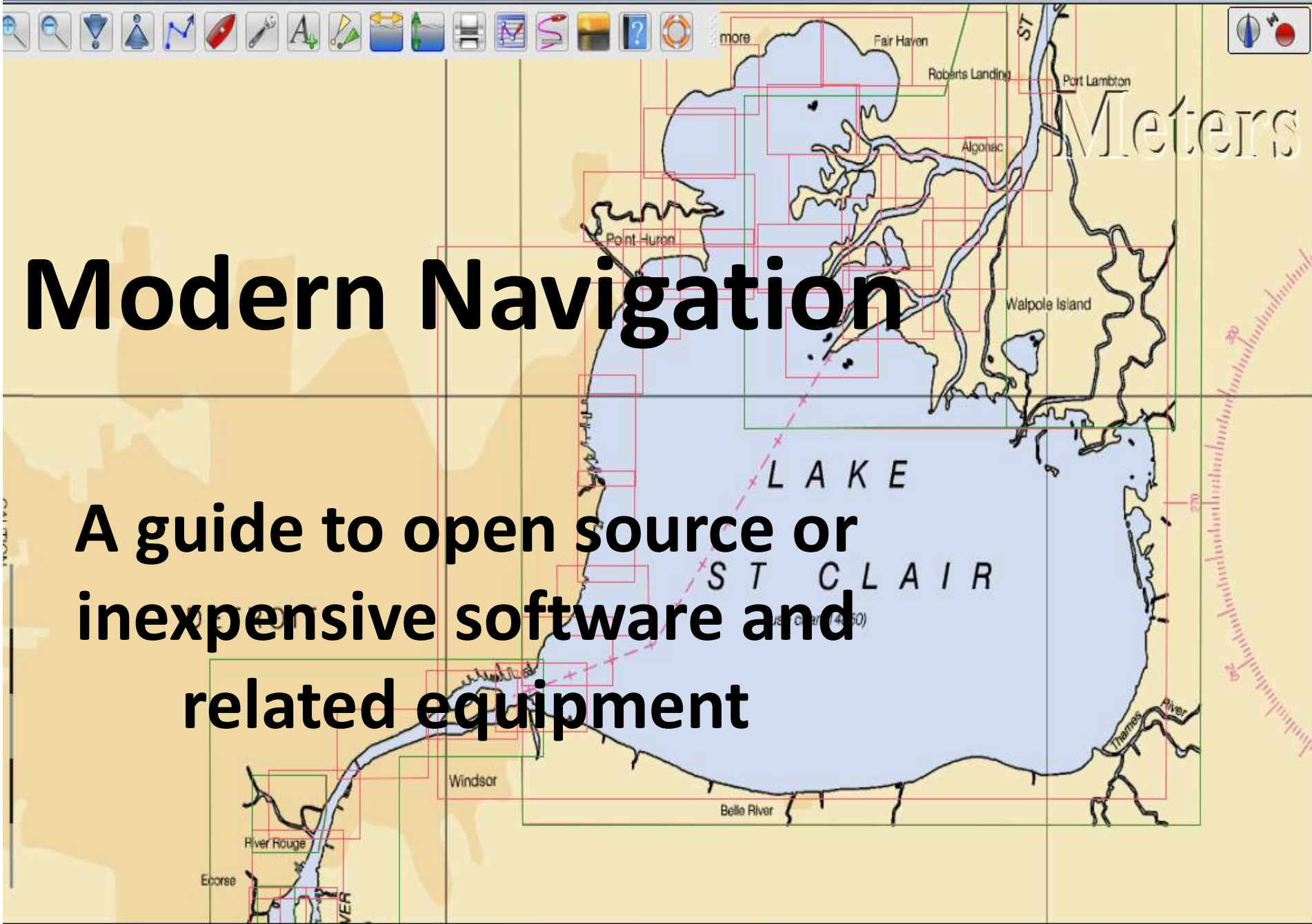




Modern Navigation

A guide to open source or inexpensive software and related equipment



Actual Applications Used

PC

- Seaclear II
- OpenCPN (+ tablet)
- Polarview

IPhone

- Navionics
- Isailor

Personal Adaptation

- Laptop rack at nav station – holds laptop securely in unfolded position



Modern Navigation - Overview

Charts

Raster, Vector, US, Canadian, Sources

Hardware and OS

Phones, Laptops, Tablets

Windows, Mac, Linux, IOS, Android

GPS Devices

USB, Bluetooth, Included in Hardware

