Connection Remove Connection

Serial Network

OK Cancel Apply

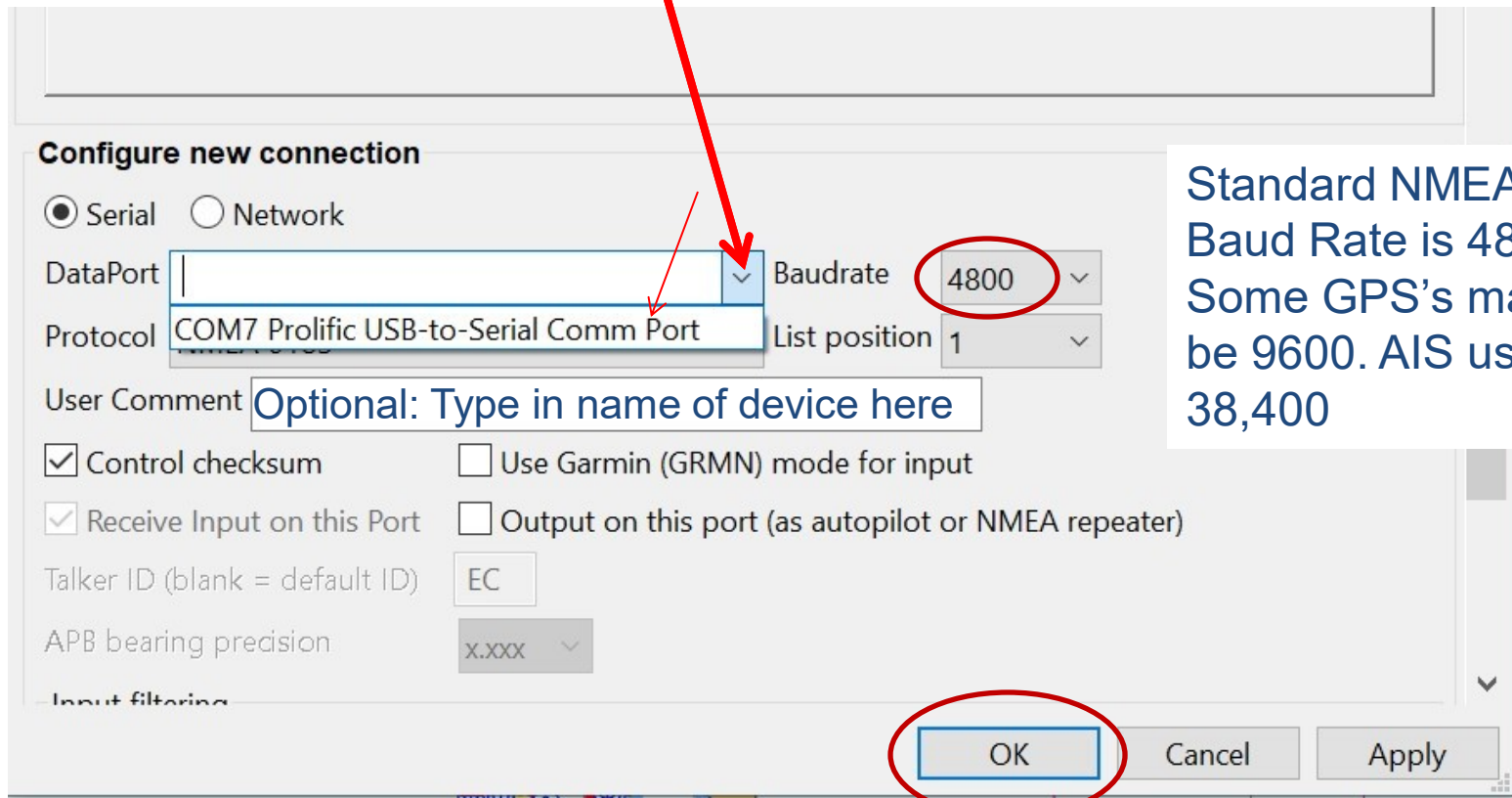
Setting up a GPS

- 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

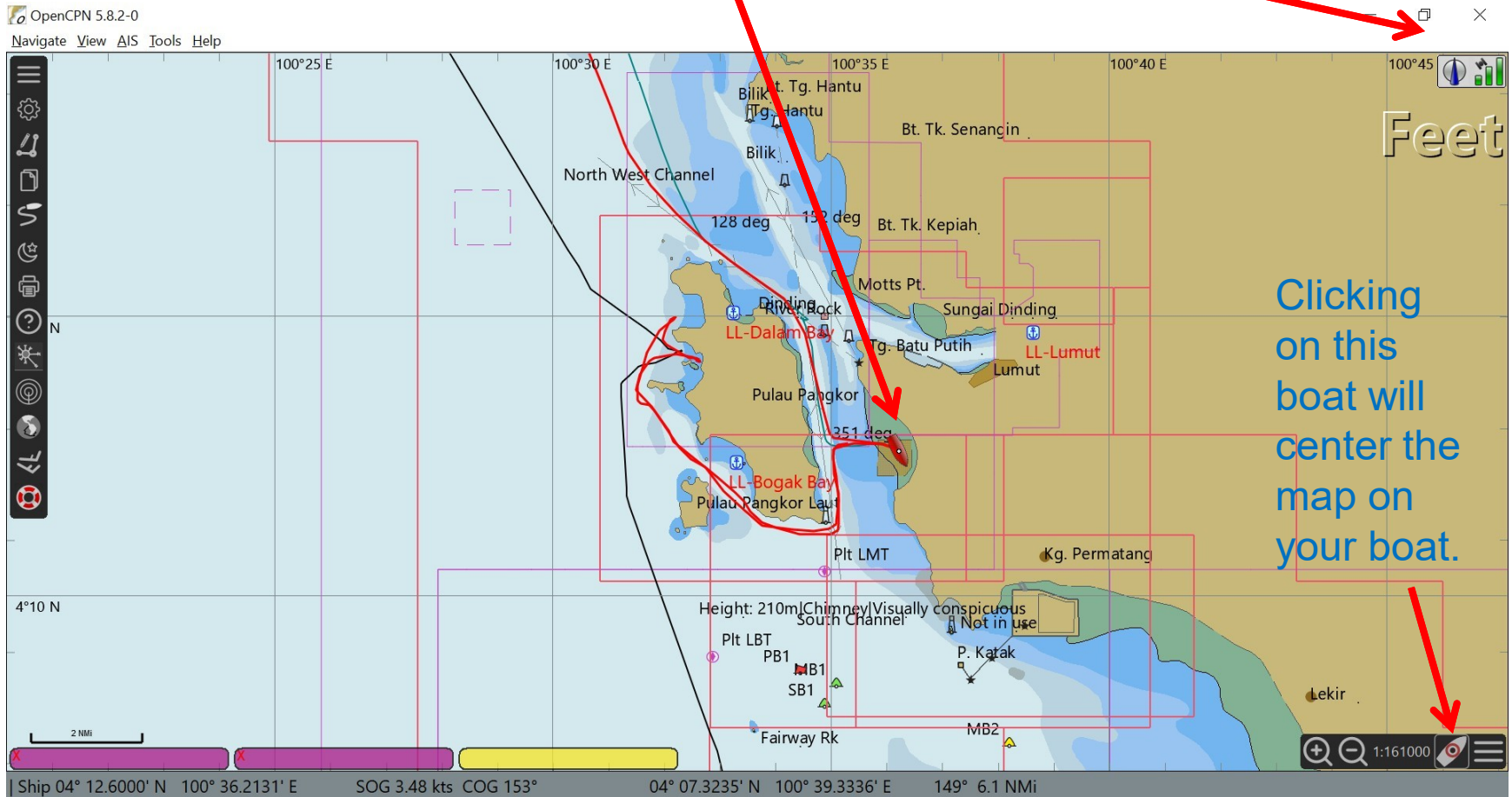


For a simple NMEA GPS for position input, that's all you need to do!

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 a software interface. On the left is the 'NMEA Debug Window' displaying a list of NMEA sentences. On the right is an 'Options' dialog box with several tabs: 'Display', 'Charts', 'Connect', 'Ships', 'User', and 'Plugins'. The 'Connect' tab is selected. In the 'General' section of the 'Connect' tab, the checkbox 'Show NMEA Debug Window' is checked and circled in red. Below this, the 'Data Connections' section contains a table with one entry: 'Serial Input NMEA 0183 COM7 4800 1'. The 'Enable' checkbox for this entry is also checked. At the bottom of the dialog are 'OK', 'Cancel', and 'Apply' buttons.

NMEA Debug Window

15:07:09 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>
15:07:10 (COM7) \$GPGGA,070710.000,0412.6154,N,10036.2056,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:10 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>
15:07:11 (COM7) \$GPGGA,070711.000,0412.6149,N,10036.2061,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:11 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>
15:07:11 (COM7) \$GPGGA,070712.000,0412.6143,N,10036.2065,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:12 (COM7) \$GPGSV,3,1,12,11,37,317,31,06,25,007,11,12,12,324,23,4,00,00,00,00
15:07:12 (COM7) \$GPRMC,070712.000,A,0412.6143,N,10036.2065,E,0.35,A,0.0,M,0.0,0.0,0.0,0.0,0.0,0.0
15:07:13 (COM7) \$GPGGA,070713.000,0412.6145,N,10036.2066,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:13 (COM7) \$GPRMC,070713.000,A,0412.6143,N,10036.2066,E,0.73,A,0.0,M,0.0,0.0,0.0,0.0,0.0,0.0
15:07:14 (COM7) \$GPGGA,070714.000,0412.6141,N,10036.2070,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:14 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>
15:07:15 (COM7) \$GPGGA,070715.000,0412.6139,N,10036.2071,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:15 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>
15:07:16 (COM7) \$GPGGA,070716.000,0412.6140,N,10036.2071,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:16 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>
15:07:17 (COM7) \$GPGGA,070717.000,0412.6145,N,10036.2067,E,1,04,3.4,21.3,M,-14.3,M,,0000*41<0x0D><0x0A>
15:07:17 (COM7) \$GPGSA,M,3,11,06,12,24,,,,,,,,,4.8,3.4,3.3*36<0x0D><0x0A>

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 Furdno 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 on the Chart

- 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.

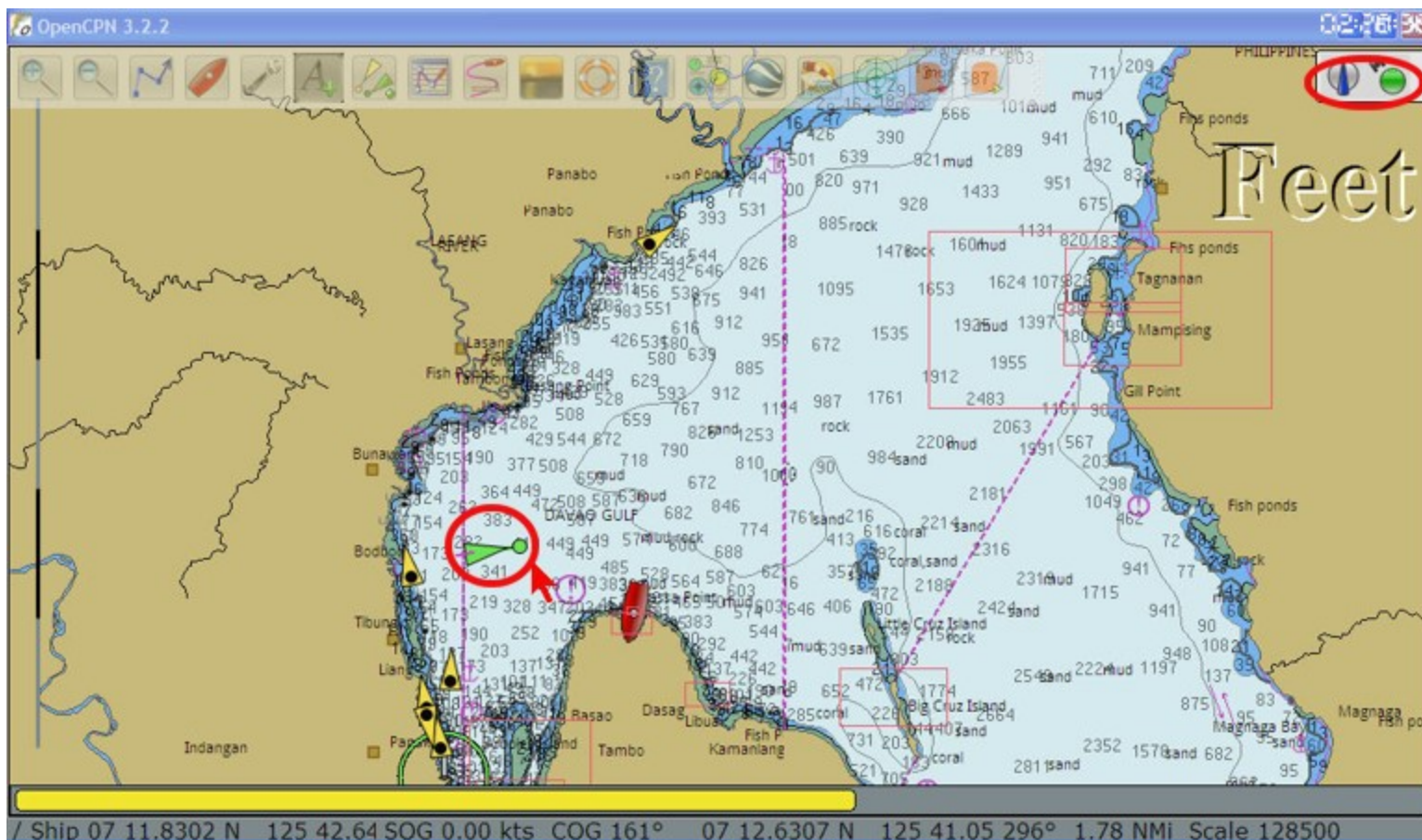
Newer AIS's may supply AIS (and maybe position) by Wifi. OpenCPN can do this by adding the connection as a Network connection.

- Consult your Mfg's manual, and the OpenCPN manual.

Getting Your AIS on the Chart

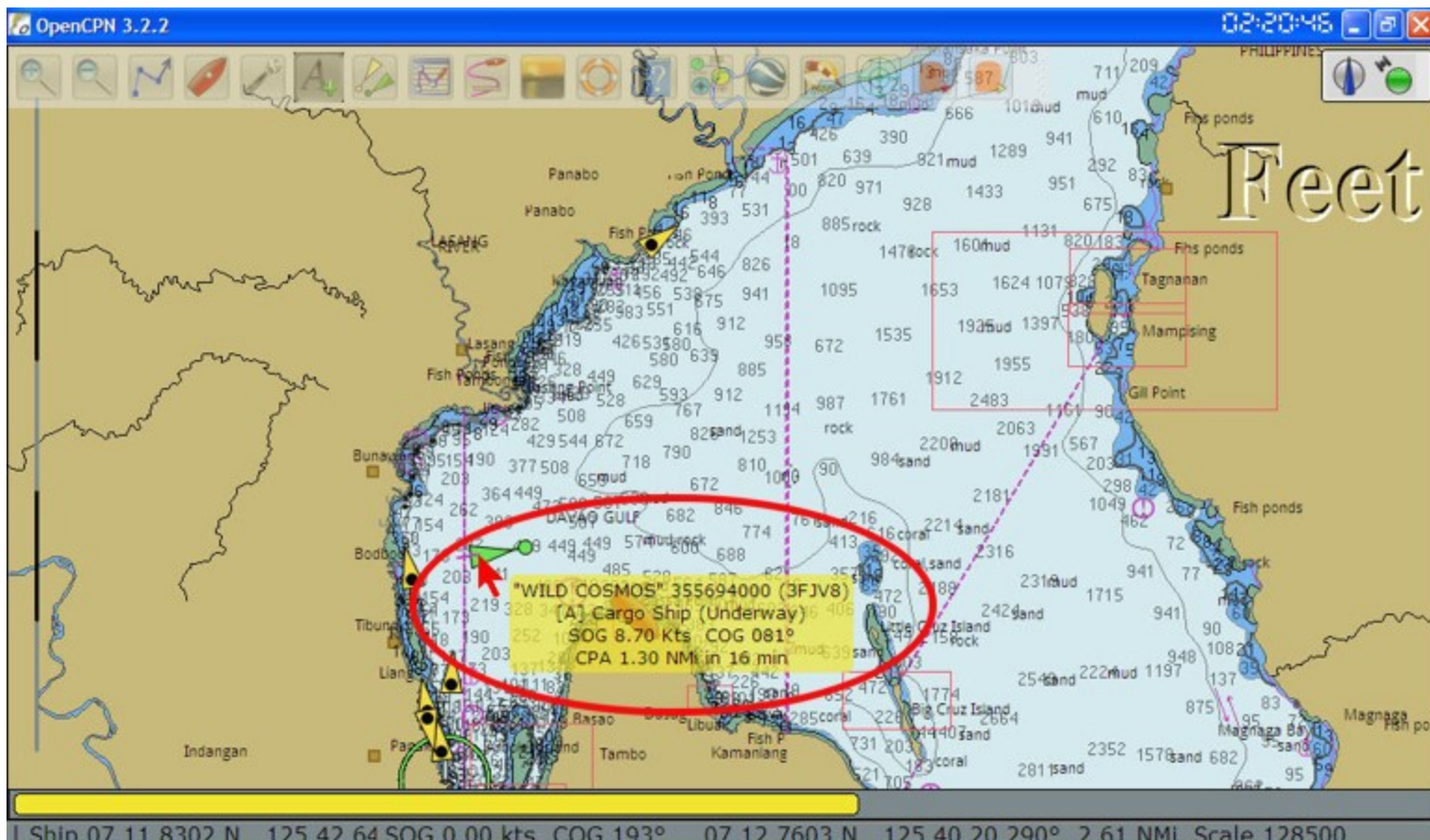
Once installed and configured – Ships with AIS on your chart!

