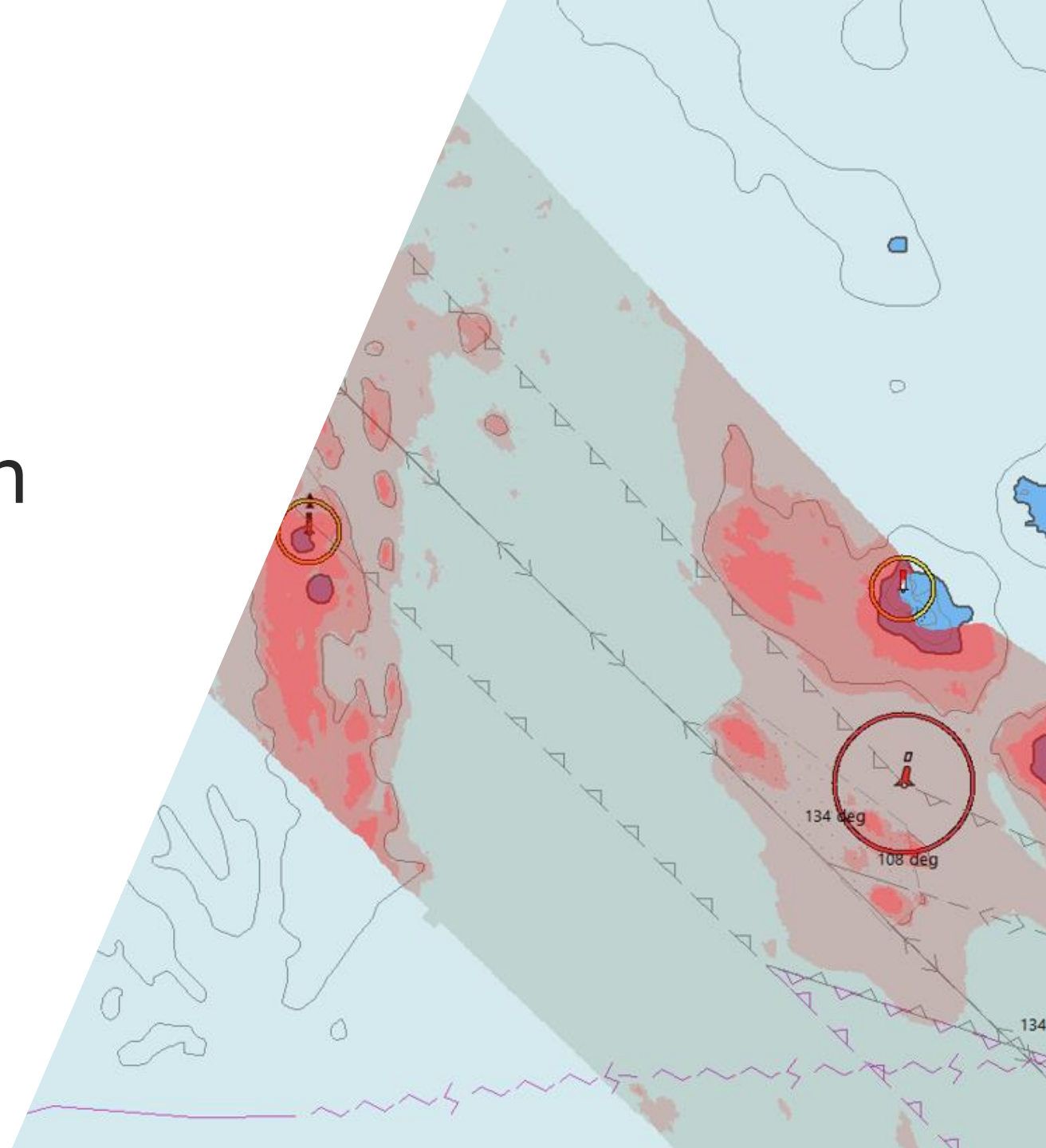


Smart fairway & Depth model development

Stefan Engström



Smart fairway

Environmental data and forecasts