Navigation Software

Low Cost, Open Source, Obsolete, Geo Ref

Charts

- **Raster** – Essentially a picture of a paper chart
- **Vector** – A ‘diagram’ of a chart composed of discreet lines and angles

Raster has a ‘traditional’ look, Vector is cleaner looking and more compact in file size.

Charts

- Raster (RNC) charts are available free for U.S. waters and Canadian waters for a fee
- Vector (ENC) charts are available free for U.S. waters and Canadian waters for a large fee

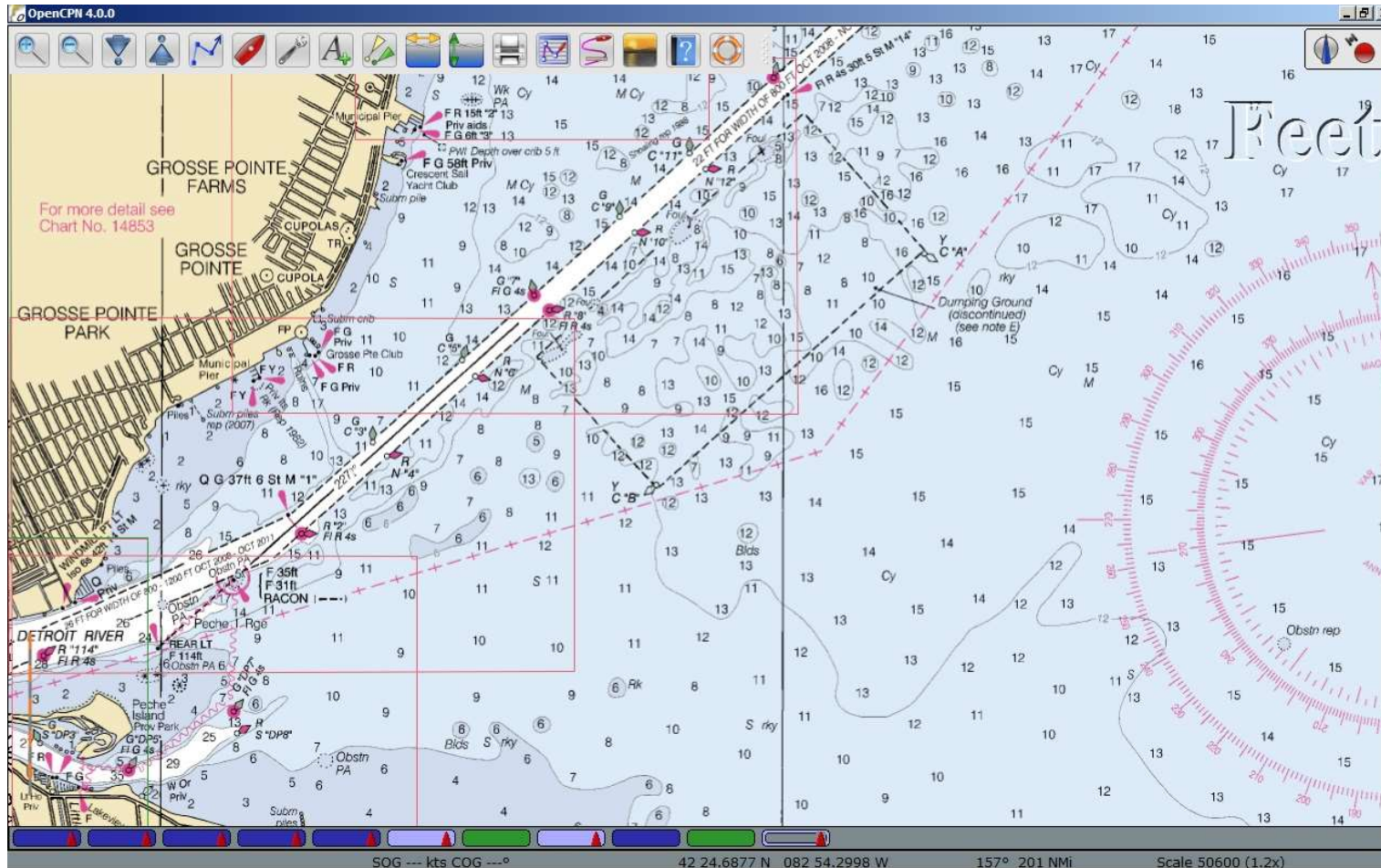
U.S charts download from (search by region):