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



Getting Your AIS on the Chart

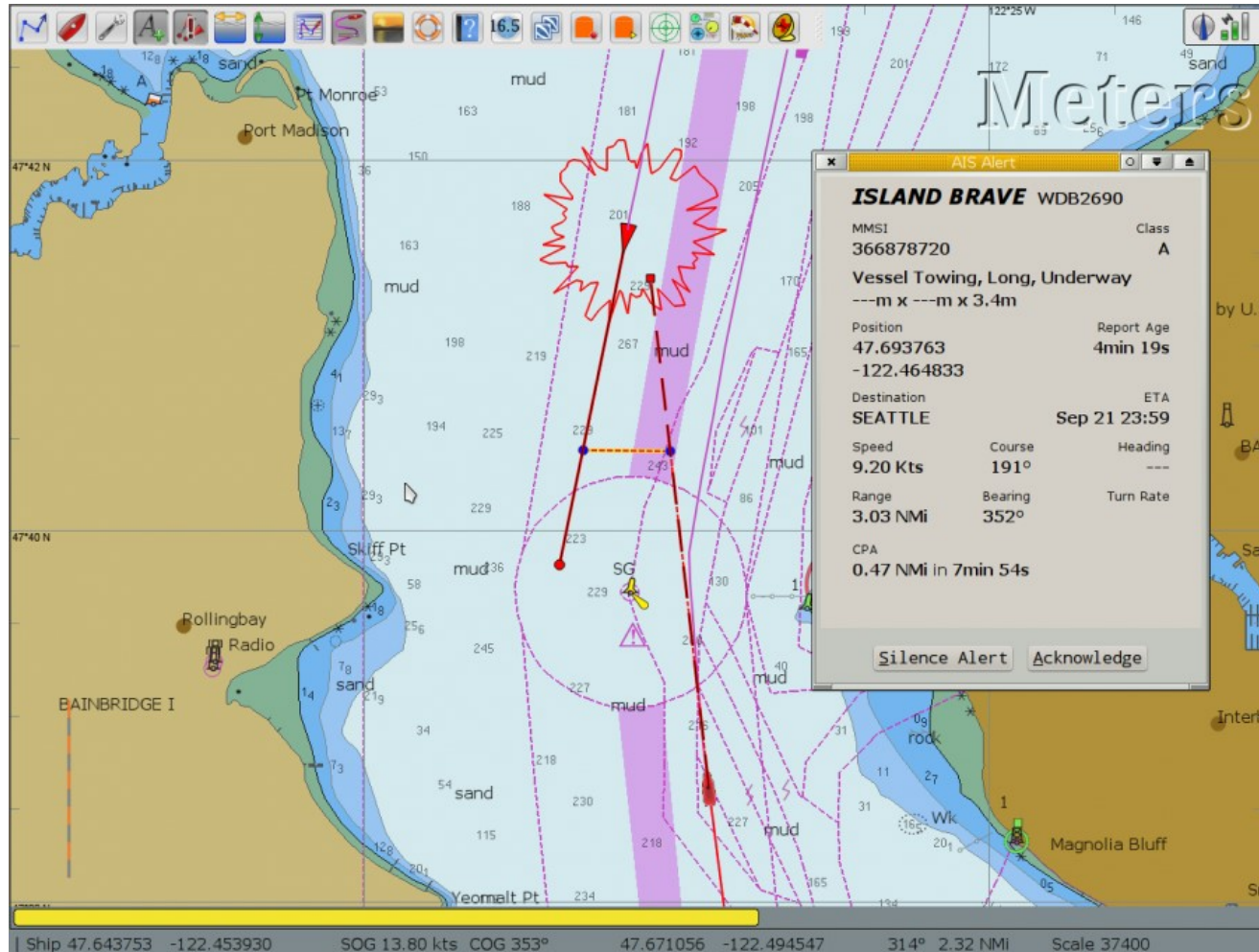
Placing your cursor on a ship gives a pop-up information box



Getting Your AIS on the Chart

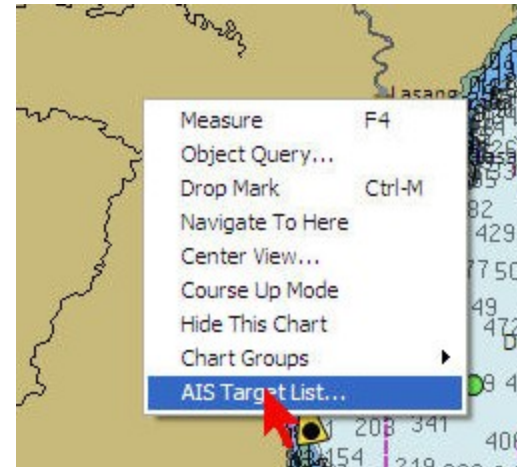
Right click on target to show AIS Target Data and CPA

See
OpenCPN
Manual for
LOTS more
on AIS in
OpenCPN



Getting Your AIS on the Chart

- 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	-	-	-	-
WILD COSMOS	3FJV8	355694000	A	Cargo Ship	Underway	291	2.57	081	8.8
Unknown		357094000	A	Unknown	At Anchor	250	3.05	112	0.1
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

Getting Your AIS on the Chart



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



Getting Your AIS on the Chart

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. (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!!!

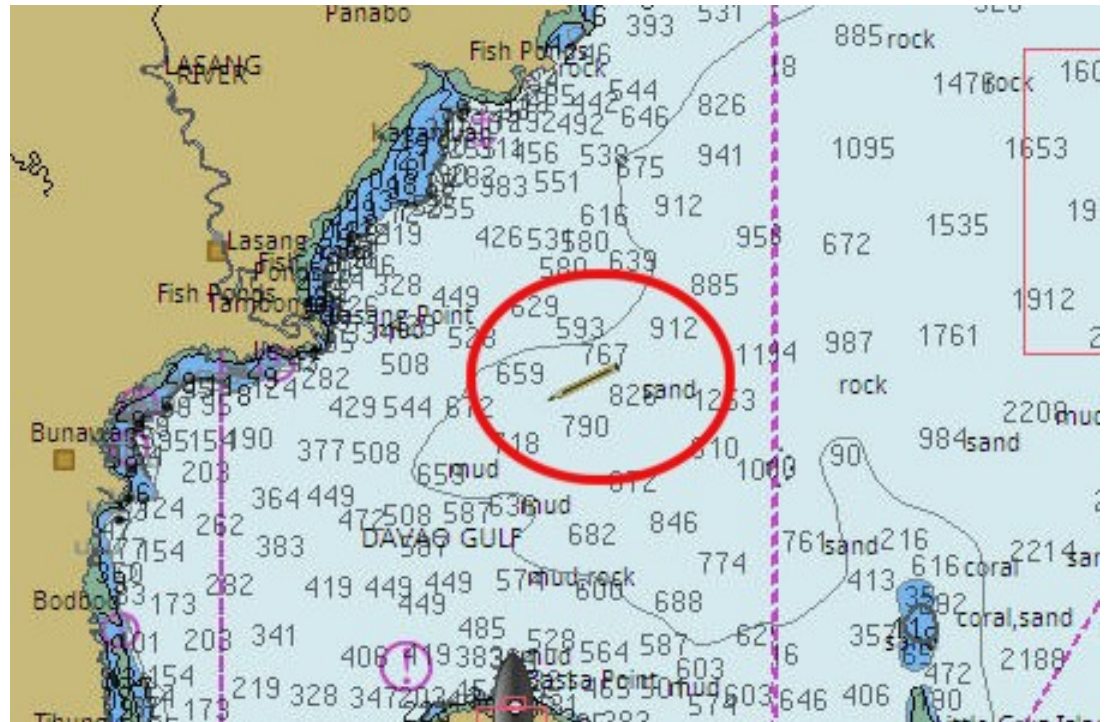
Routes

Create a Route



Select "Create Route"

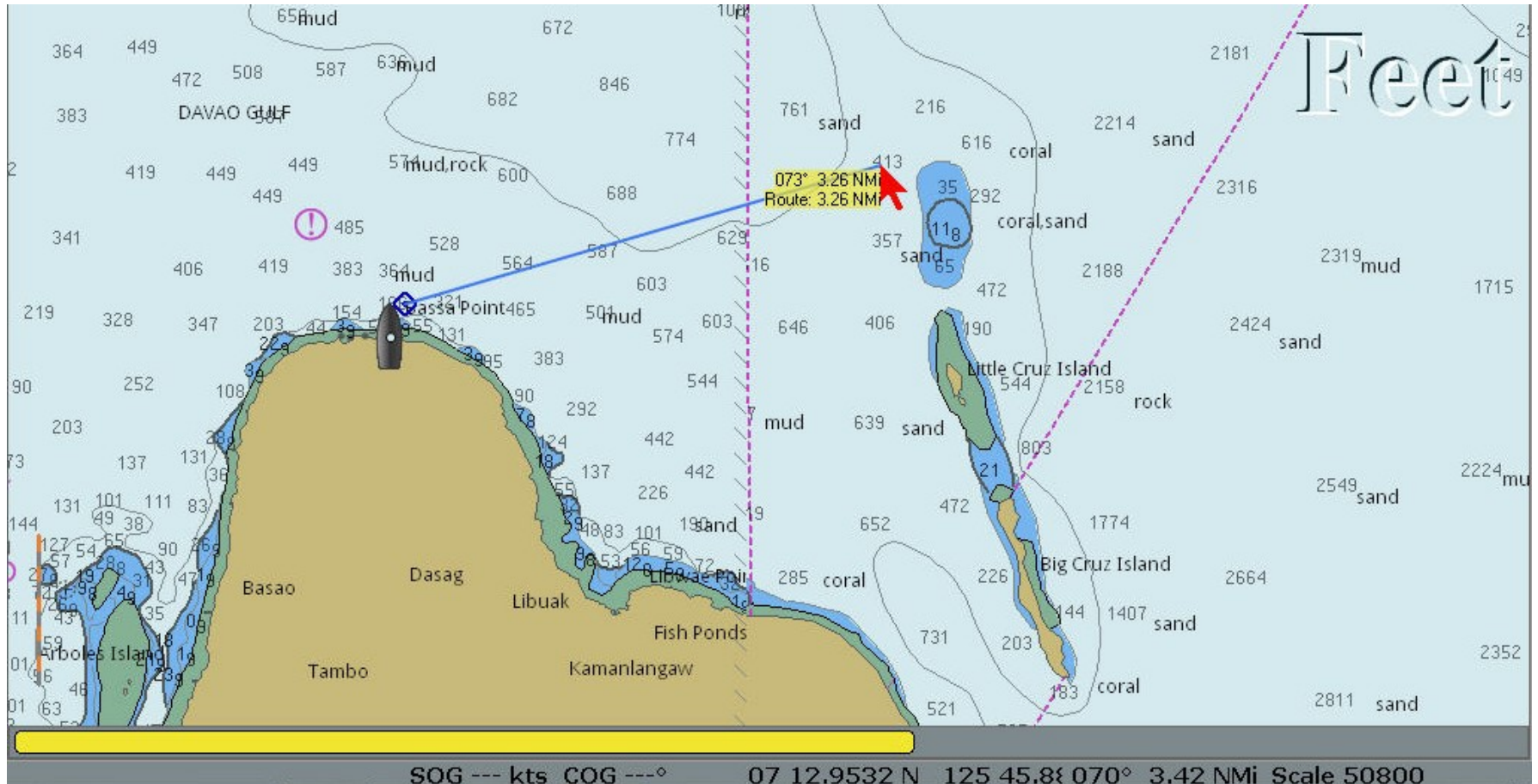
The Cursor turns into a pencil shape



Routes

Create a Route

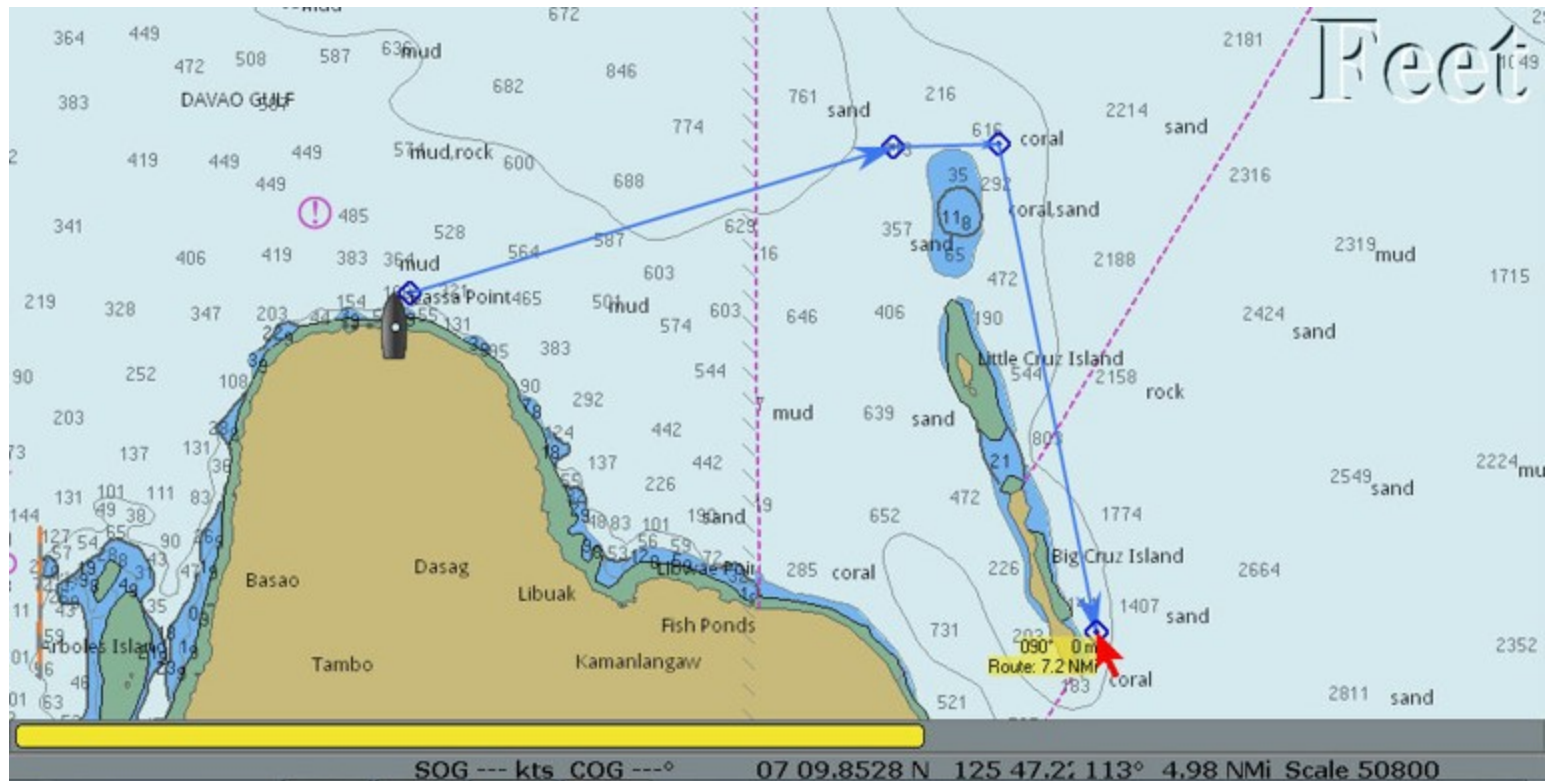
Click the pencil pointer at the desired location to describe a route



Routes

Create a Route

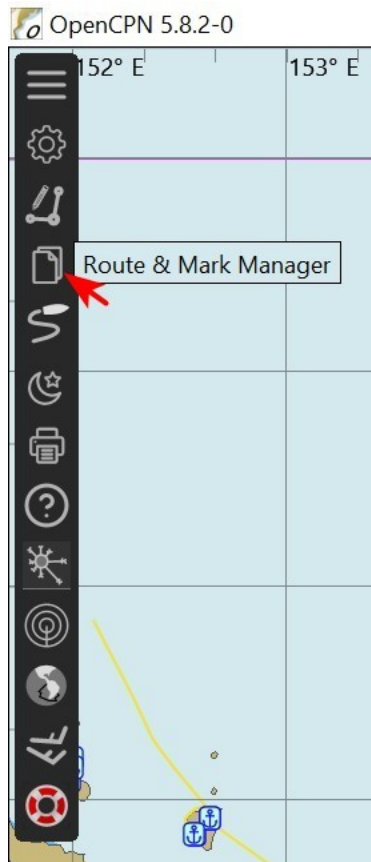
- Continue dropping waypoints (with a click) until you are finished.
- Press the ESC key to stop



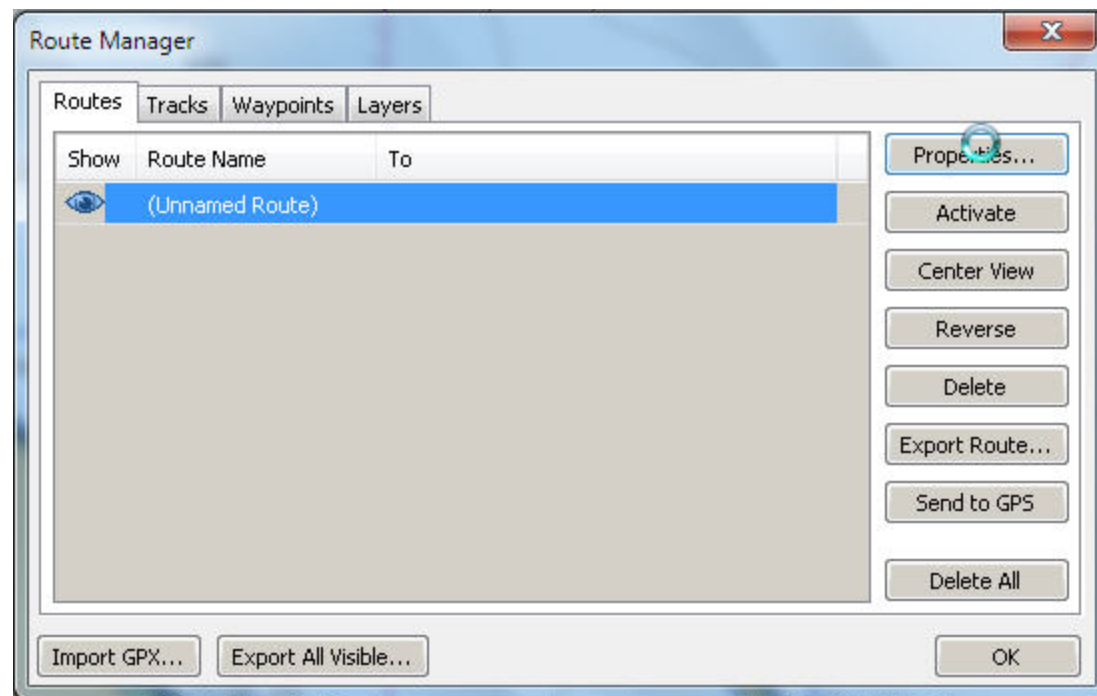
Routes

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

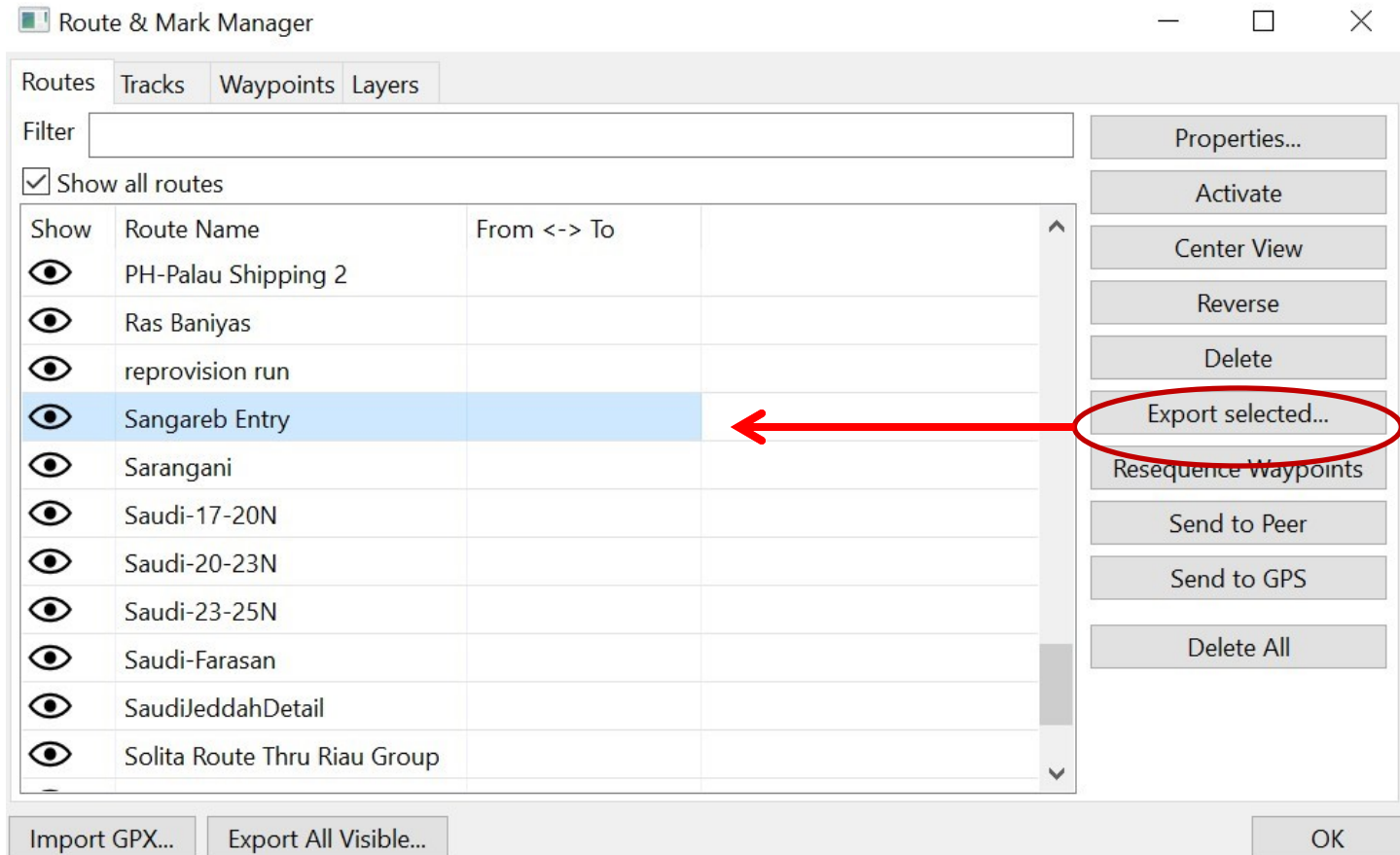
L...	To way...	Dista...	Bear...	Total Dist...	Latitude	Longitu...	ETE	ETA	Spe...	Next tide ...	Description	Course	ETD
---	FEND1	1684....	288 °T	0.0 NMi	22° 53.4'...	036° 18...	11d 16...	Start: 5/12/2...	6			248 °T	
1	FEND2	0.4 N...	248 °T	0.4 NMi	22° 53.3'...	036° 18...	3M 58S	5/12/2023 1...	6			334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