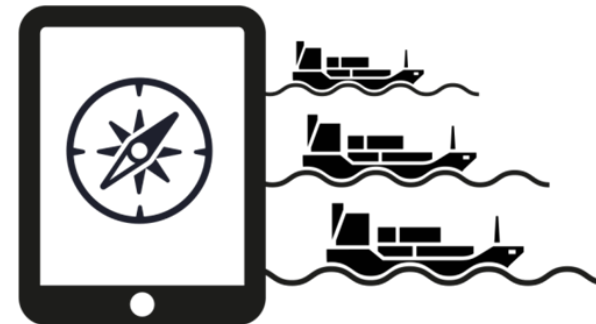
Depth data, S-100



Smart buoys



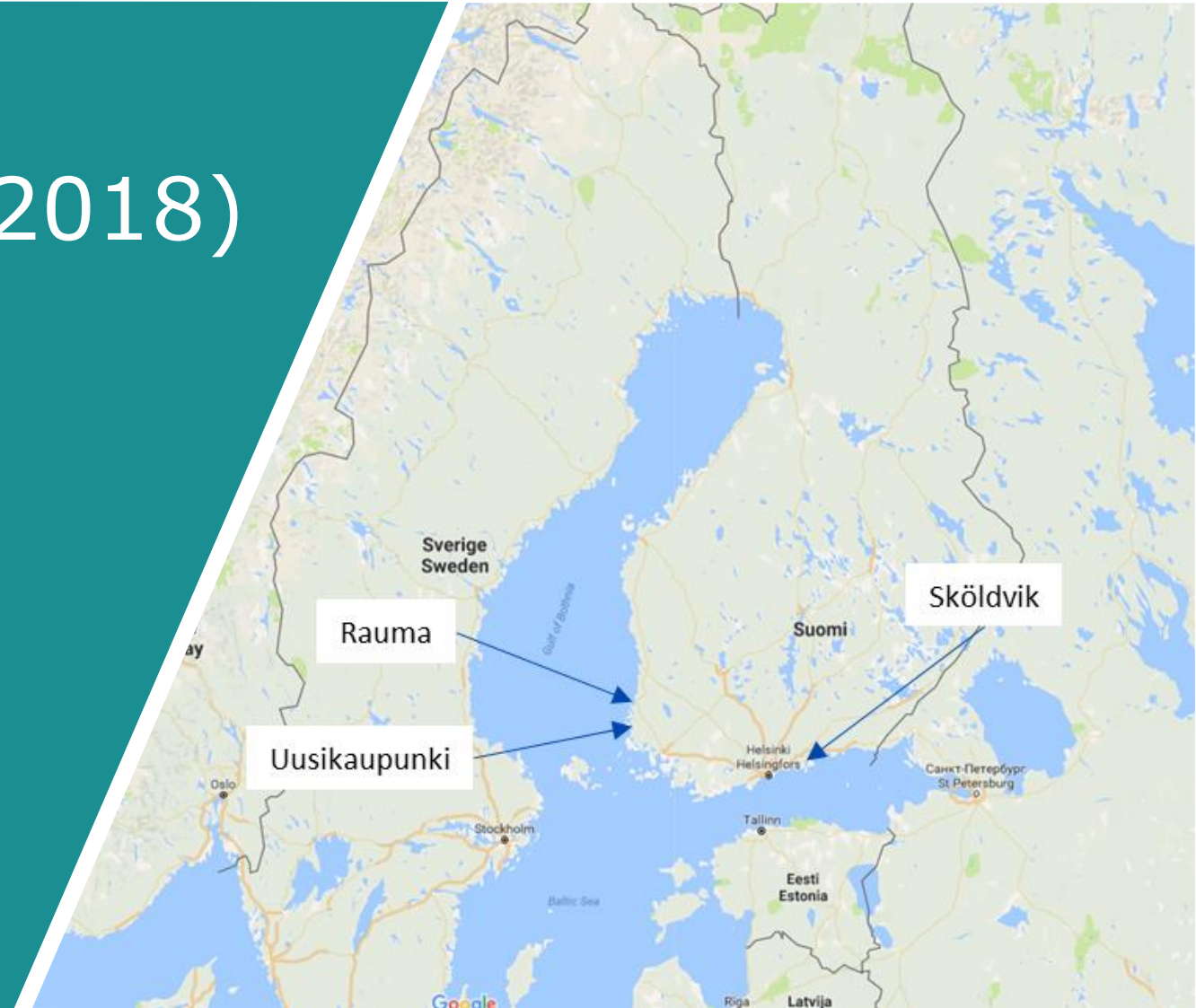
New services



Safe and efficient navigation

Depth models (2015-2018)