<http://www.charts.noaa.gov>

Canadian Charts are purchased from a dealer

See <http://www.charts.gc.ca> for locations

Raster - RNC



Vector - ENC



Hardware GPS

IOS (IPhone, IPad)

- iPhones and Cellular Ipads have GPS chip
- Non Cellular Ipads require a external GPS

When you buy a tablet, check the specs to see what in in the base hardware... GPS? Some have it

Hardware and OS

Android

- OpenCPN Beta (open source - free), Navionics
 - Similar issues to Apple devices
 - Some non cellular devices may have GPS chips

Hardware and OS

PC's, Laptops

- Windows – OpenCPN, Polarview (\$), SeaClear
 - Linux – OpenCPN, Polarview (\$)
 - Mac – OpenCPN, Polarview (\$), GPSNavX (\$), MacENC (\$\$)
- All require some kind of accessory GPS device
 - Interface on cheaper software not as polished or intuitive as higher priced apps

Hardware and OS

PC's, Laptops

- More CPU power and RAM memory is better in Navigation (but works OK on a cheap tablet)
- Reasonably modern devices have plenty of space for charts
- Mounting the devices is an issue
- Protection of the devices is an issue
- Powering the devices is an issue

GPS Devices

IOS Devices

- **Bad Elf GPS with Lightning Connector**



GPS Devices

USB and Bluetooth

- **USB USGlobalSat BU353-S4**



- **GlobalSat ND-105C Micro USB GPS Receiver**
Micro USB for Android, Tablet & SmartPhone



GPS Devices

Bluetooth

- **GlobalSat BT-368i**



- **Bad Elf 2200 GPS Pro**



GPS Devices

Notes

- **USB** devices \$35 - \$70
- **Lightning** and **Bluetooth** \$90 - \$150
 - Bluetooth types often connect to several devices at once
 - USB and Lightning are powered by the device they are plugged into
 - Bluetooth runs on a battery, needs recharging