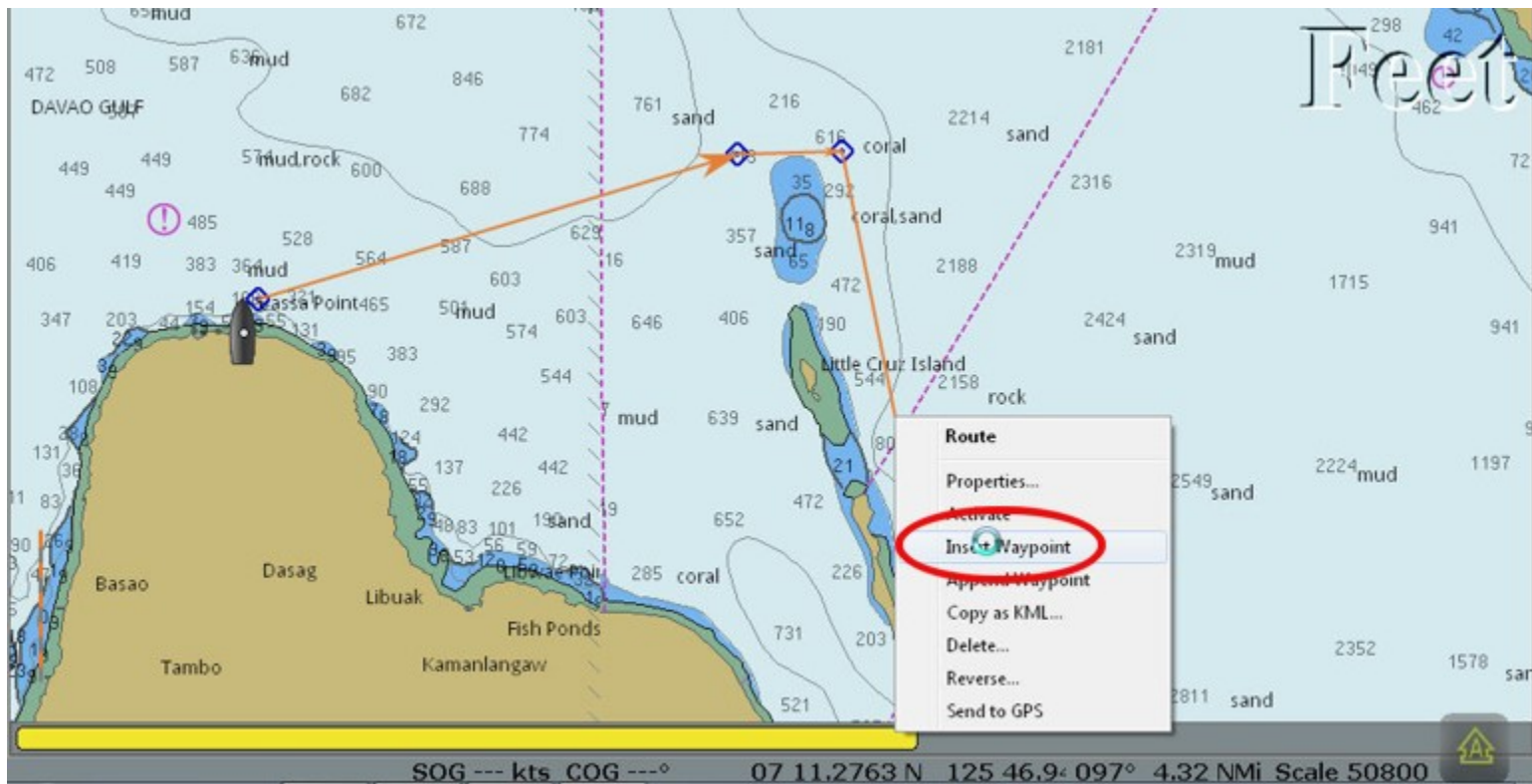
- To save a route outside of OpenCPN (for backup, to share with others)
 - Highlight route
 - Click Export Selected and Save as a file



Routes

Change a Route

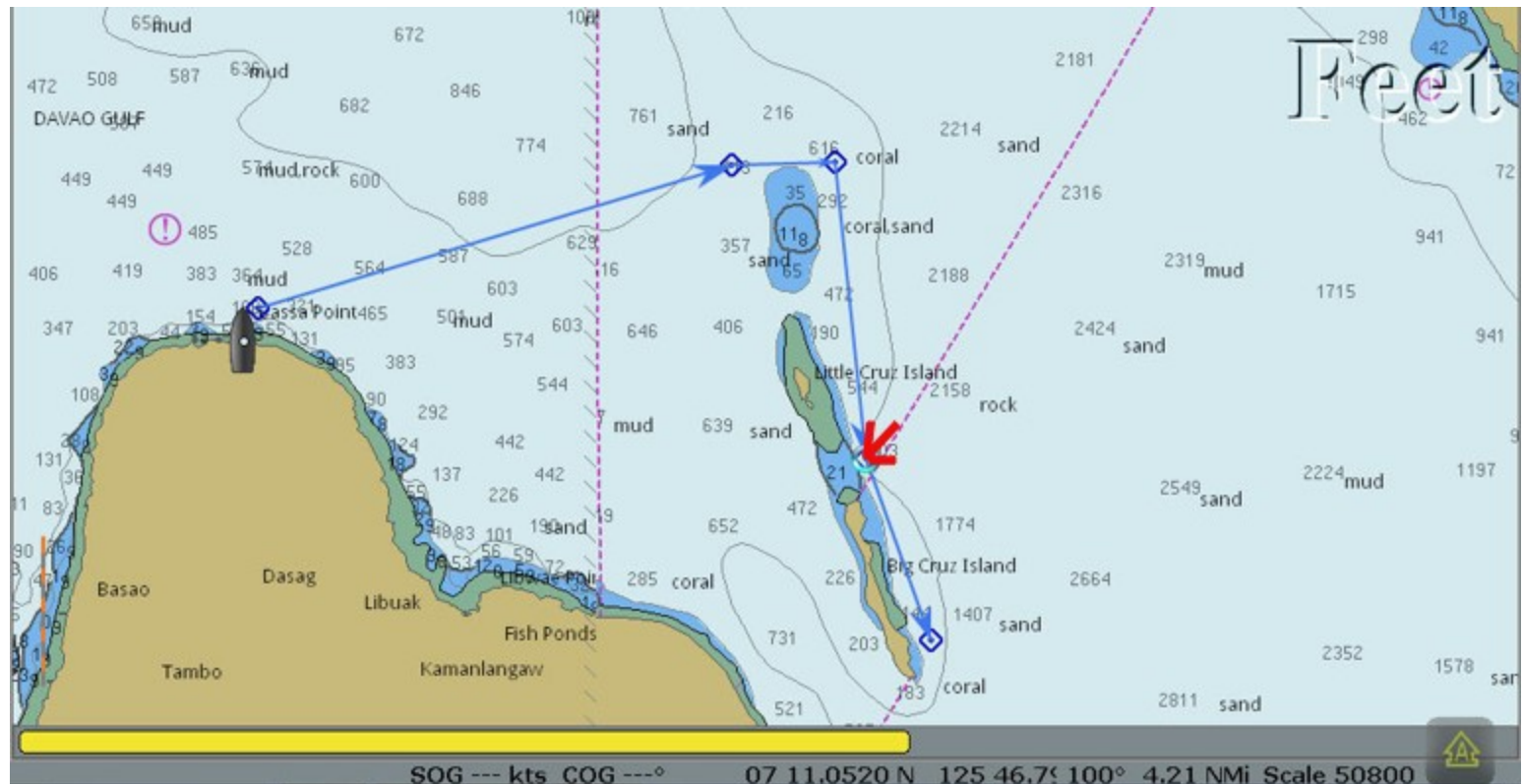
- To change a route
 - Right click on a point on the route
 - Select “Insert Waypoint”



Routes

Change a Route

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



Routes

Change a Route

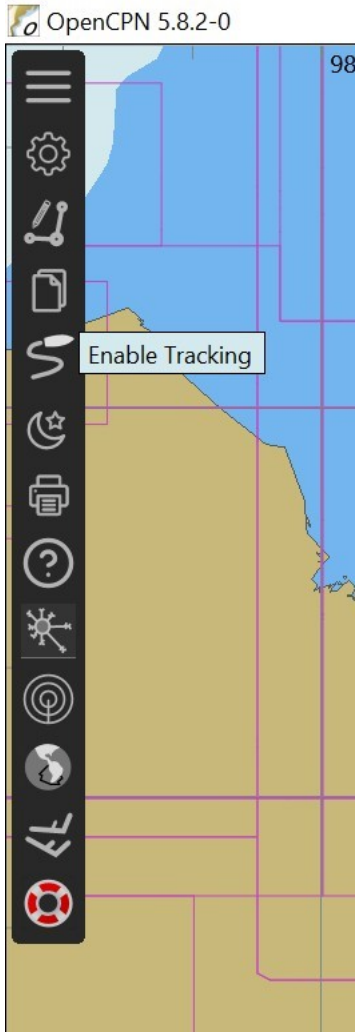
If you can't drag a waypoint, check settings

The screenshot shows the 'Options' dialog box with the 'Routes/Points' tab selected. The 'Ships' icon in the top toolbar is highlighted. 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

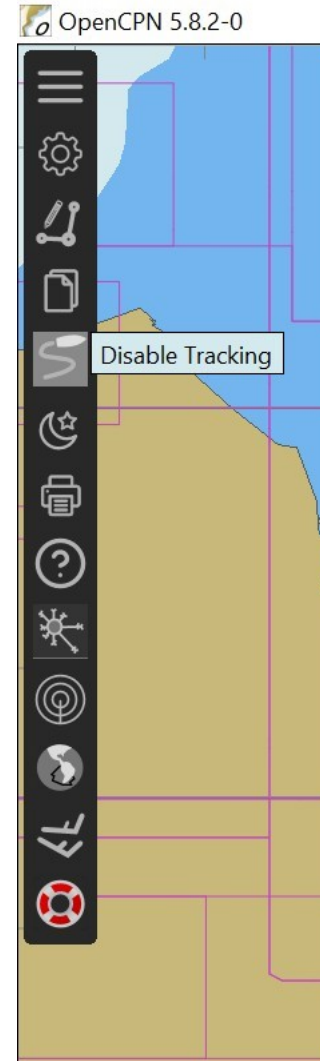
Click on the Tracking Icon to activate tracking

Creating a Track



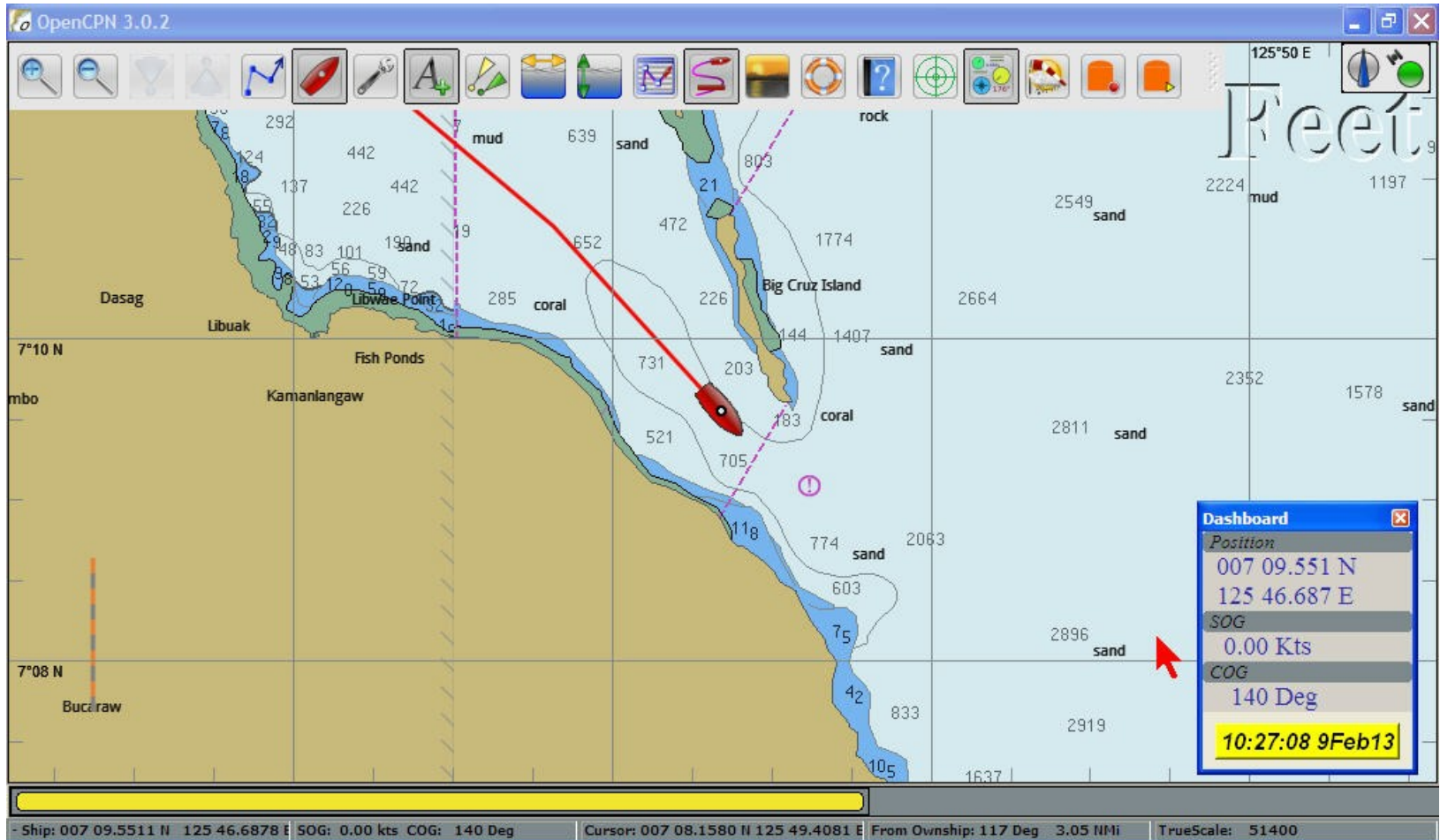
Now it is highlighted
Click again to Disable

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

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

Dashboard

Position
007 09.551 N
125 46.687 E

SOG
0.00 Kts

COG
140 Deg

10:27:41 9Feb13

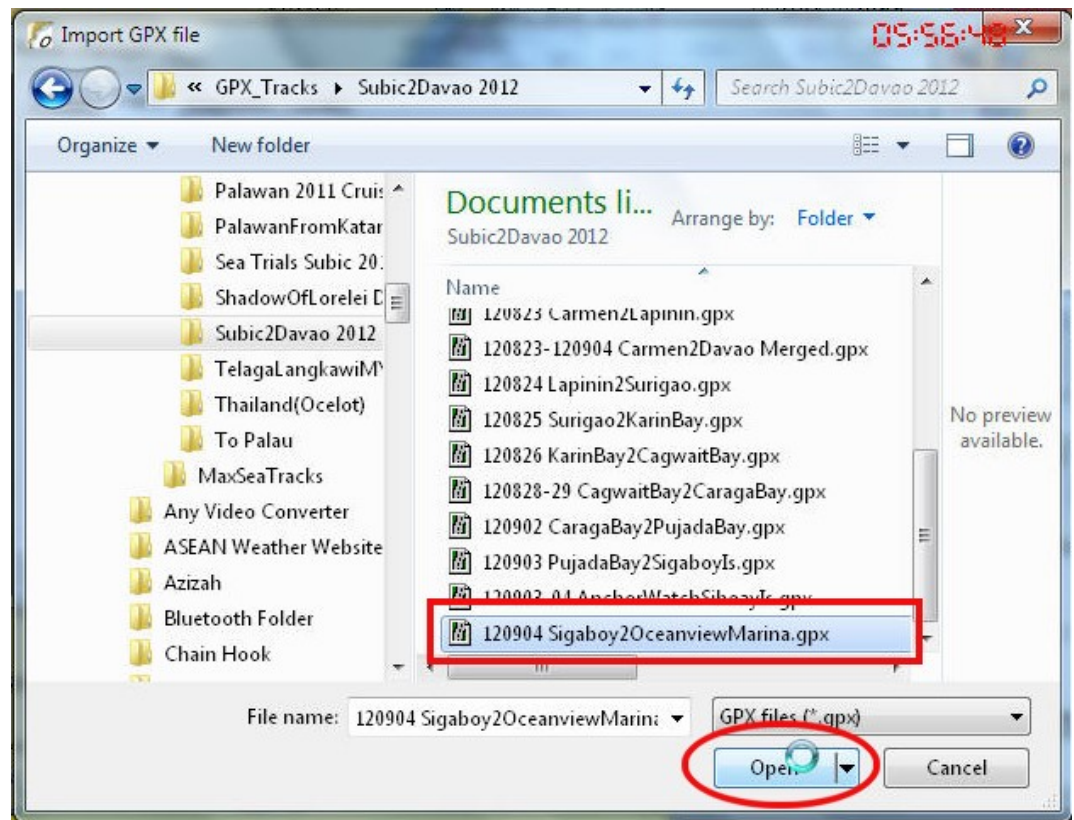
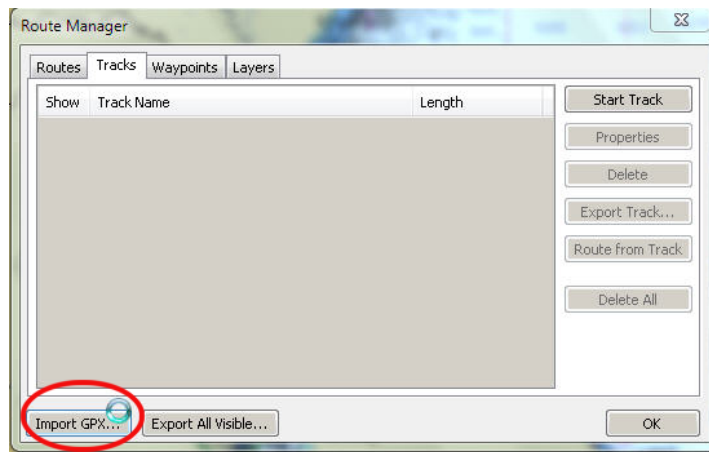
/ Ship: 007 09.5511 N 125 46.6878 | SOG: 0.00 kts COG: 140 Deg | Cursor: 007 11.1966 N 125 46.6088 E | From Ownship: 357 Deg 1.65 Mth | TrueScale: 51400