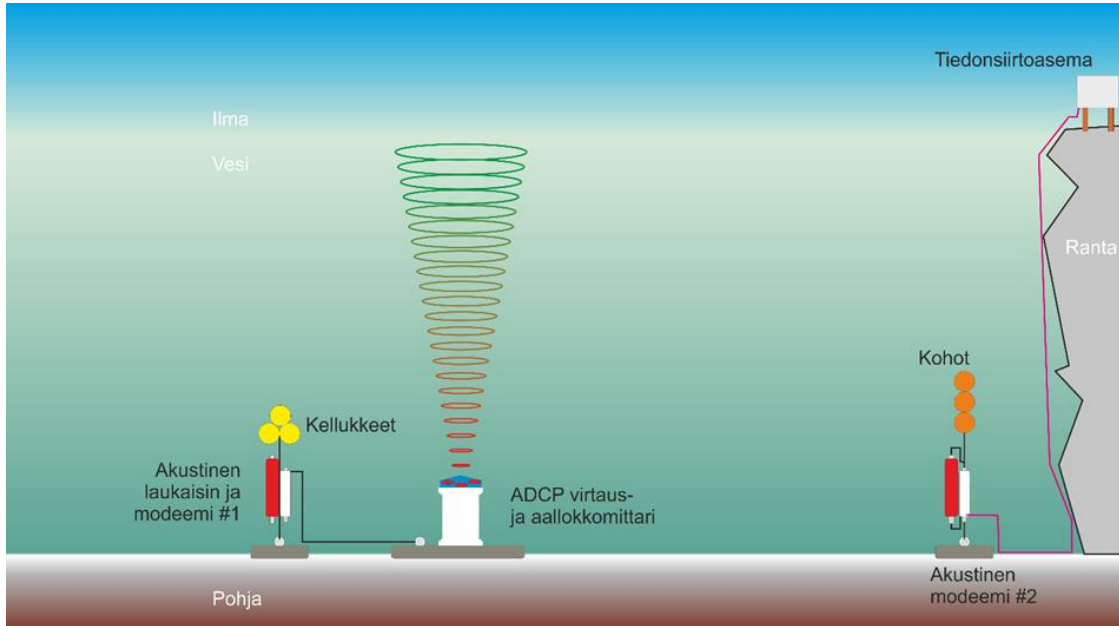
- Test data sets for selected fairway-areas.
- Latest addition Rauma Q4/2018
- Additionally same fairways equipped with smart buoys and equipment.
- New environmental data (long term water level forecast, up to 10 days, including estimate of probability)





Environmental data

- Distribution of FMI-produced enhanced water level forecasts and environmental data.
- Collection of data using buoys and local equipment