Navigation Software

Non Positioning and trials

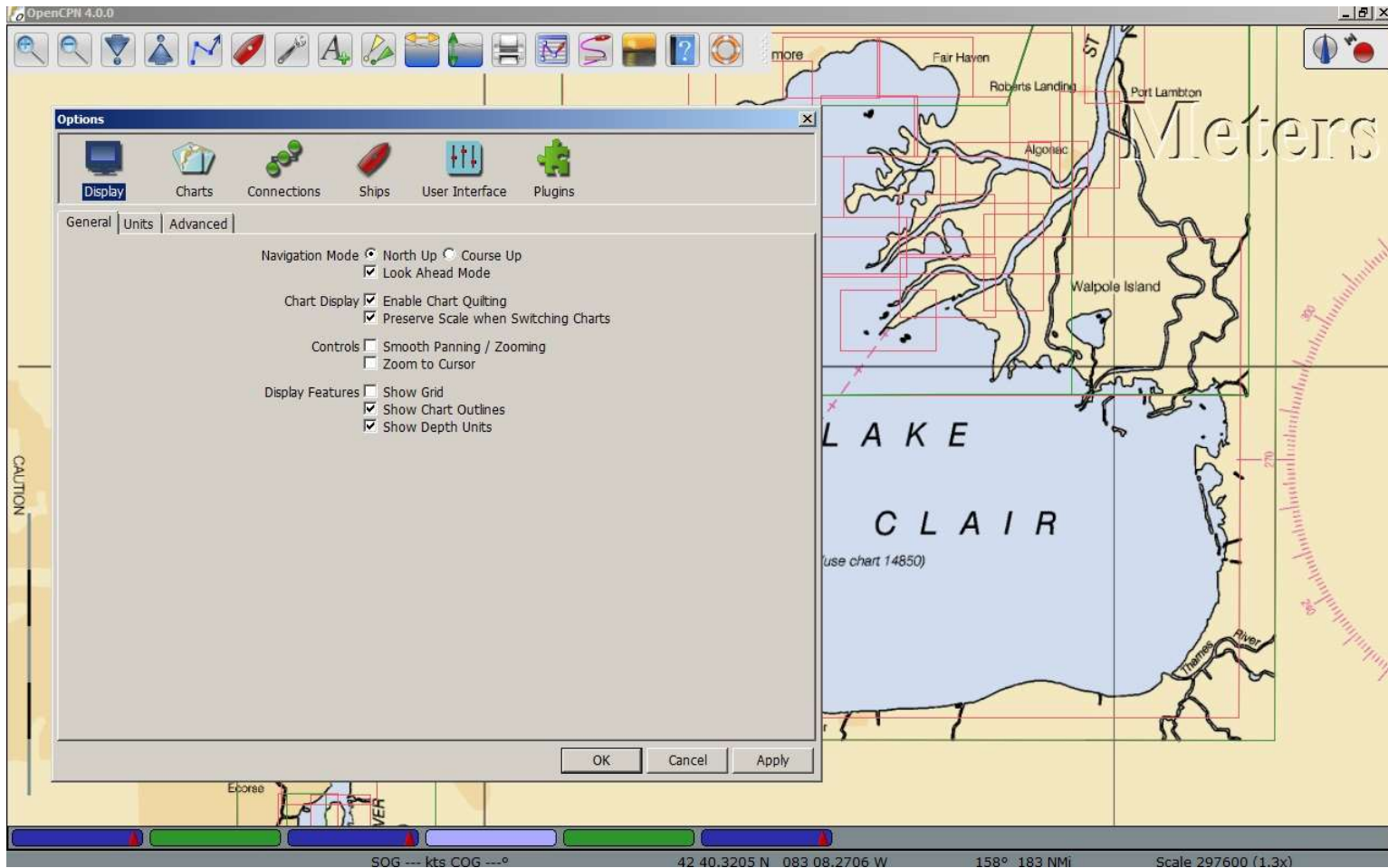
- StarNavPilot – no GPS position. Useful for planning and developing routes or courses
- Polarview – 30 day trial with GPS positioning.
Try before you buy

Navigation Software

Open Source - Free

- **OpenCPN 3.2.2** is a viable open source product currently supported and evolving
- **CapCode 2.5.0** Jury is out on this one, minimal activity and somewhat buggy (my opinion)
- **SeaClear II** unsupported, unintuitive but it works OK. Map Cal is useful for geo-referencing various types of graphics like weather and currents

OpenCPN



Navigation Software

Cheap

- **Polarview 2.0.7** (by Polar Navy) \$50
 - Install on up to 5 PC's with initial purchase
 - Live GPS and instrument navigation
 - AIS traffic display
 - ActiveCaptain POI display
 - GRIB Weather display
 - Manage, export and import routes, waypoints and tracks
 - Decent product, supported and evolving