Importing Tracks

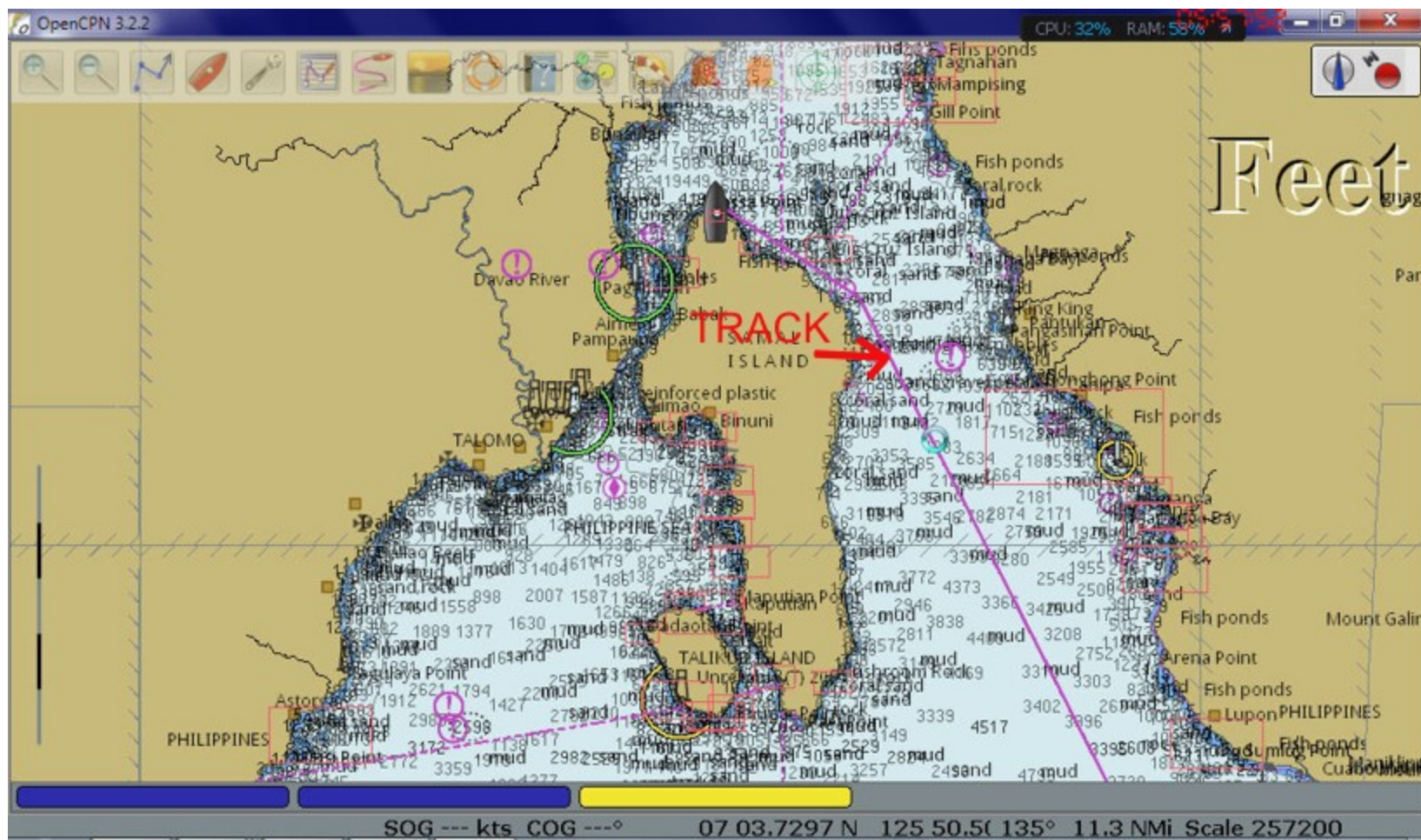
Route Manager

- Select Tracks tab
- Click on Import

Navigate to saved tracks location
Click Open

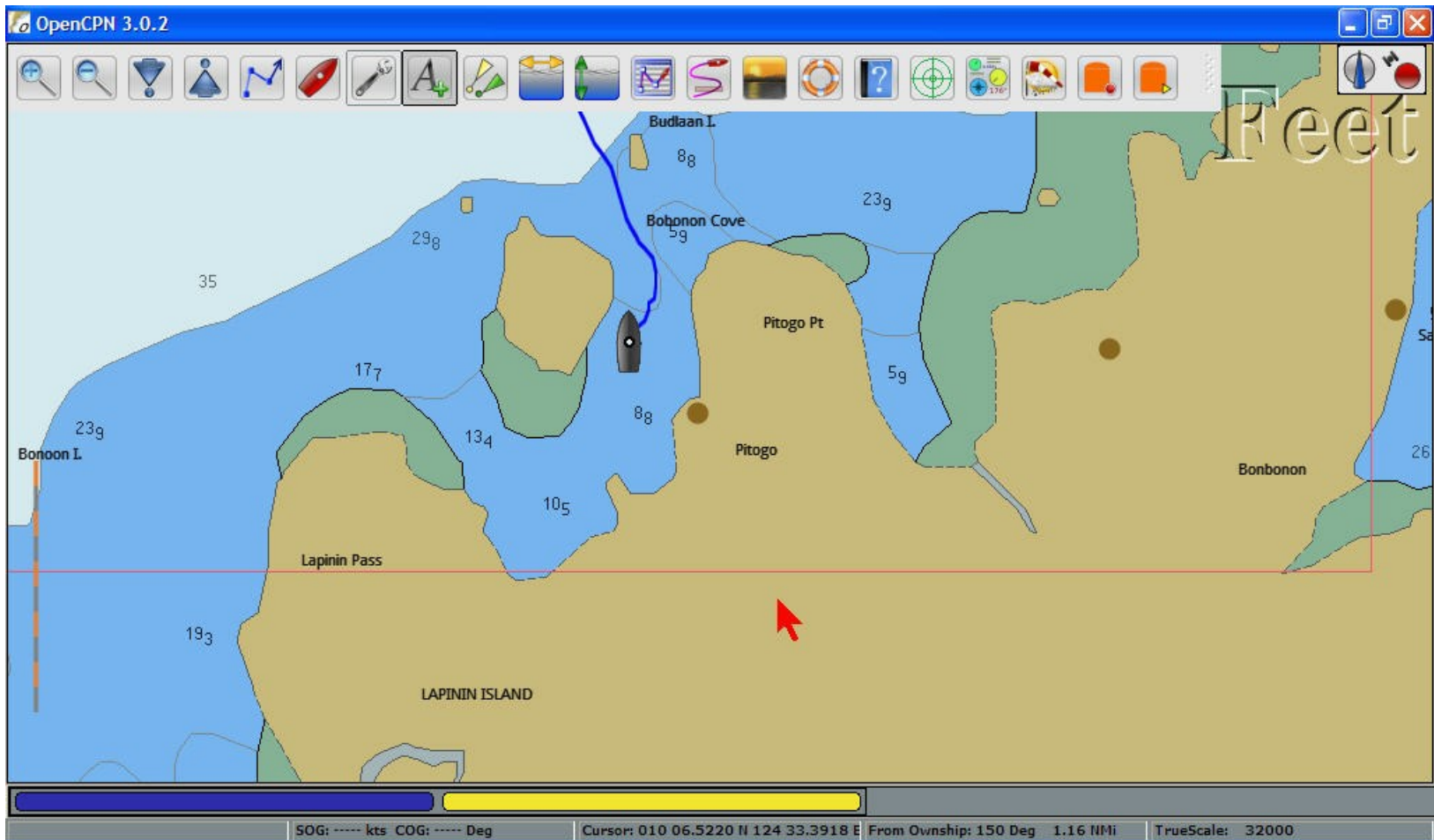


Importing Tracks



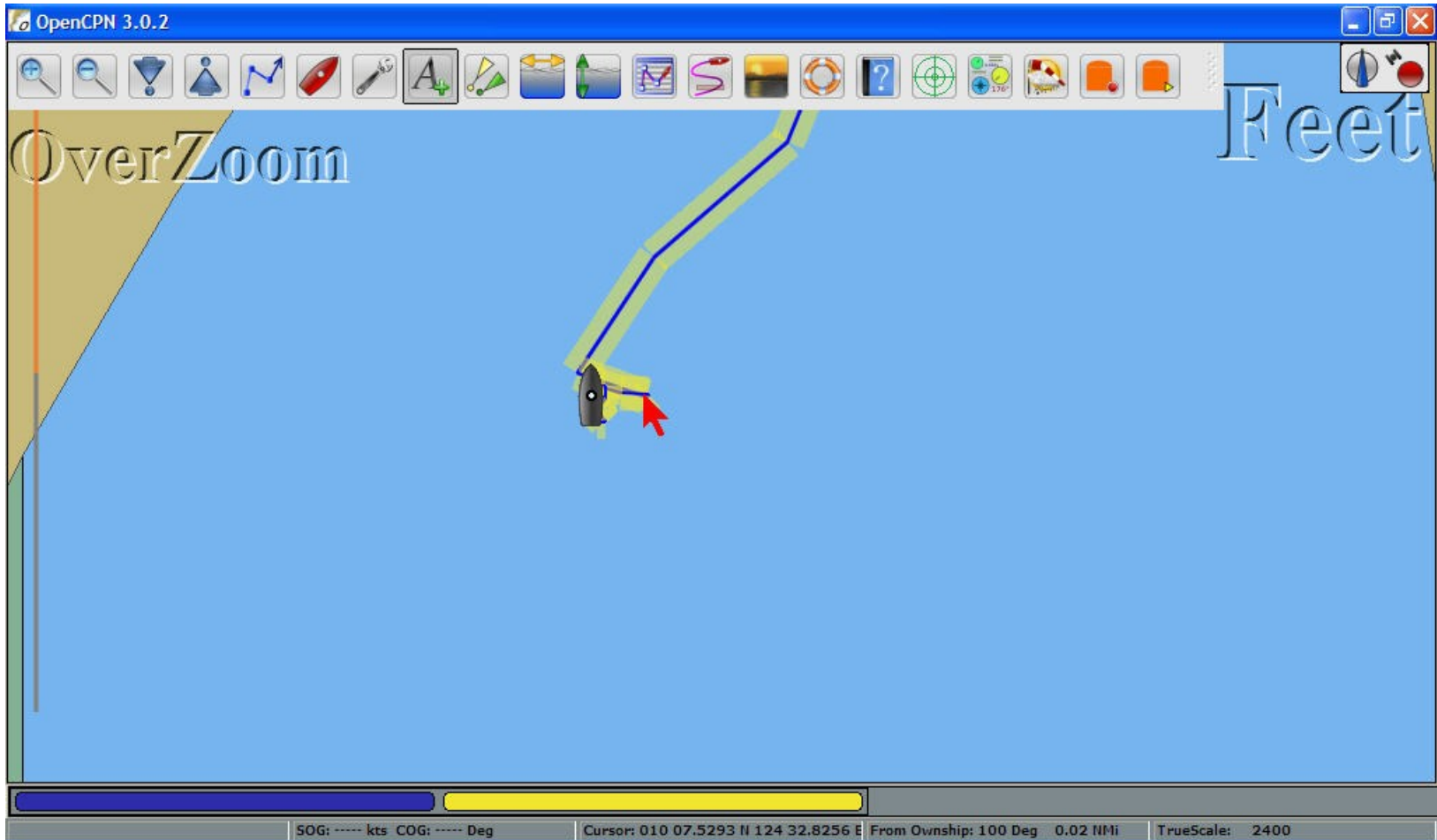
Saving Waypoints (Marks)

Shown below is the arrival at an anchorage



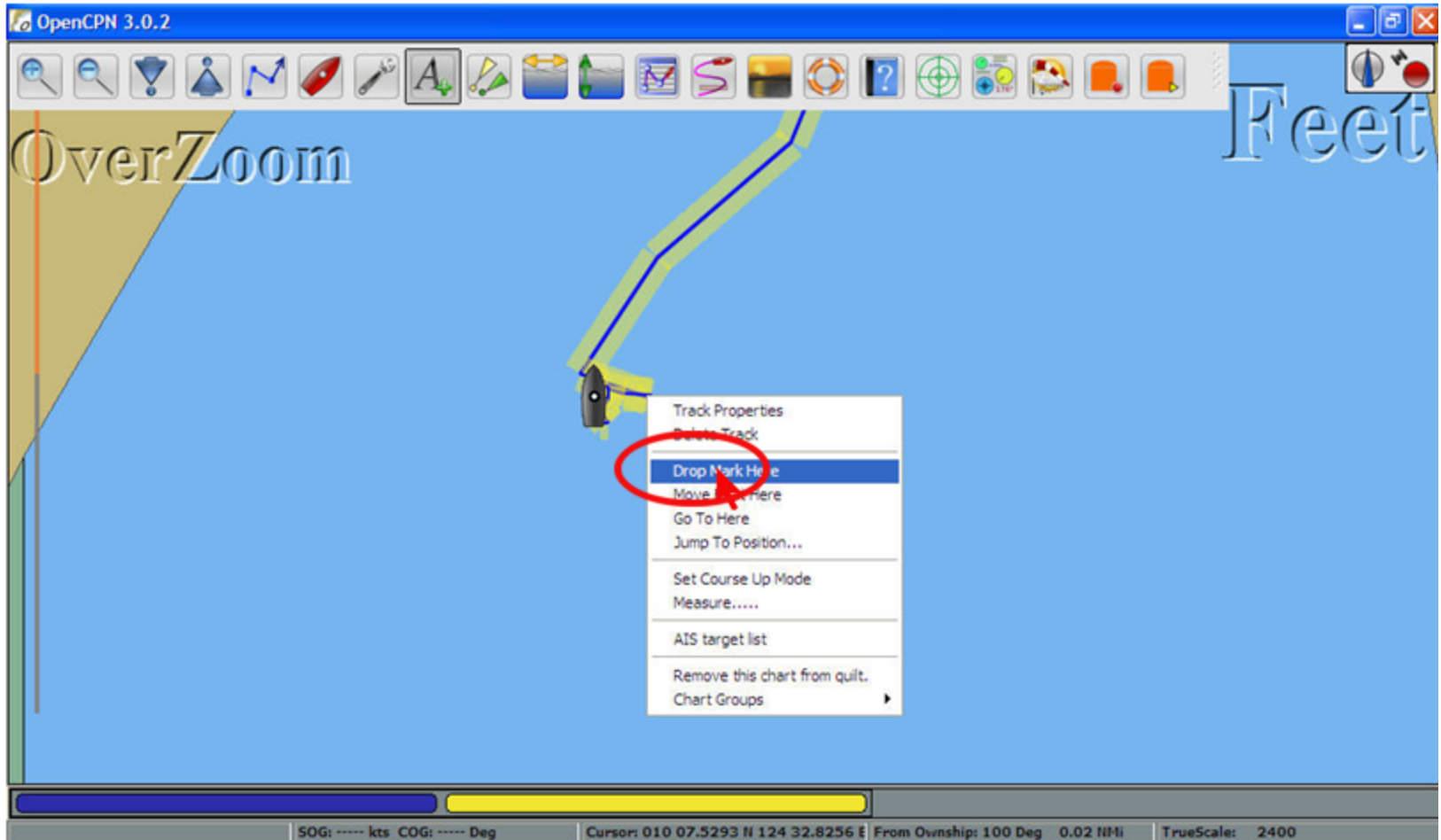
Saving Waypoints (Marks)

Zoom in to see where the anchor was dropped



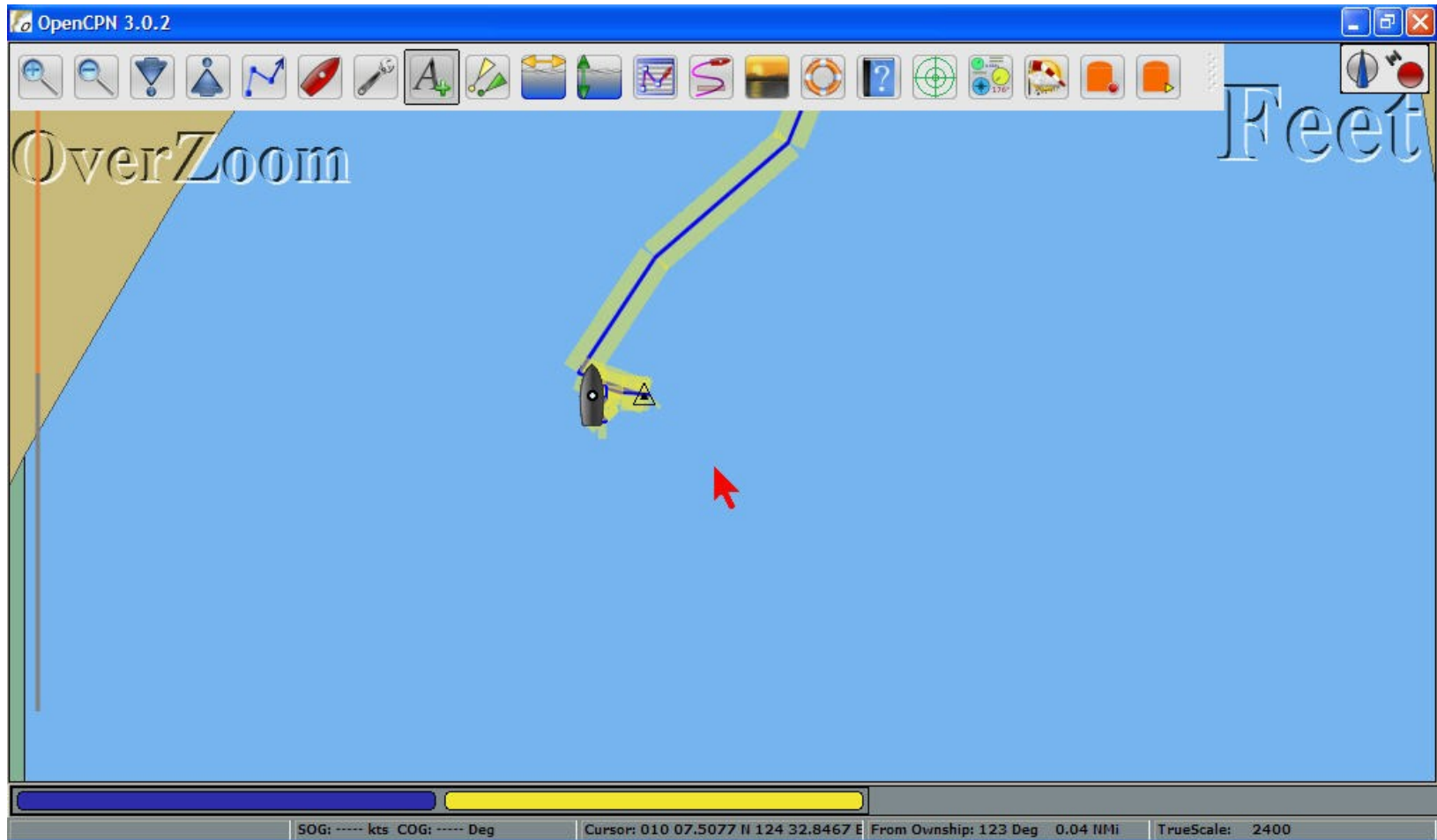
Saving Waypoints (Marks)