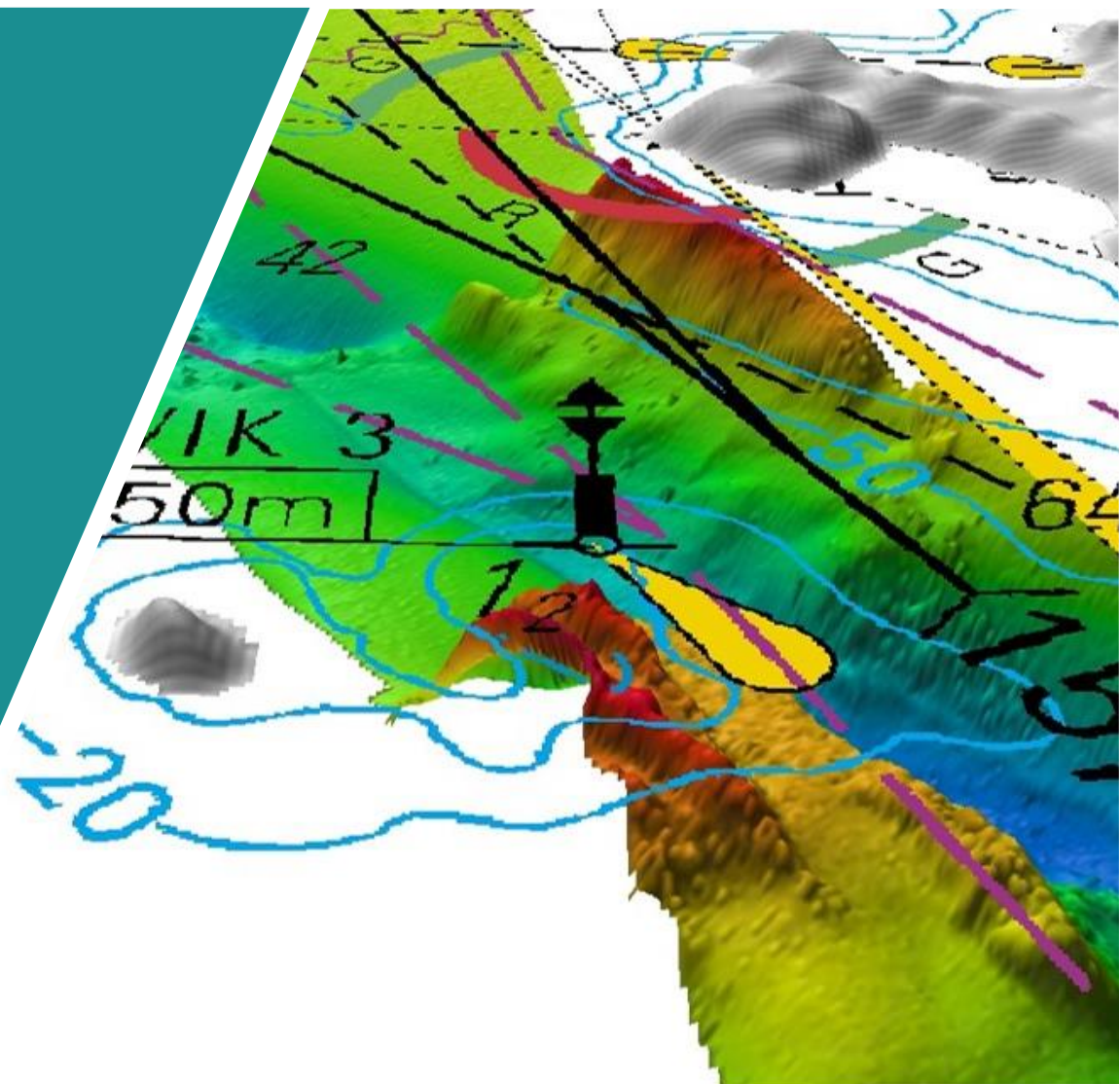
Luode Consulting ADCP- equipment produce data of currents, ice, wave height and direction of waves.



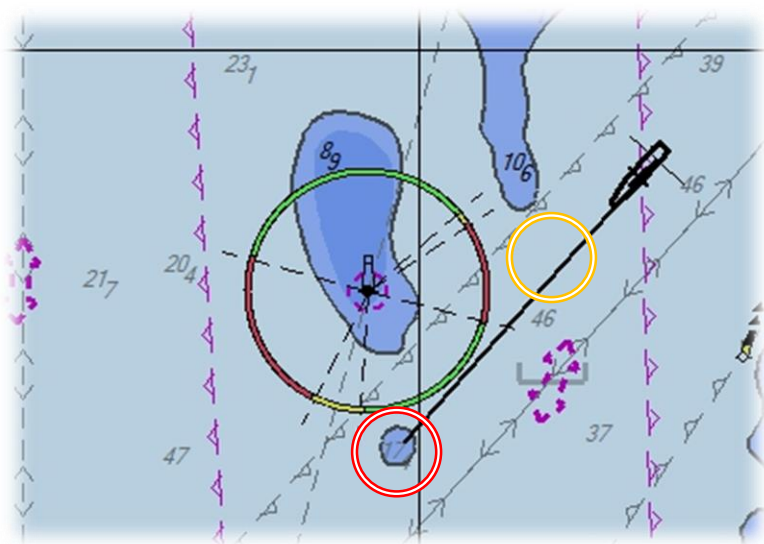
Cybernetica buoys equipped with inclination measurement, tested for calculation of wave heights.