Polarview

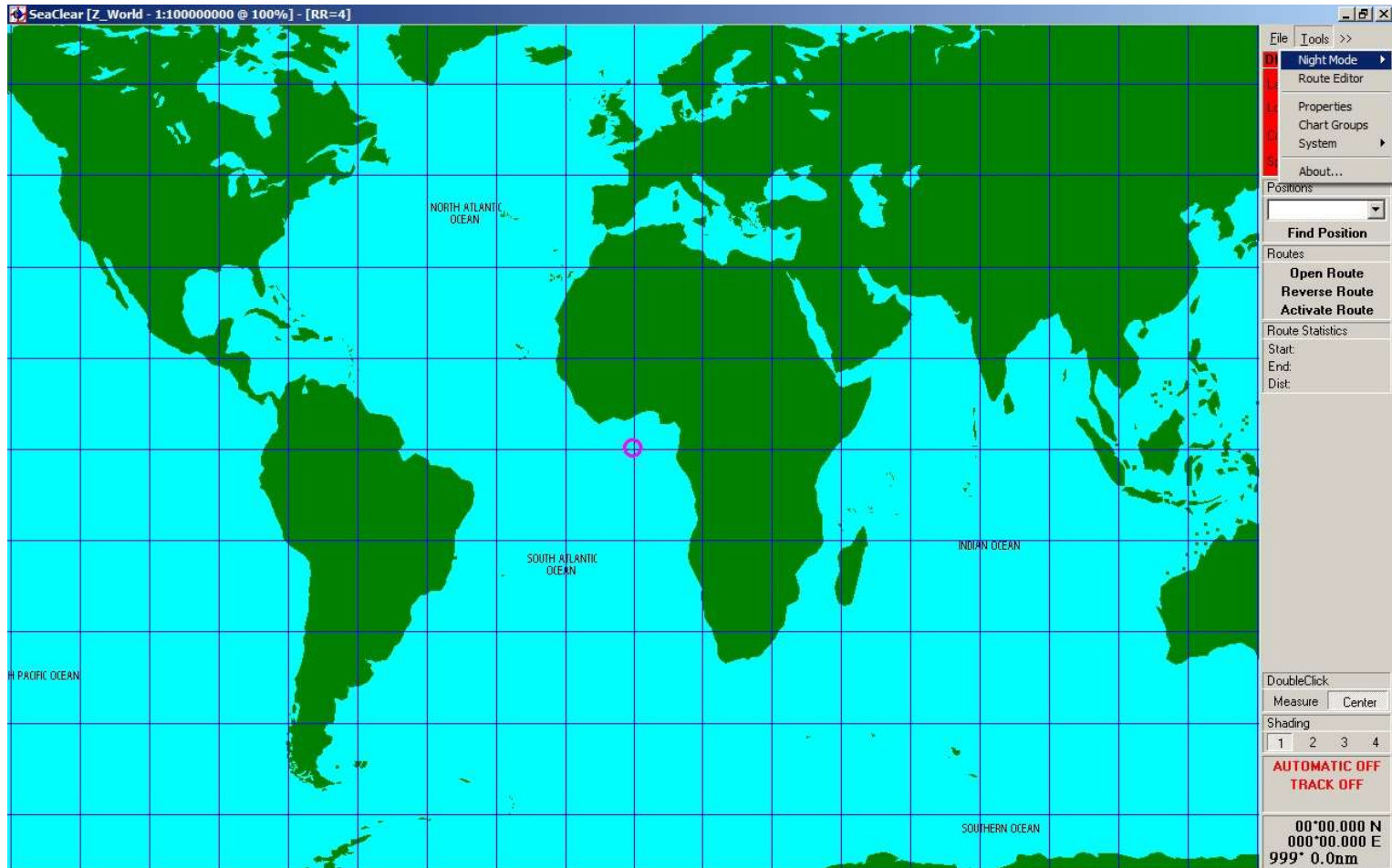


Navigation Software

Recap

- OpenCPN , Polarview and GPSNavX are actively supported products
- Seaclear II is old and not being further developed
- The real gem of Seaclear is MapCal 2

Seaclear II



MapCal



Navigation Software

Evaluations and Info

Good evaluation of a short list of the cheapest but viable PC programs can be found at:

visitmyharbour.com/chartplotter-sea-tests.asp

Good info site:

i-marineapps.blogspot.com/p/pc-software.html

Overall

PC

Try OpenCPN first for a PC (test the concept)

Polarview is a bit more user friendly

- Both are being supported and developed

Mac

Try free first then work up the cost ladder

IPhone

Navionics, INavX

Backup ...

Great Lakes

DR, Compass, Hand Bearing Compass

Ocean –

Next Speaker