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



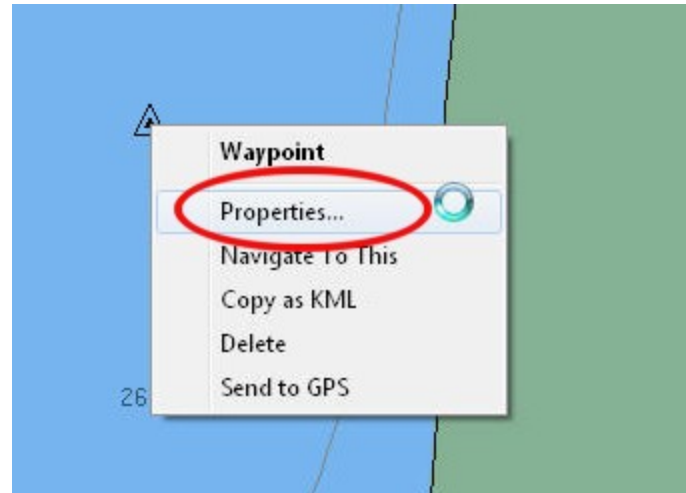
Saving Waypoints (Marks)

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


Waypoint Properties

Basic Description Extended

Properties

Name

Show name

Icon  Anchorage

Latitude

Longitude

Description

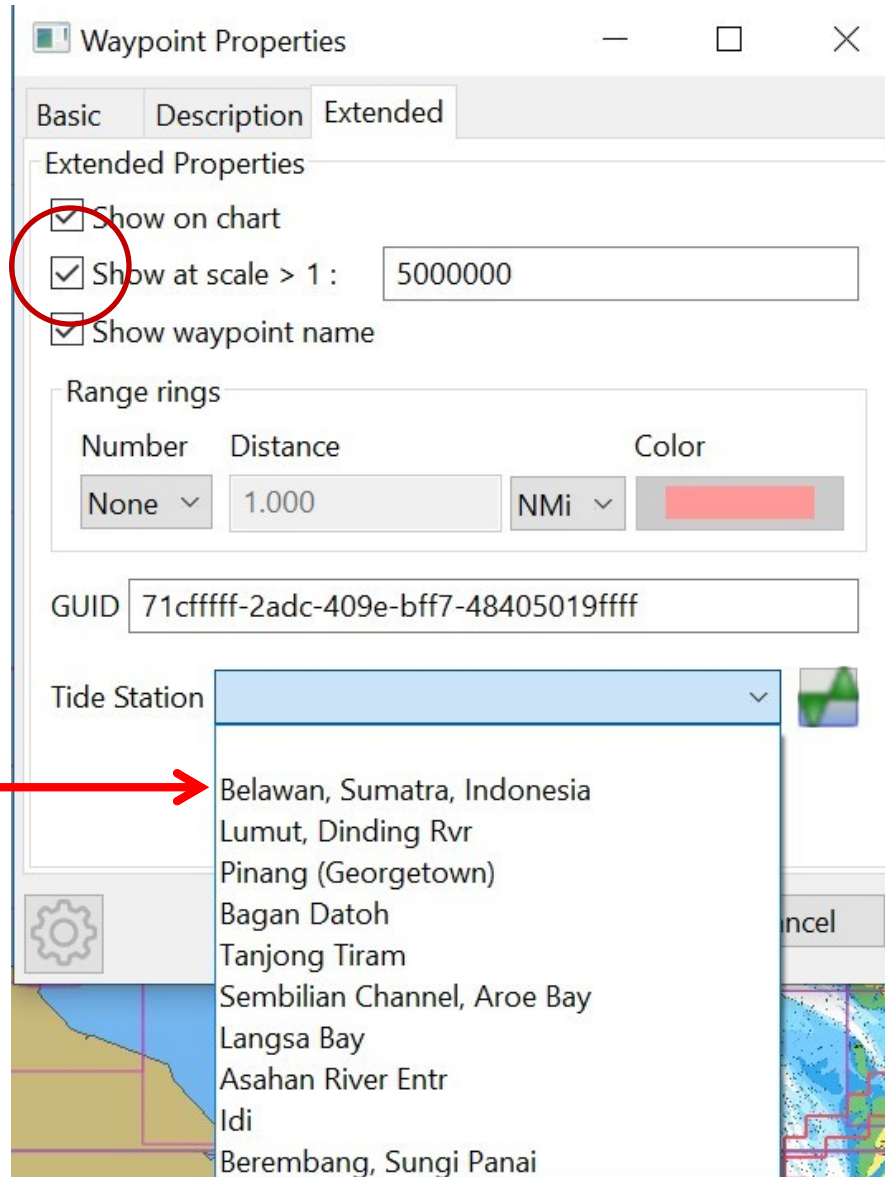
Links

OK Cancel

Waypoints Extended Info

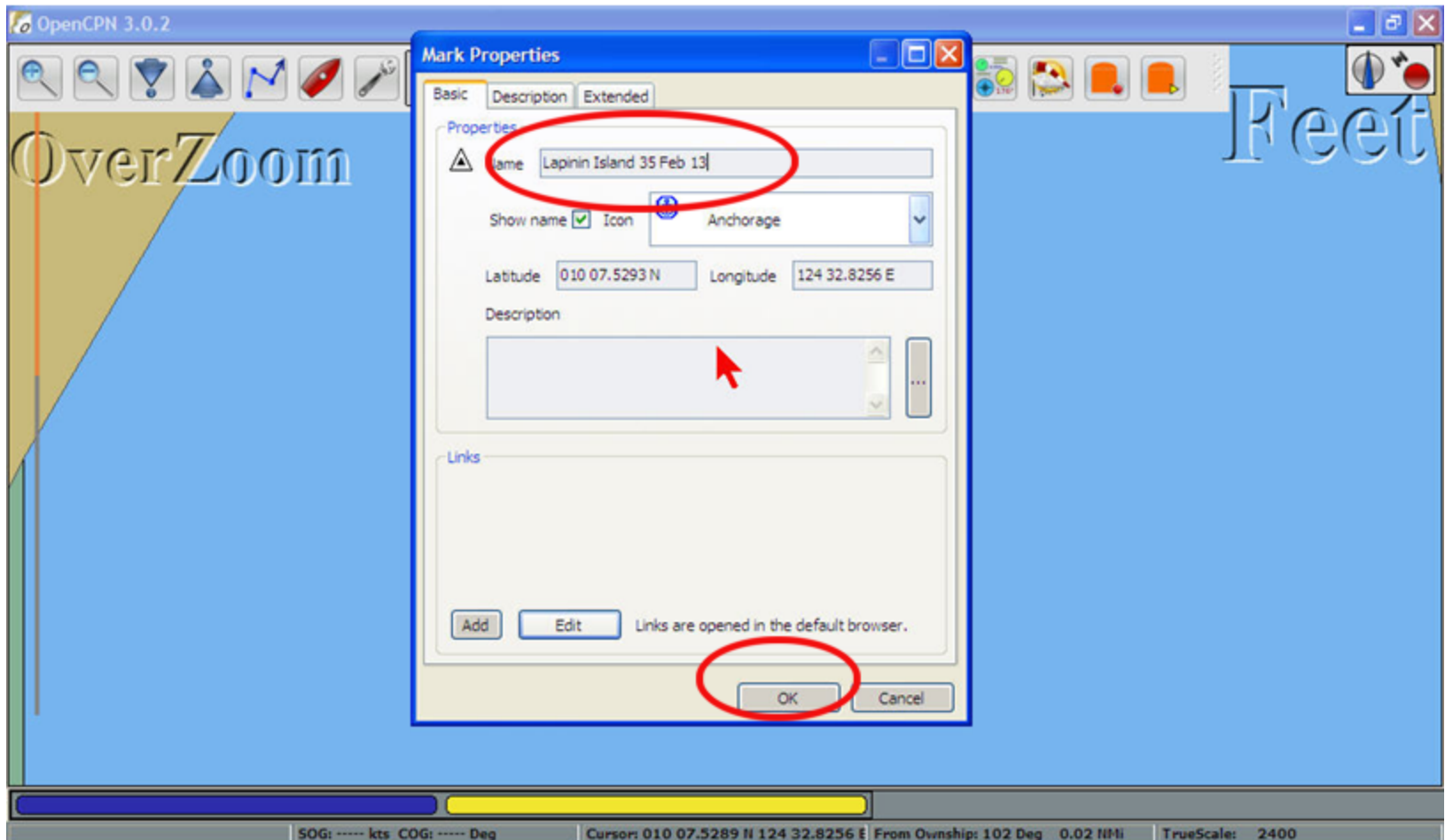
Hide waypoints
On zoom out
(set as default
For new wpts)

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

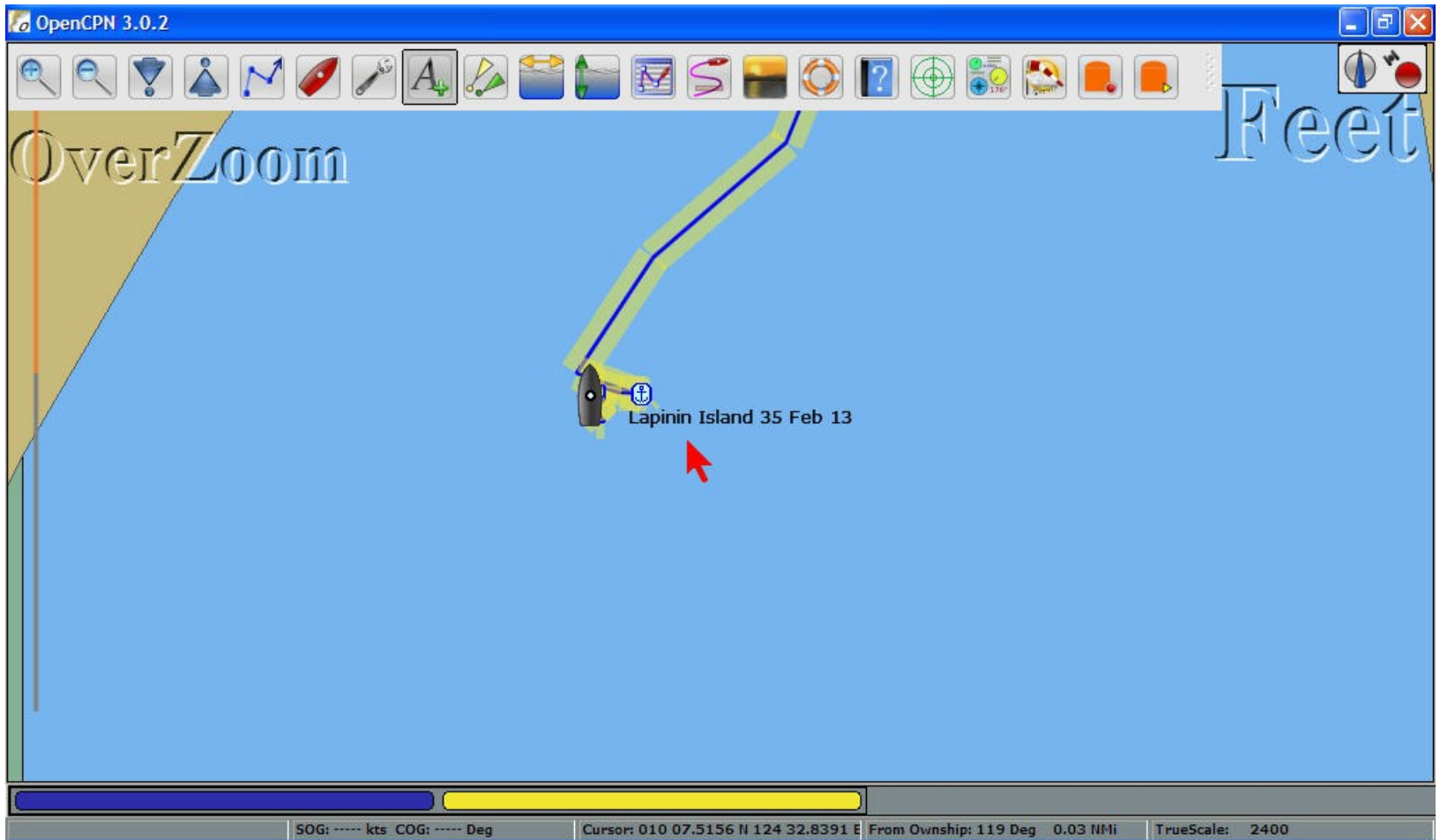


Changing Waypoints (Marks)

Also change name, and add a short description



Changing Waypoints (Marks)



Saving Waypoints (Marks)

Waypoints can be manipulated just like routes and tracks

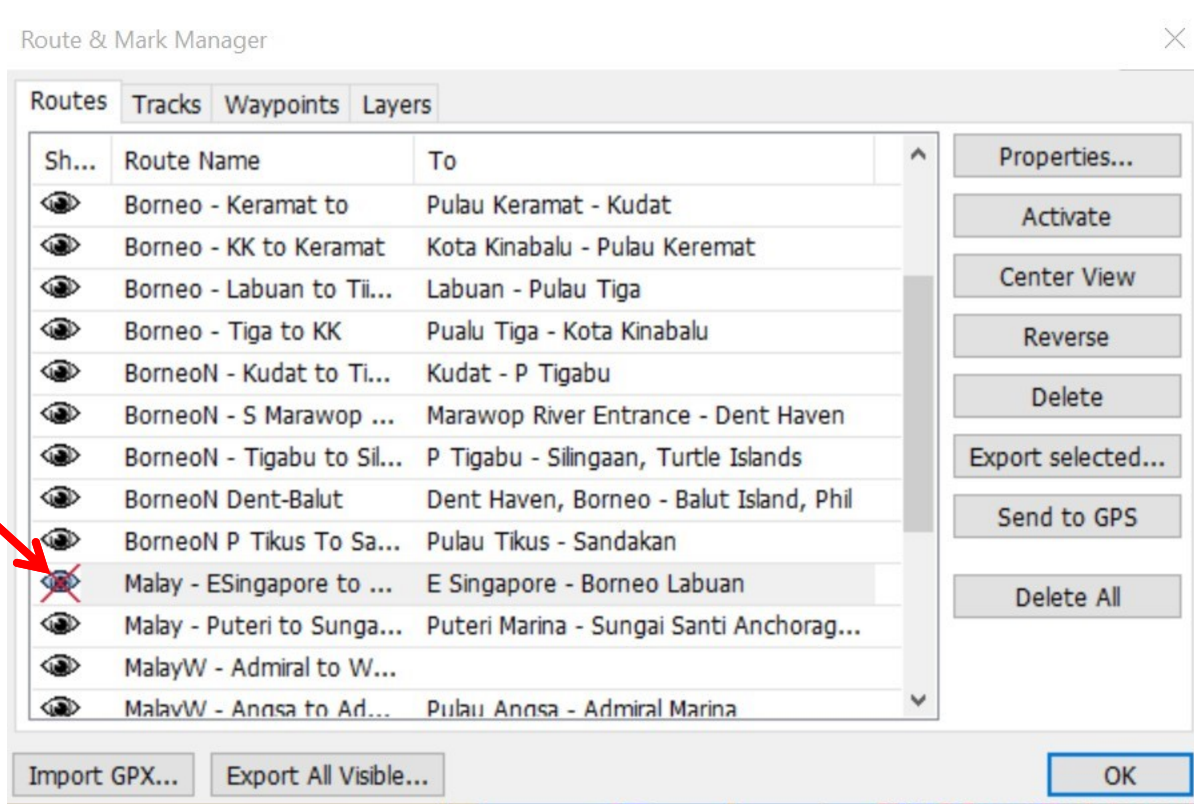
- Export to file
- Import from file

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

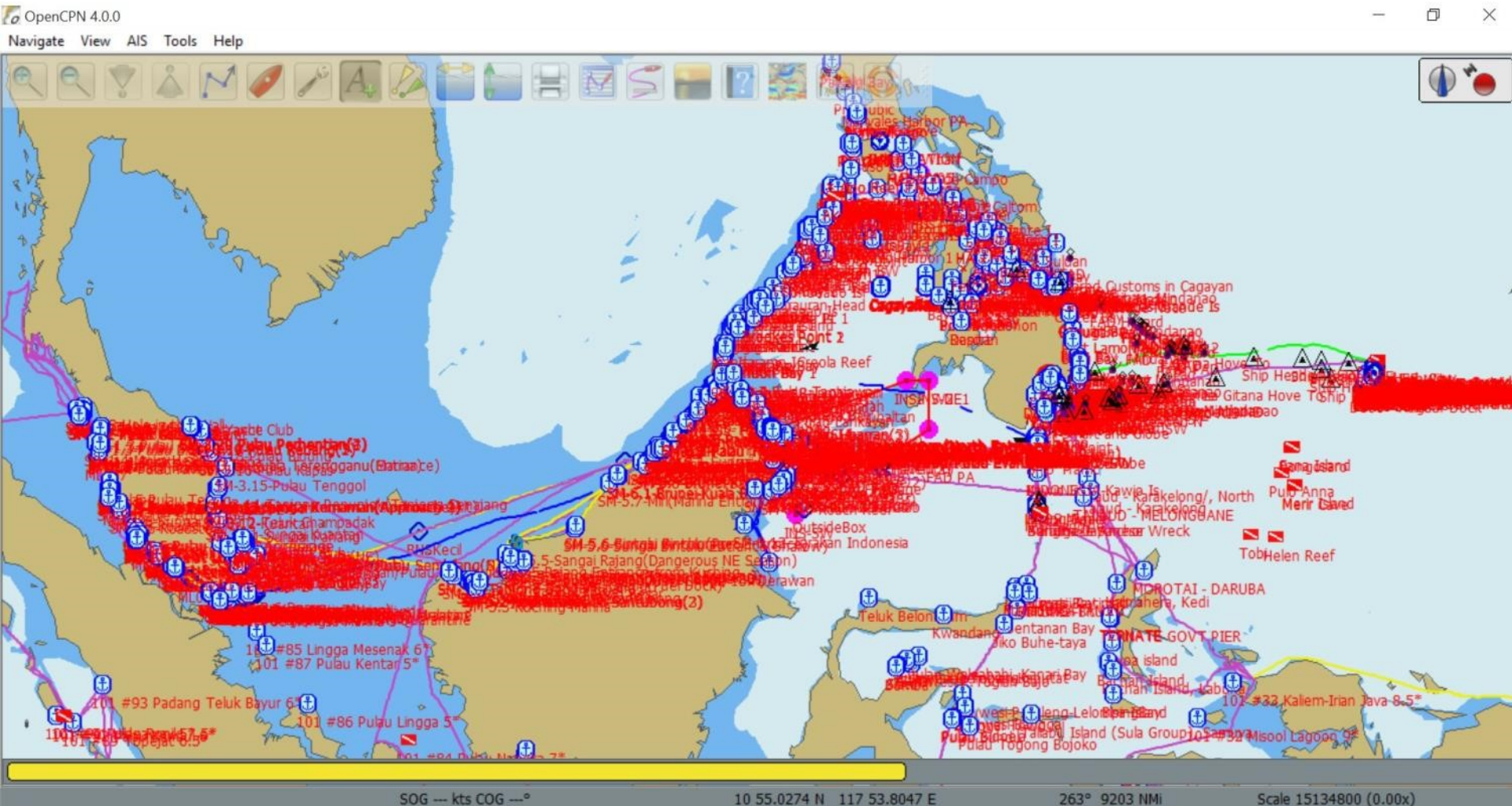
Hidden Route



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



Route & Mark Manager interface showing the Layers tab. The interface includes a table of layers, a list of actions on the right, and buttons for import/export at the bottom.