Depth models

- Technical requirements (shoal)
- Specifications (grid size: ~5m)
- Projected grids (UTM)
- S-102 PT participation



Simulator testing (2016)



ECDIS / ENC



S-102 COLOR RAMP



"UNDERKEEL CAMERA"



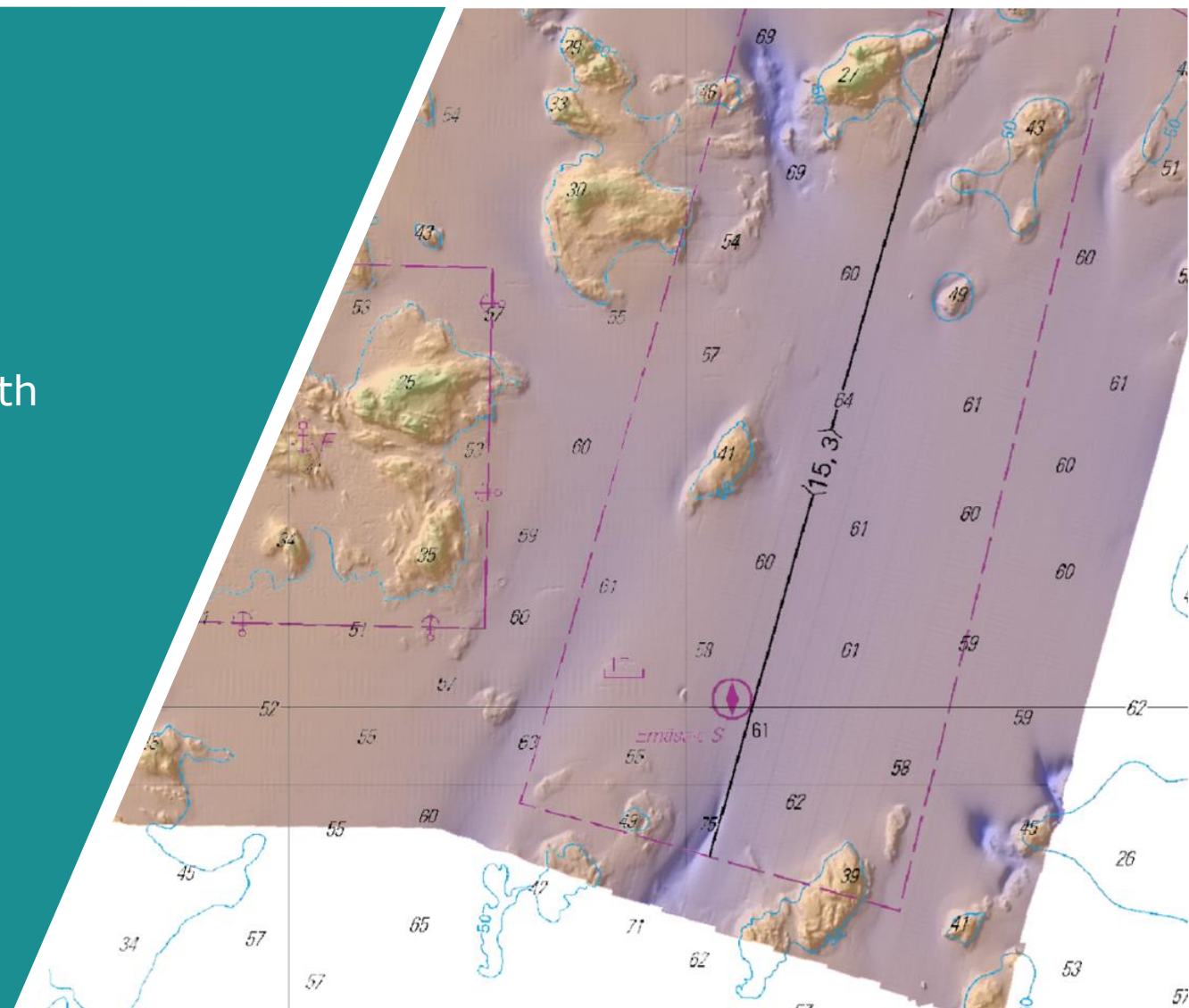
OpenCPN (2018)

- Open Source Chart Plotter (ECS)
- Native S-52 / S-57 and NMEA support
- Basic ECDIS-like route functions
- Can be;
 - installed in laptop,
 - connected to GPS and
 - used in simulator and onboard

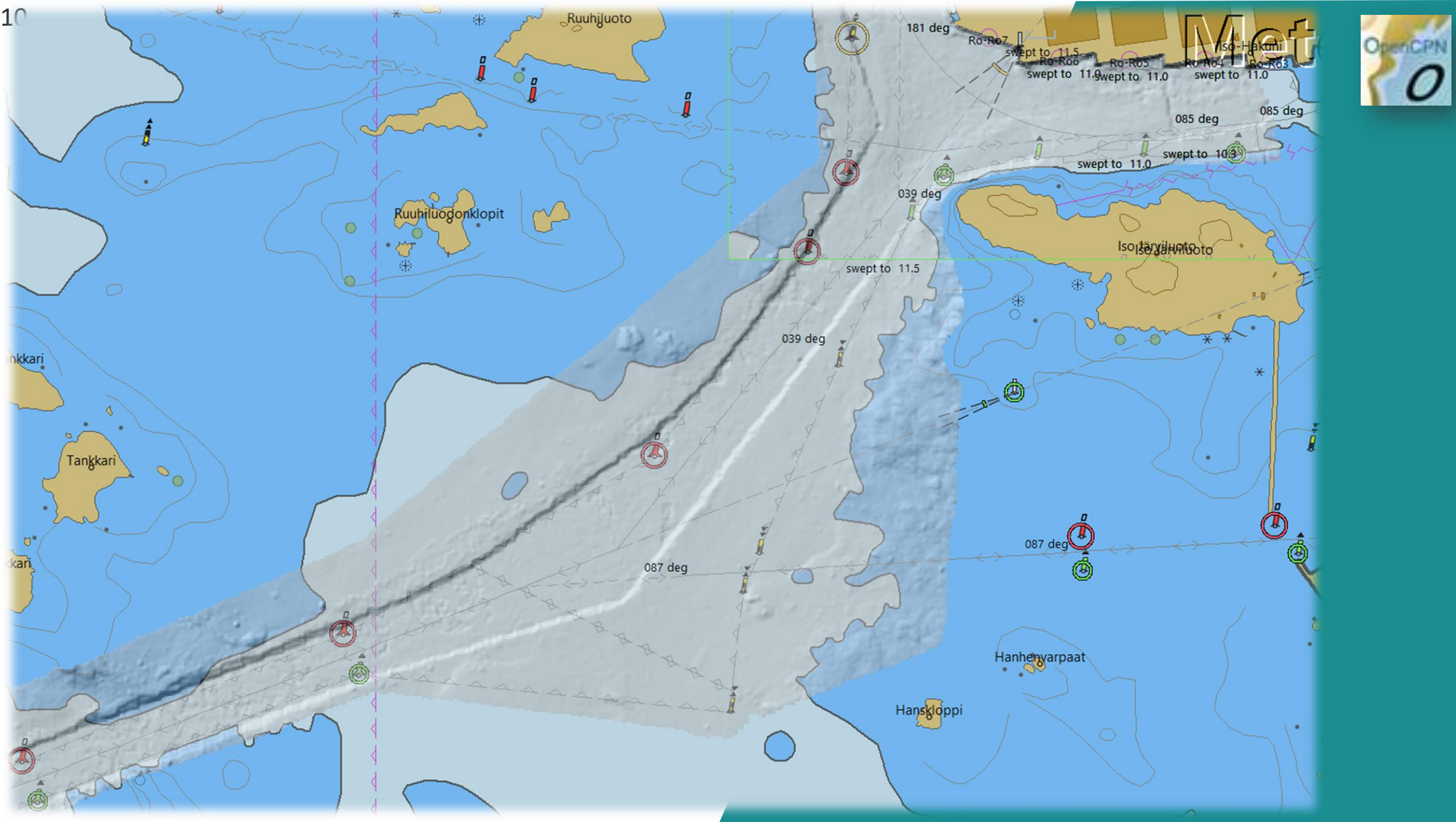


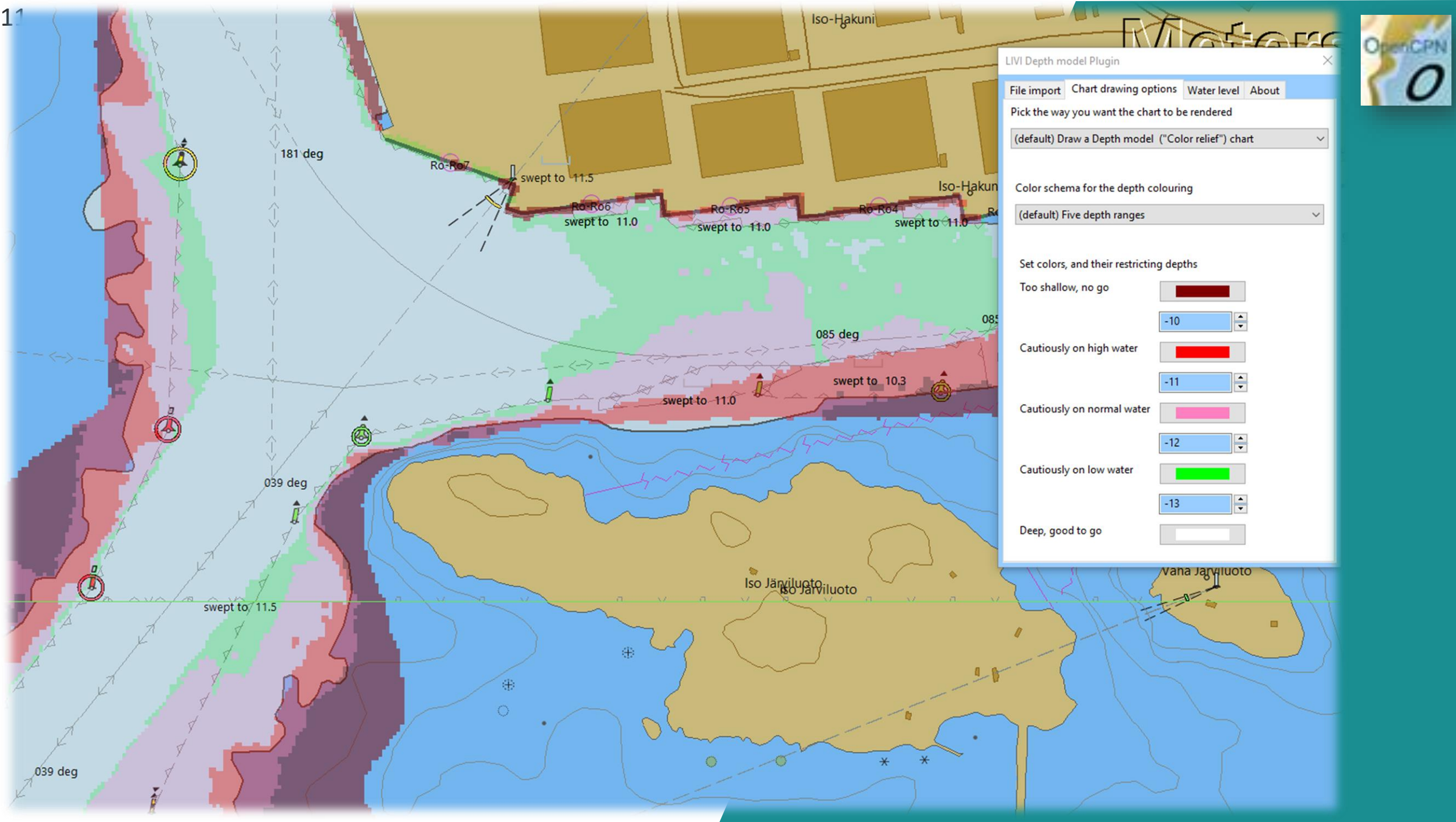
Depth Plugin (2018)