Layer Name	No. of items
MindtheGap Tracks	127
Palau	661
Philippines	554
Sail Malaysia Waypoints	250
Sumatra, Indonesien-Malaysia W, Borneo,...	1
Talau-Morotai2	1
Thailand, Malaysia, Borneo	1
Totem-2012-2013 Indonesia	2
Totem-2013 Malaysia, Brunei, Singapore	1
Totem-2013 Sabah, Saruwak, Brunei	1

Actions on the right:

- Temporary layer
- Delete
- Hide from chart
- Hide WPT names
- List contents

Buttons at the bottom:

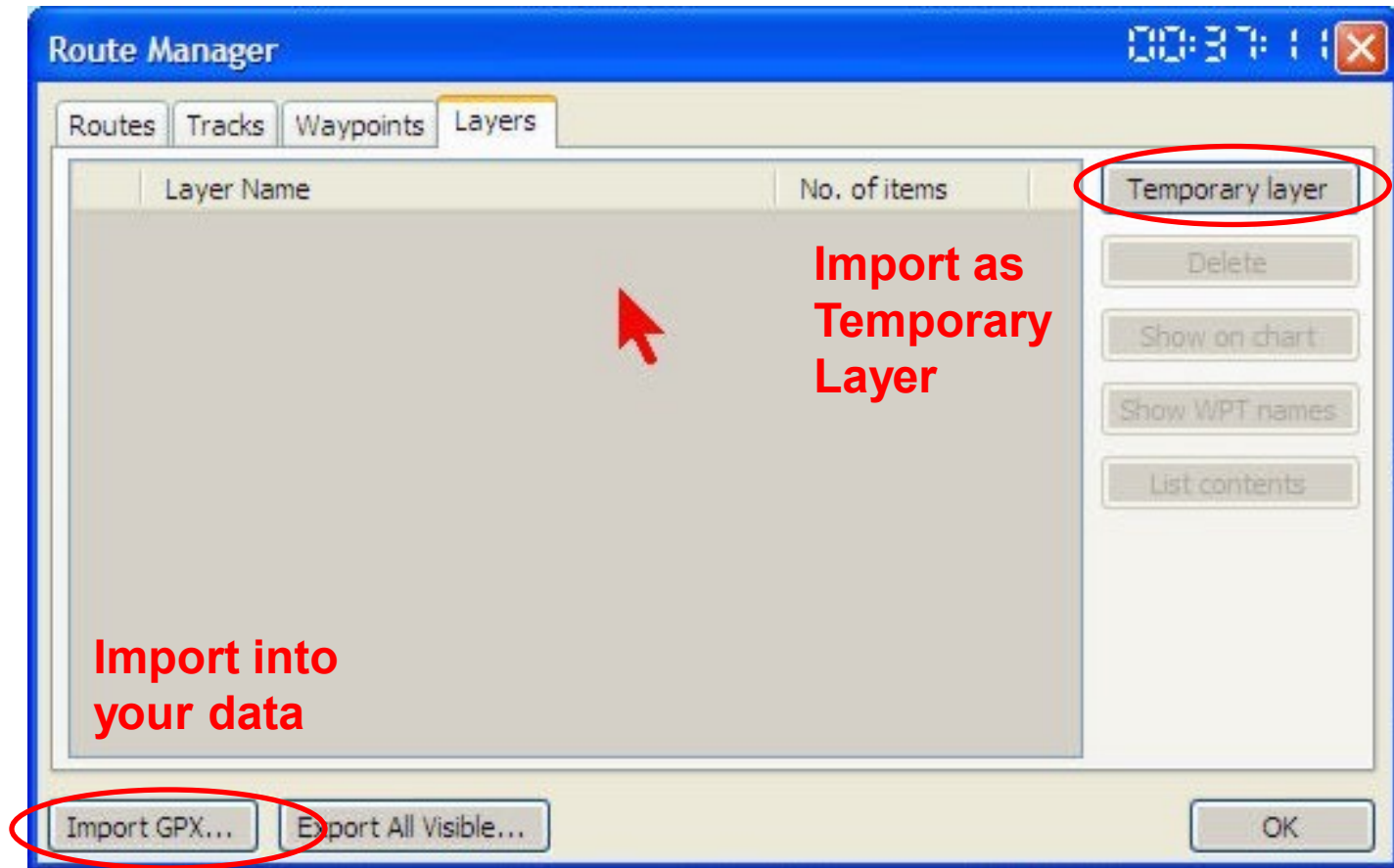
- Import GPX...
- Export All Visible...
- OK

Importing Others' GPX Files

- 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
 - Can delete the layer in the Layers tab (doesn't delete the file) or just close OpenCPN

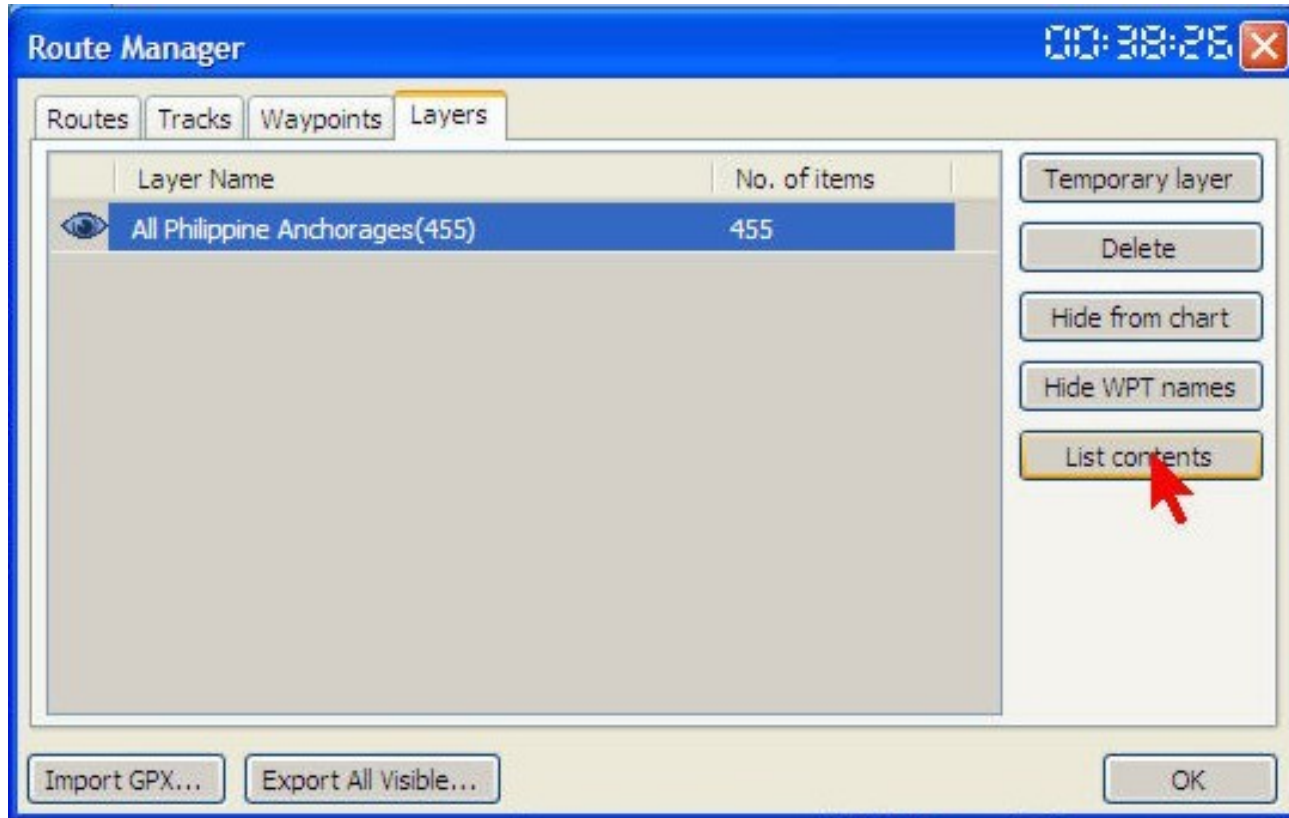
Importing Others' GPX Files

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



Exploring OpenCPN – LAYERS

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

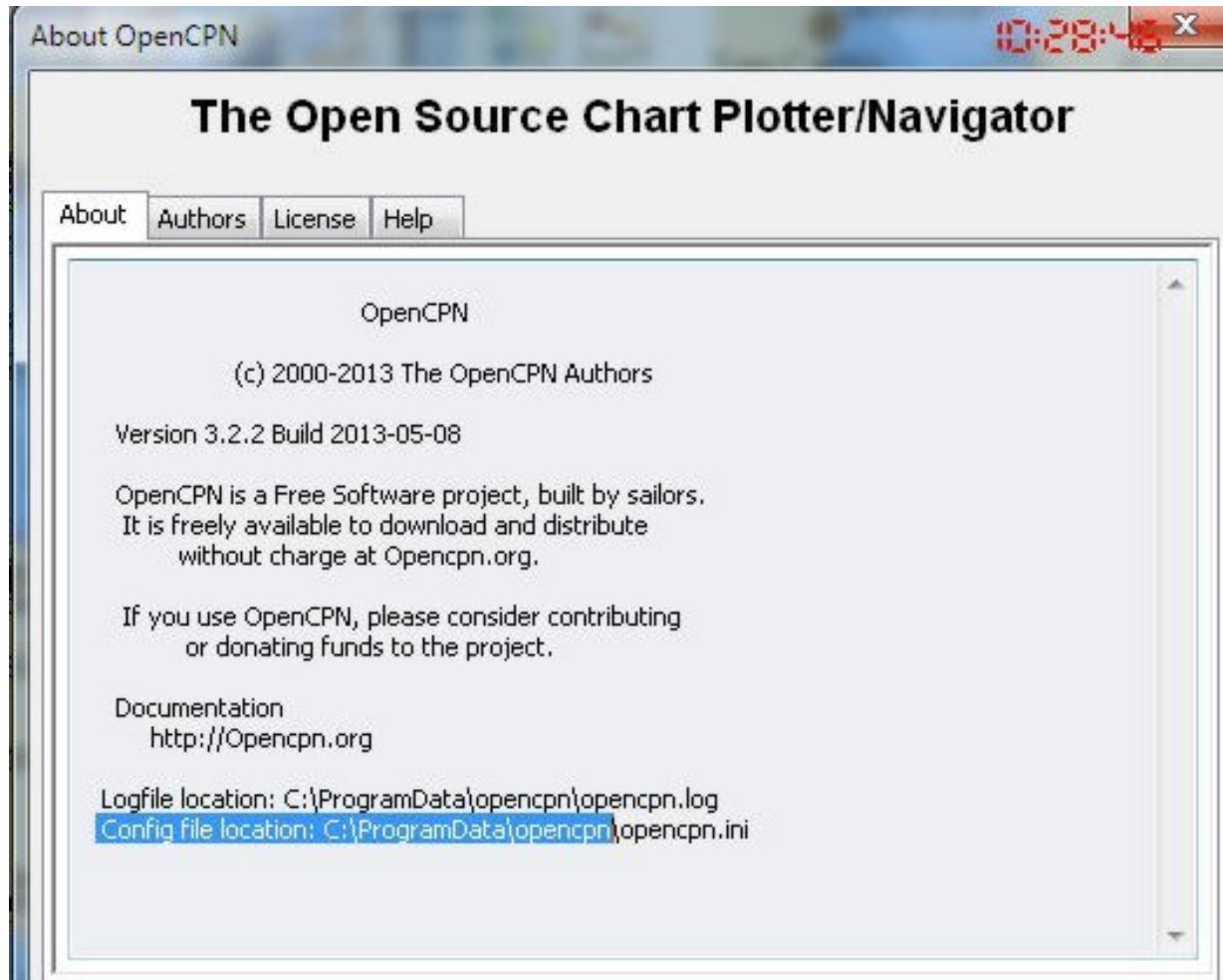
Structured text (XML)
Can edit with Notepad
I use SciTE
Easy to email (zips well)

Permanent Layers

- For layers to be permanently available they must be manually placed in the OpenCPN data folder
-> *New! Can also be imported from Route Manager*
- The location of this folder is dependent on the operating system ...
- But The OpenCPN program helps you find the location !!

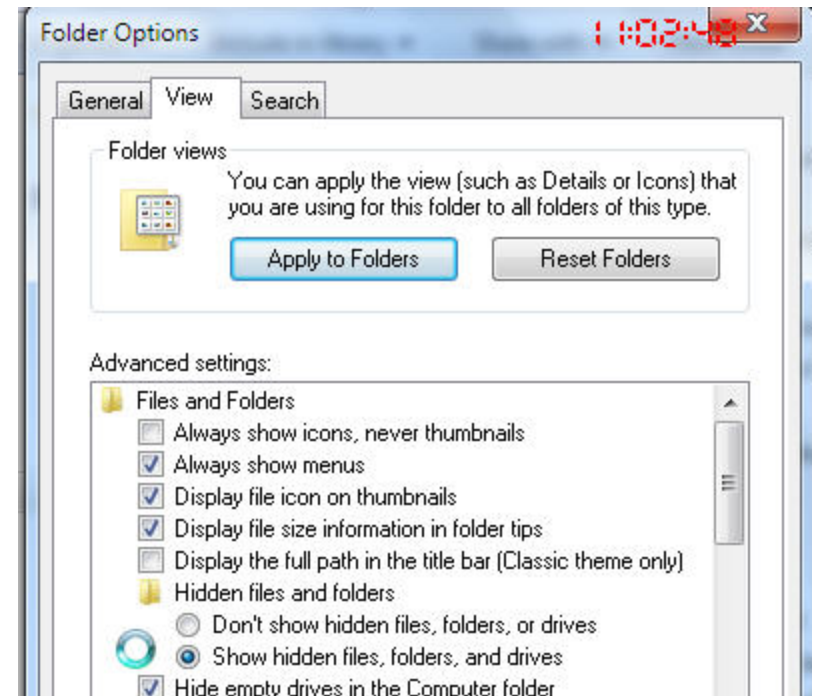
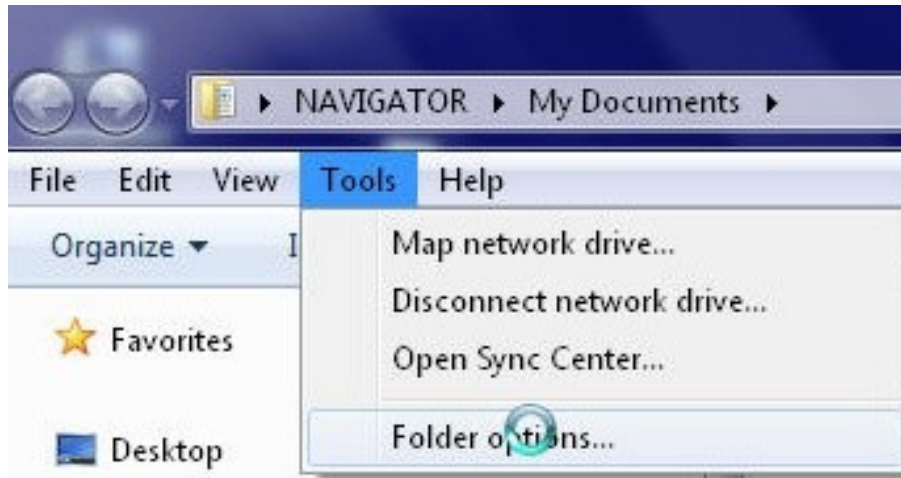
Permanent Layers Location

In the OpenCPN Data Folder (varies by OS)
Open the About tab for exact location



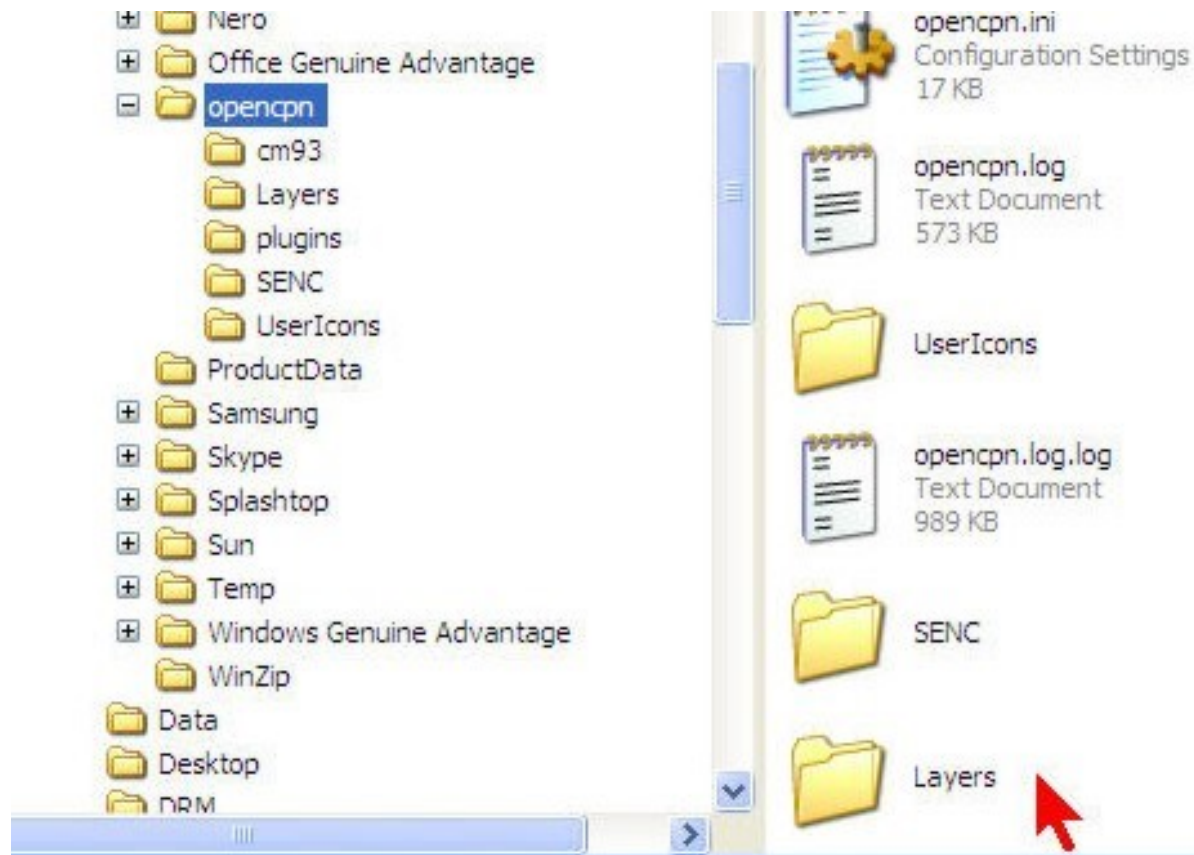
Windows 7-11, it's in ProgramData

- The ProgramData folder is usually hidden
Go to 'Tools' and click on 'Folder Options ...'
- On the 'View' tab check the button
'Show hidden files, folders or Drives'.
- Click 'OK'
- Only need to do once



Create Layers Folder

It's only necessary to create this folder once.
All future layer information will be placed in this folder.



Create a new folder named Layers in the OpenCPN Data folder

Managing Layers Files

- To put a layer in OpenCPN, copy the gpx file to the Layers folder, or import from Route Manager as Permanent Layer
 - Layers are loaded at startup (must restart OpenCPN)
- Make a shortcut to Layers in the folder where you manage your saved gpx files
- Move or copy gpx files in and out of OpenCpn/Layers

My Documents / Navigation /GPX Files

- My gpx data (folders by region)
- Others gpx data (folders by region)

If you delete a Permanent Layer in Route Manager, it WILL delete the gpx file. Make sure you have a copy somewhere else.

Managing Layers Files

- ANY .gpx file can be put in a layer.
This includes routes, tracks, anchorages and other information that has been saved in the .gpx format.
- Waypoints and routes in a layer are locked and cannot be changed. This prevents the unplanned movement of a waypoint while clicking on the screen
- Only files with .gpx will be loaded (temporarily unload a layer by renaming .gpy)
- GPX Files within a folder will be loaded as one layer
 - MyRoutes.gpx and MyWpts.gpx placed in SoggyPaws folder will load as layer SoggyPaws

TIPS

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

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



[News](#)

[About](#)

[Start](#)

[Manuals](#)

[Downloads](#)

[Resources](#)

[Tracker](#)

[Team](#)

[Gallery](#)

[Home](#) [Downloads](#) [Plugins](#)

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

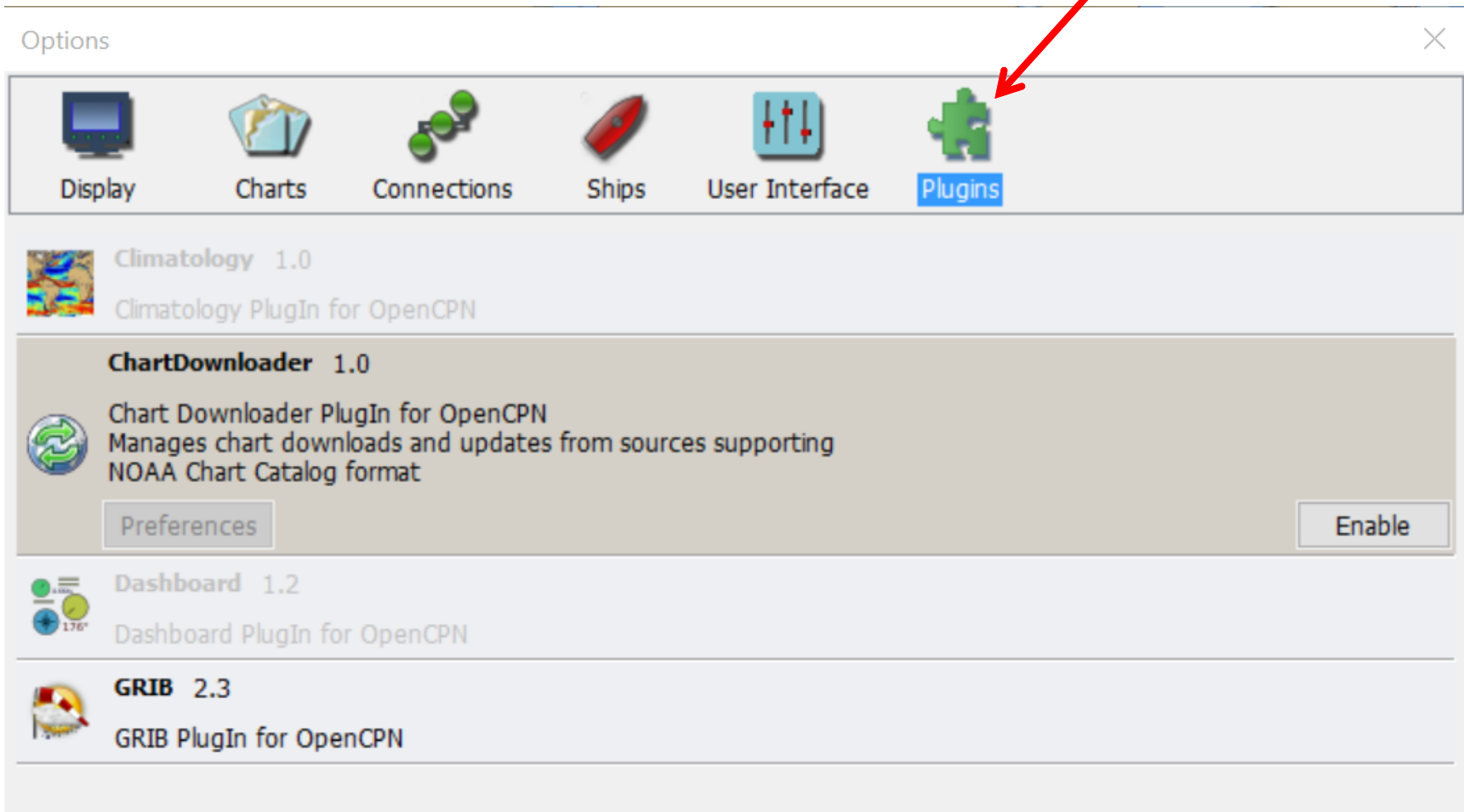
WeatherFax 1.9.56.0 Enabled
Open fax image, decode audio fax, chart overlay

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





The screenshot shows the 'Options' dialog box in OpenCPN. At the top, there is a horizontal menu with icons for 'Display', 'Charts', 'Connections', 'Ships', 'User Interface', and 'Plugins'. A red arrow points to the 'Plugins' icon. Below this menu, the 'Plugins' section is expanded, showing a list of installed plugins. The 'ChartDownloader 1.0' plugin is highlighted in a light brown background. It has a circular icon with two arrows and the text 'Chart Downloader PlugIn for OpenCPN' and 'Manages chart downloads and updates from sources supporting NOAA Chart Catalog format'. Below the description are two buttons: 'Preferences' and 'Enable'. Other visible plugins include 'Climatology 1.0', 'Dashboard 1.2', and 'GRIB 2.3'.


Options

Display Charts Connections Ships User Interface **Plugins**

 **Climatology 1.0**
Climatology PlugIn for OpenCPN

 **ChartDownloader 1.0**
Chart Downloader PlugIn for OpenCPN
Manages chart downloads and updates from sources supporting NOAA Chart Catalog format
Preferences **Enable**

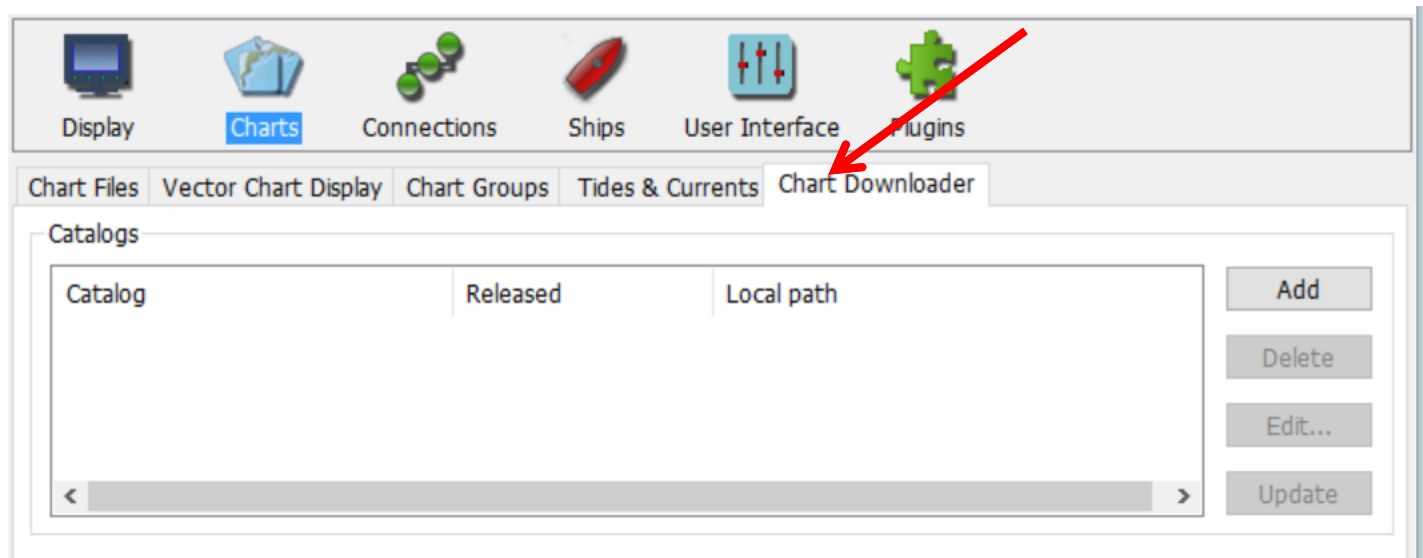
 **Dashboard 1.2**
Dashboard PlugIn for OpenCPN

 **GRIB 2.3**
GRIB PlugIn for OpenCPN

Most Plugins Add a New Icon on the Toolbar

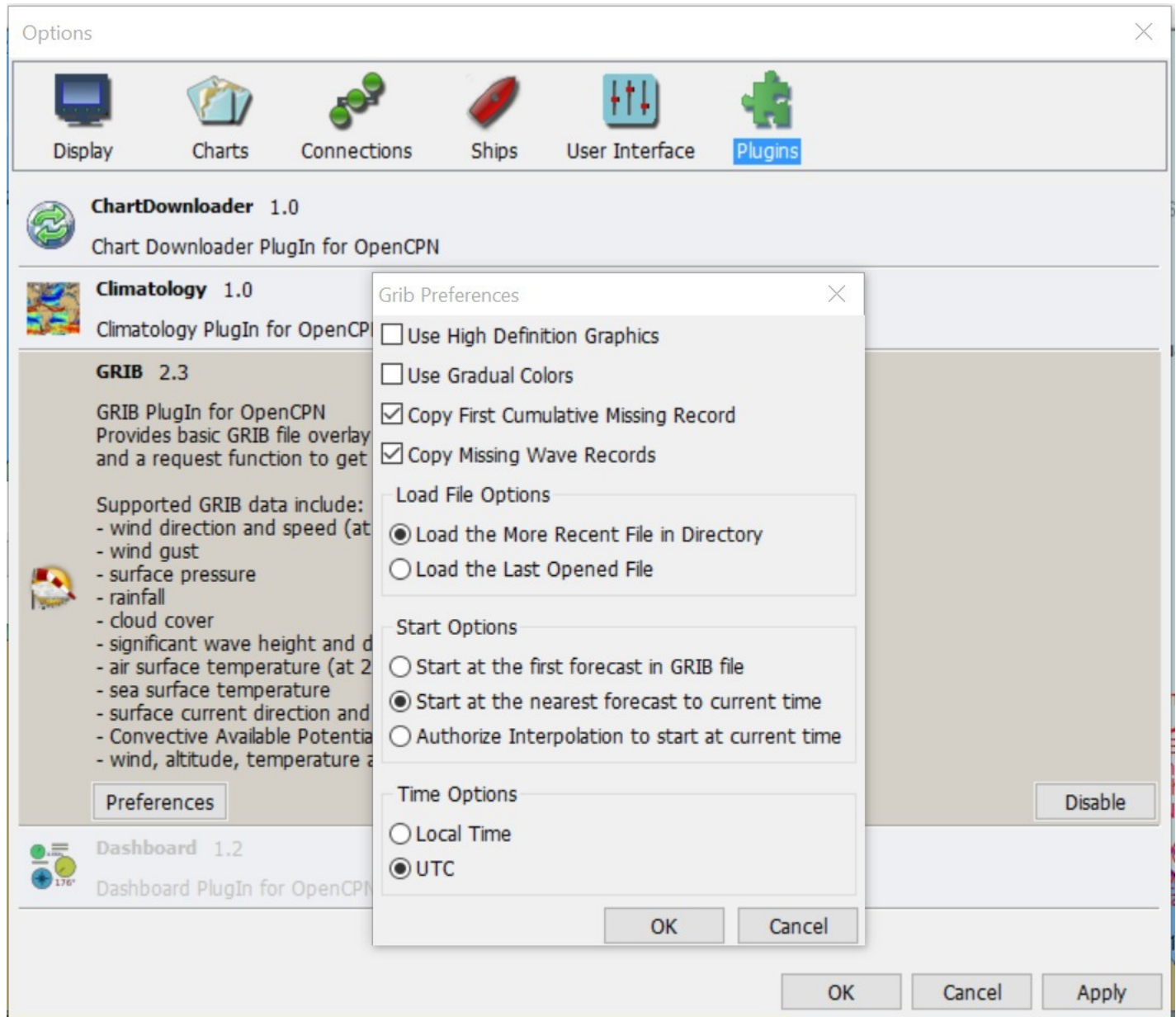
Plug-in Icons

Chart Downloader adds a new tab on the Charts page



GRIB Plugin

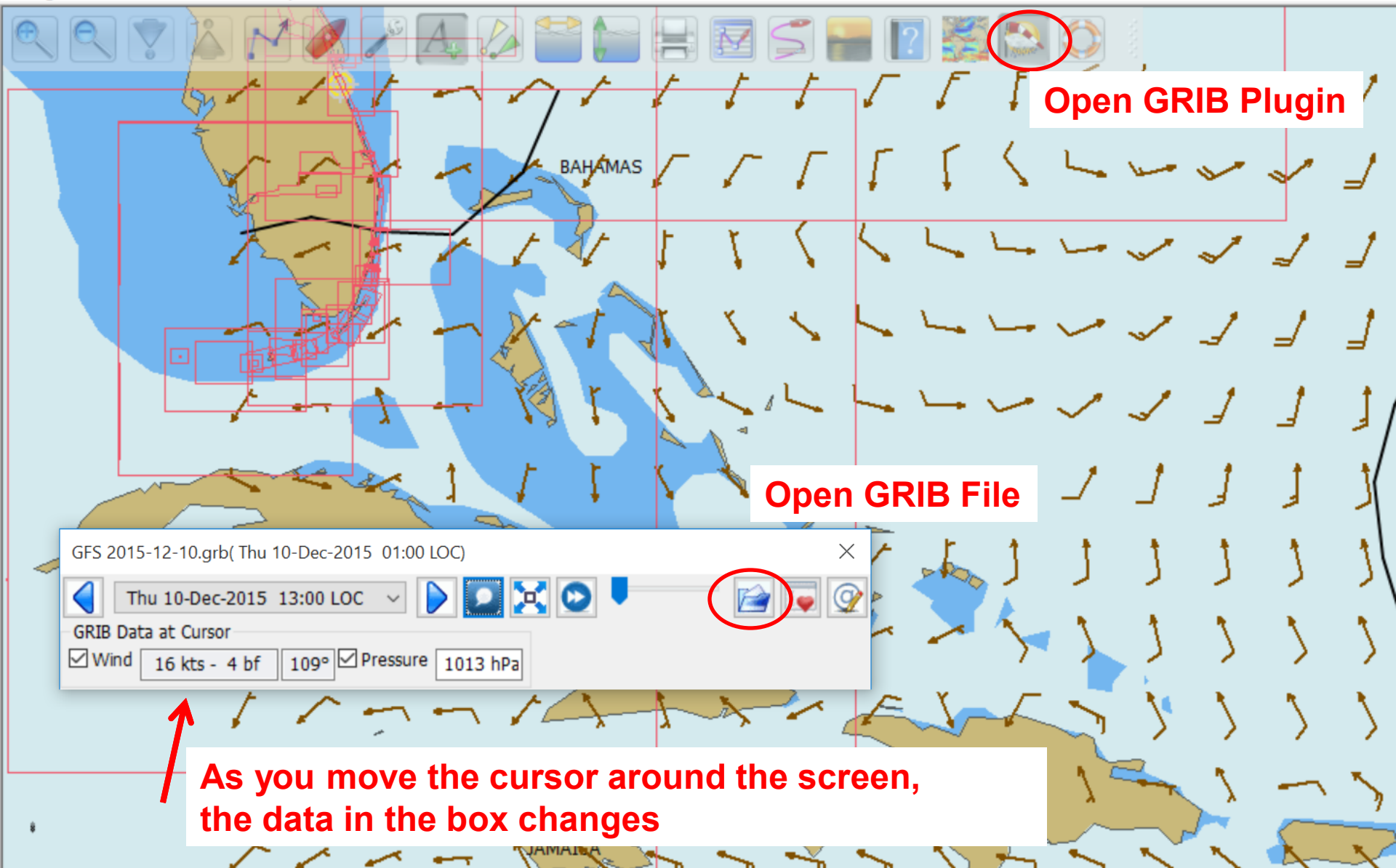
Check
GRIB
Plugin
Preferences



Open GRIB Plugin

OpenCPN 4.0.0

Navigate View AIS Tools Help



Open GRIB Plugin

Open GRIB File

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

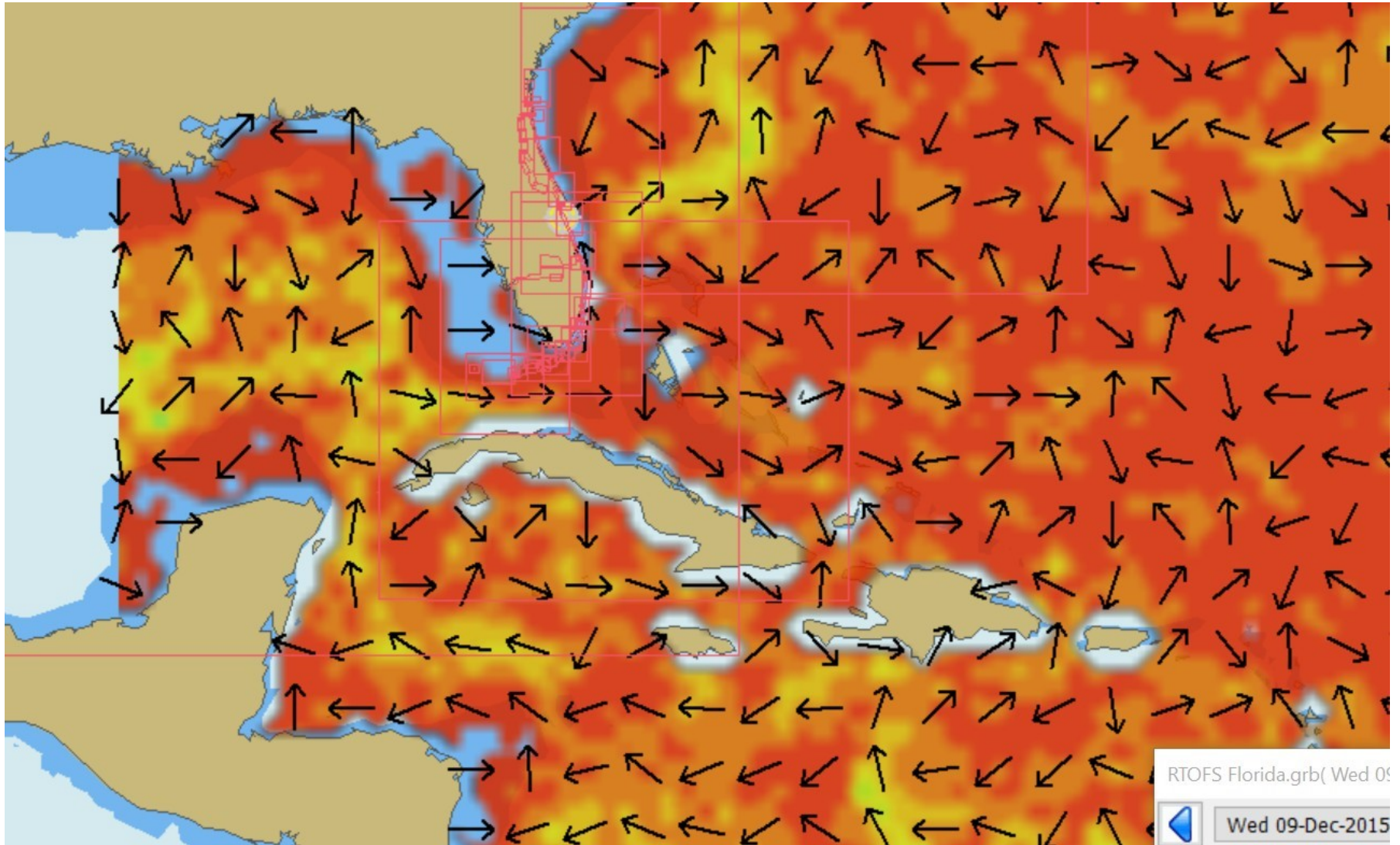
As you move the cursor around the screen, the data in the box changes