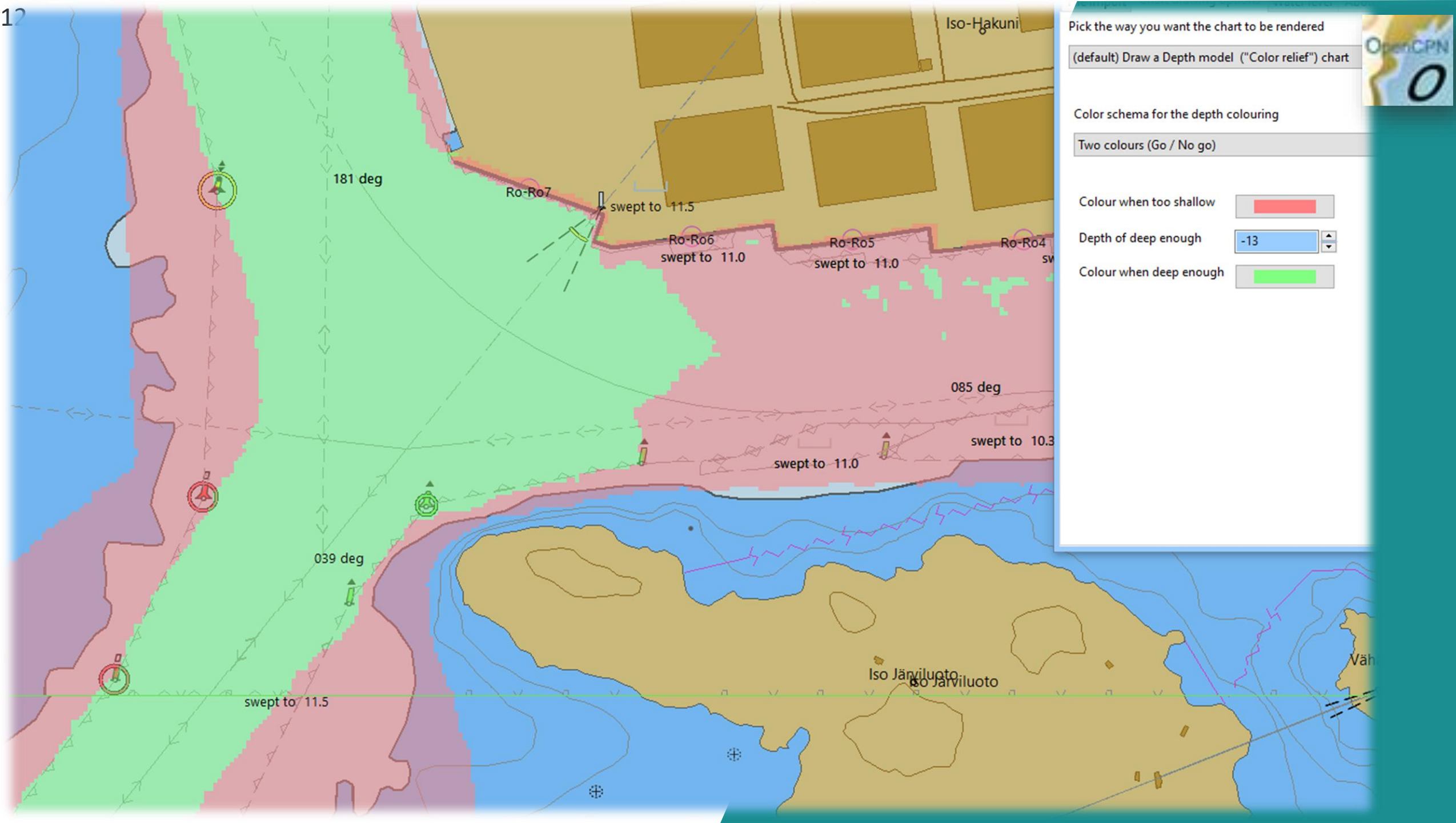
- Plugin created for combined display of depth models and ENC
- Supports difference in vertical reference systems and projections (WGS / UTM)
- Supports display as hillshade and custom color-ramps (S-102 2018 draft portrayal)
- Supports current water level offset
- <https://github.com/FihoFi>











Kiitos!