SOG --- kts COG ---°

17 44.5714 N 073 12.9456 W

146° 743 N

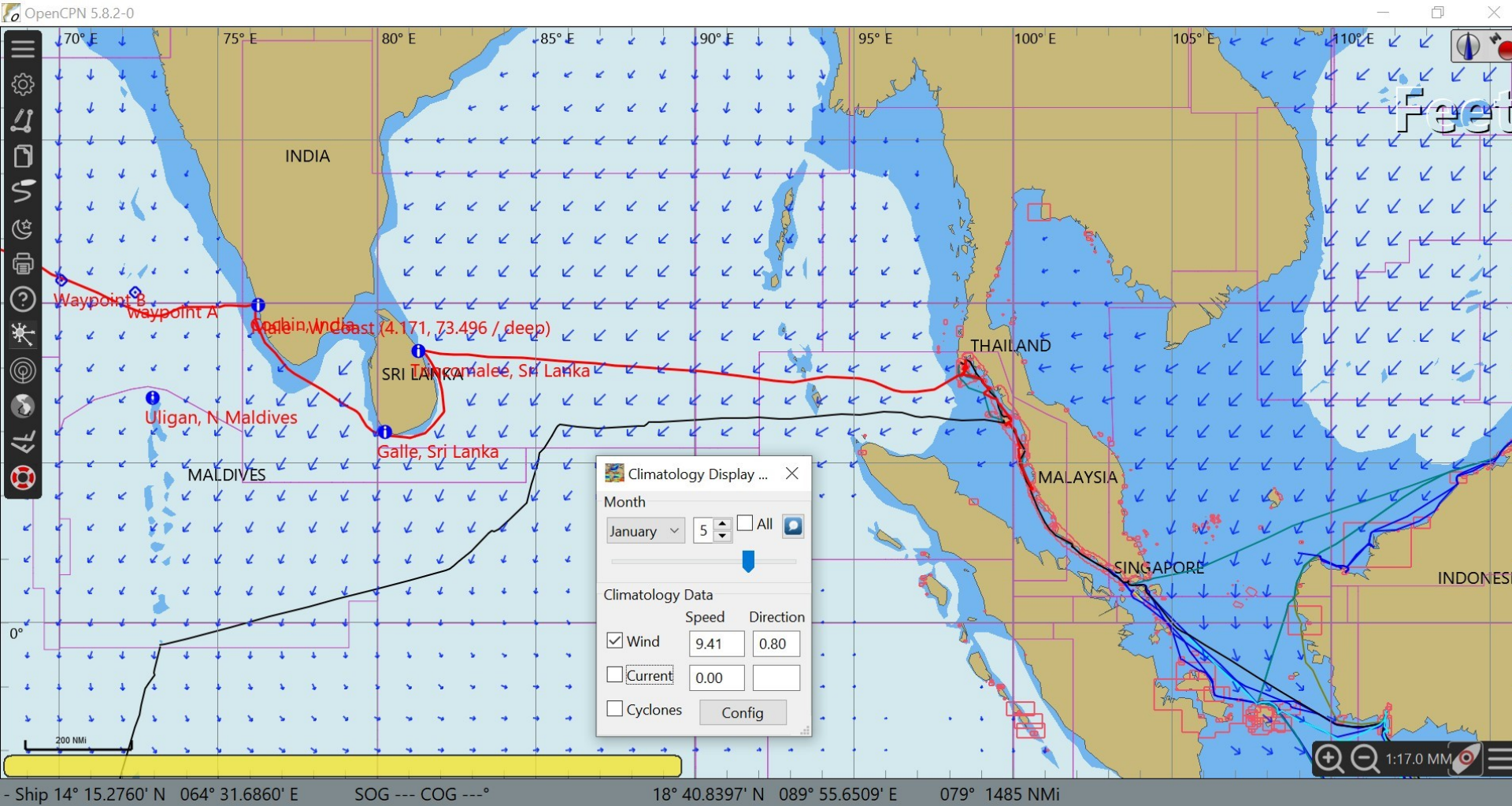
RTOFS (Current) Display



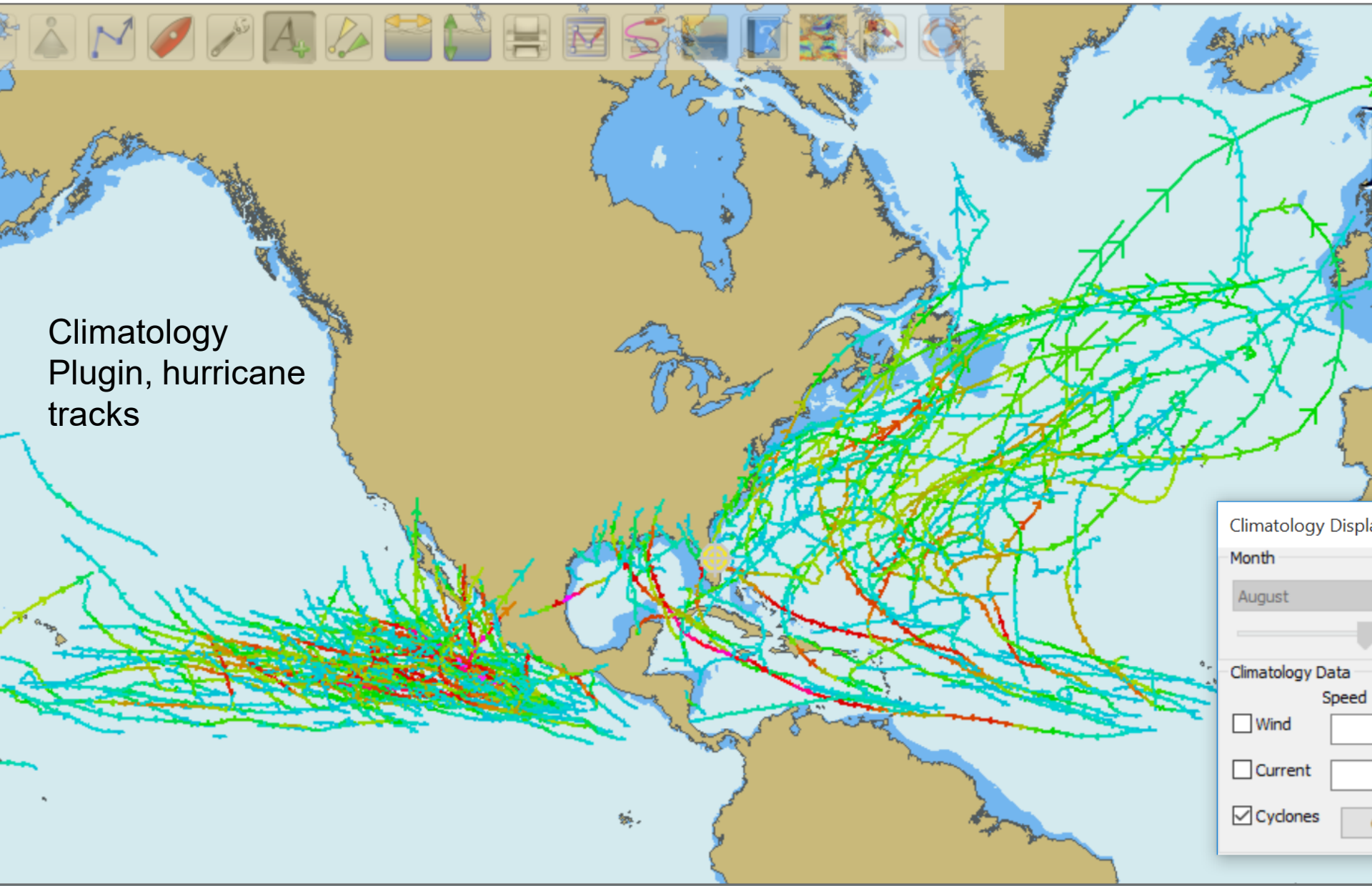
Climatology Plugin

- 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

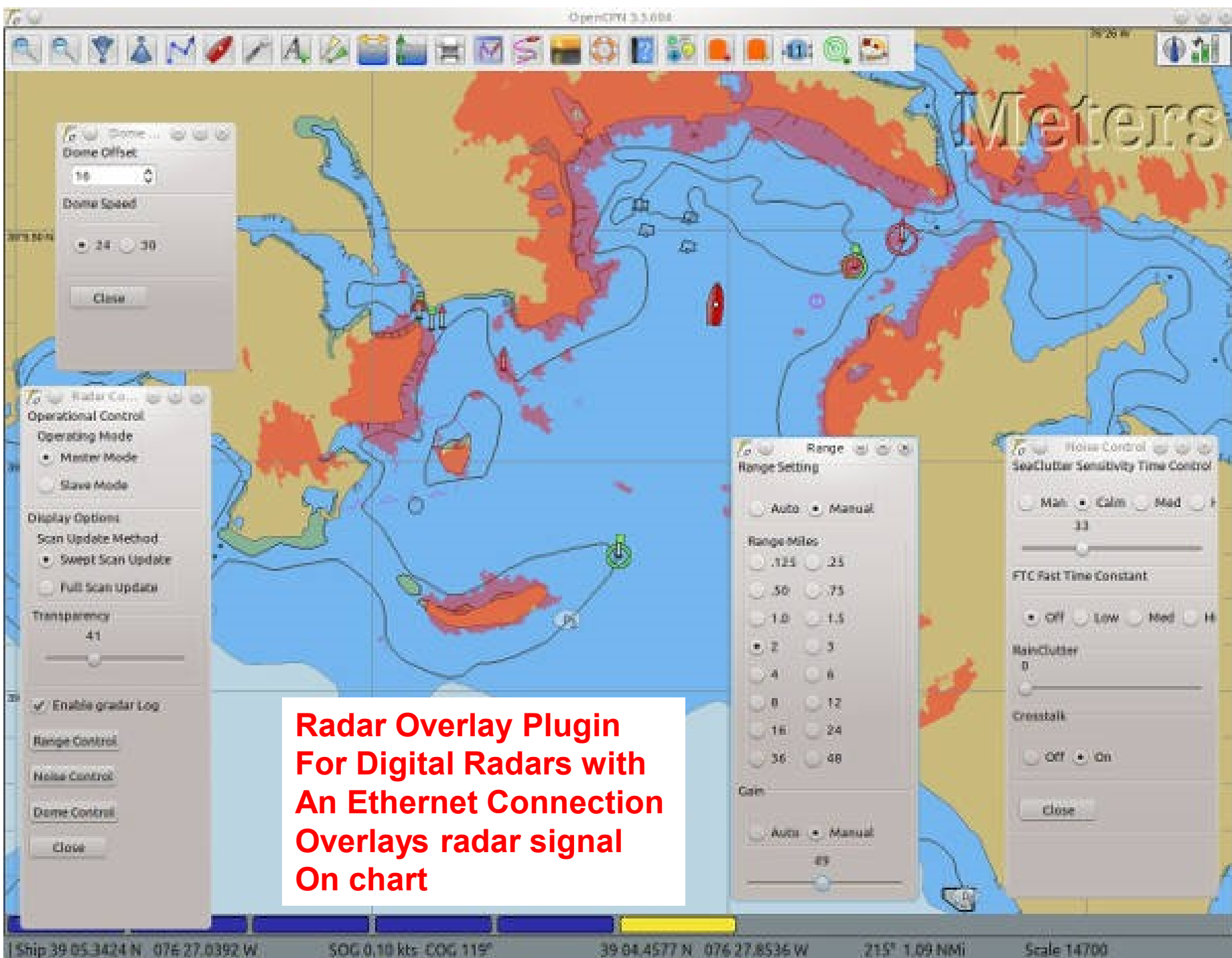
El Nino Period:
 El Nino La Nina
 Neutral N/A

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



**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. On the left, a sidebar shows trip details for 'Weather Route' from 'Helsinki' to 'Stockholm'. Below this is a table of waypoints:

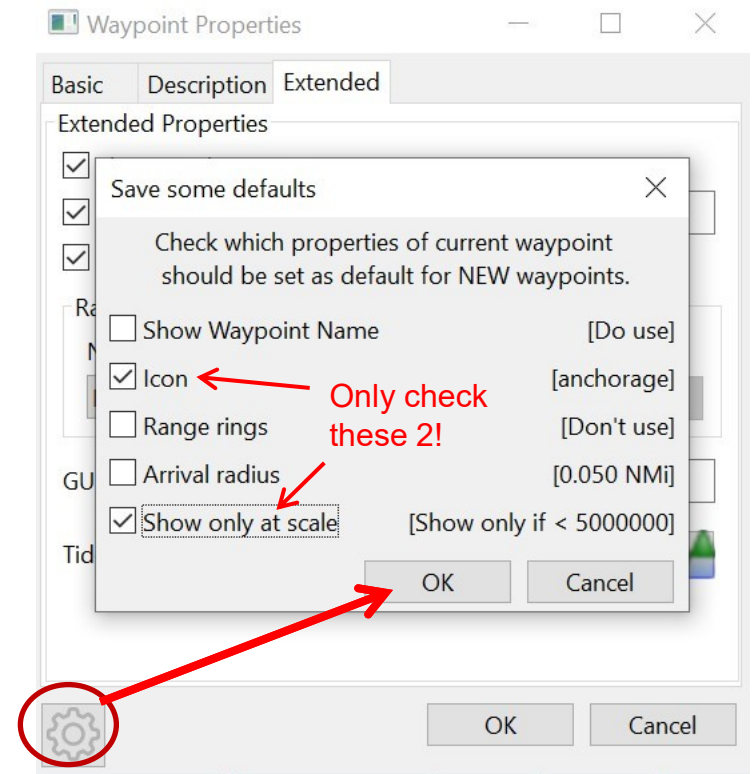
Leg	To Waypoint	Distance	Bearing	Latitude	Longitude
00	Weather Rout...	21.01	000.0e	59.93796	24.02892
01	Weather Rout...	21.21	045.0e	59.95598	24.07999
02	Weather Rout...	21.23	004.0e	59.94802	24.09176
03	Weather Rout...	21.60	134.0e	59.95583	24.03398
04	Weather Rout...	21.71	140.0e	59.97298	24.03043
05	Weather Rout...	26.31	131.0e	59.91273	24.01223
06	Weather Rout...	27.51	140.0e	59.90398	24.01785
07	Weather Rout...	28.41	134.0e	59.91098	24.01841
08	Weather Rout...	32.09	150.0e	59.98294	24.04878
09	Weather Rout...	32.22	147.0e	59.97798	24.04986
10	Weather Rout...	34.81	150.0e	59.97894	24.05834
11	Weather Rout...	38.48	134.0e	59.98397	24.07133
12	Weather Rout...	39.36	146.0e	59.98697	24.07958
13	Weather Rout...	43.83	171.0e	59.97897	24.08896
14	Weather Rout...	44.74	145.0e	59.98297	24.09131
15	Weather Rout...	49.24	134.0e	59.98297	24.09131
16	Weather Rout...	44.11	155.0e	59.98398	24.09131
17	Weather Rout...	39.23	010.0e	59.94793	24.01367
18	Weather Rout...	32.81	004.0e	59.91898	24.01841
19	Weather Rout...	24.89	100.0e	59.97398	24.02649

The 'Route Manager' dialog box in the bottom right shows route statistics: 'Selected Route' with a length of 4105.87 and 'Selected Route' with a length of 1156.10. It includes buttons for 'Start Trip', 'Proceed', 'Cancel', 'Export selected...', 'Route From Track', and 'Refresh'. The 'Route Manager' also has tabs for 'Routes', 'Tracks', 'Waypoints', and 'Layers'.

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

- Just released in October.
- 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)

Primary screen in Android



Click and hold to right click

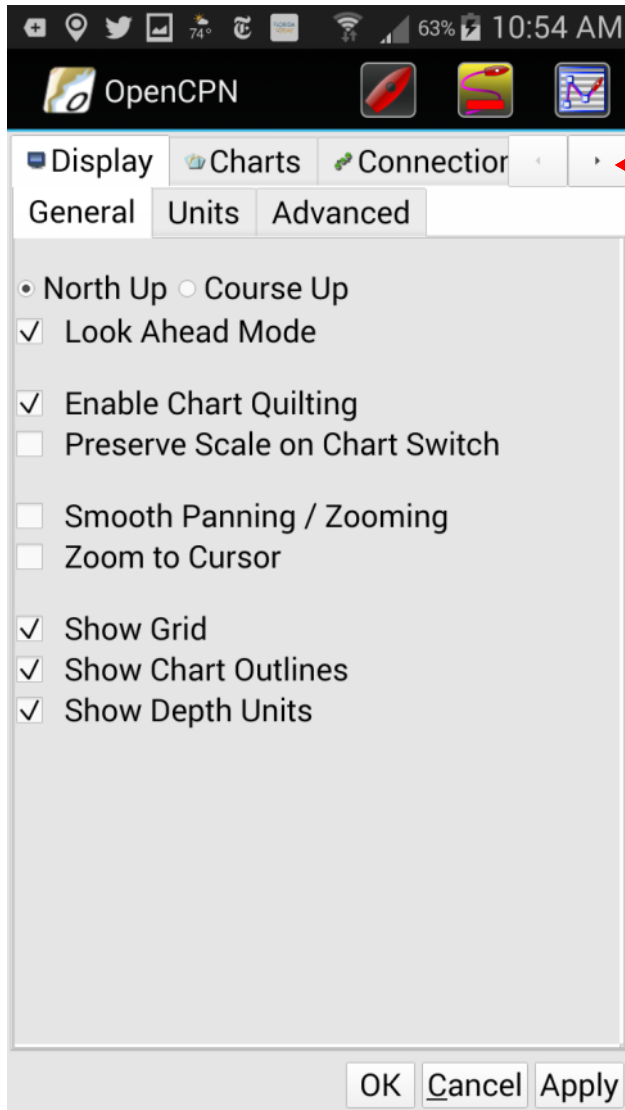
- Pops right-click menu (couldn't get screen shot)
- All the right click functions appropriate to where you are right-clicking

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

- Manually move to device (put on SD card is best)
- Use Charts tab to load charts

Downloading charts

- Use downloader
- Difficult to select chart catalog (+ too small to select, no zoom)
- Difficult to navigate to Charts directory on SD Card
- Scoll 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
- No documentation for Android yet
 - See Terry's Sargent's handout



The End

<http://svsoggypaws.com>

Questions?

More Info

- Just play with it—but NOT on your Nav computer!
- OpenCPN Website / User Manual
- Bigdumboat.com (videos)



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>