

OAK ARCTIC

Arctic & Maritime Domain Awareness — sovereign Canadian, ITAR-free

A software workstation for the sea and Arctic picture: who is on the water, who has gone dark, who is shadowing whom, and whether a submarine can slip through a strait. First-principles acoustic, RF and geodesy physics — no black boxes — so it runs offline on a laptop for surveillance analysis, ASW planning, training and course-of-action work in support of NORAD-modernization and Arctic-sovereignty missions.

Maritime DA tools

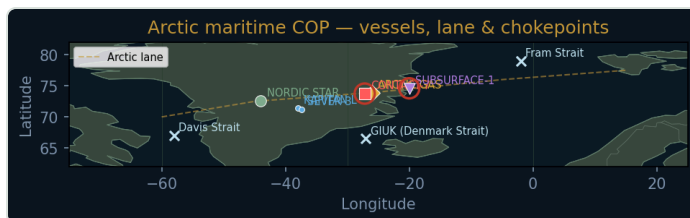
Arctic vessel COP — an AIS-style common operating picture over a polar basemap, with the trans-Arctic shipping lane and the key chokepoints (Davis, Fram, Bering, GIUK).

Dark-vessel & anomaly triage — a contact held by radar/EO but squawking no AIS is flagged DARK; plus off-lane, loitering and subsurface anomalies, with a CLEAR / WATCH / ALERT picture.

CPA / TCPA encounter screening — closest-point-of-approach and time-to-CPA between vessels, surfacing shadowing, rendezvous and collision geometry before it happens. **Validated on real AIS:** predicts the actual closest approach of real vessels to a median **0.52 km** (1,153 real encounters, NOAA traffic).

ASW sonar-barrier planner — size a sonobuoy / array field across a strait and read the probability a quiet transiting submarine is detected — coverage improves with sensor density, degrades against a quieter boat.

Multi-INT maritime fusion — correlate AIS + radar + ELINT + EO/IR into fused vessel tracks, flagging where the sensors hold a contact that AIS does not.



Maritime DA Console — Arctic vessel COP

Why it stands out

First-principles physics the suite's own sonar equation, transmission loss and multi-INT fusion — auditable, not a wrapped commercial feed.

Sovereign & portable pure-Python, offline world basemap, no GPU — Canadian IP, ITAR-free, runs on a ruggedised laptop afloat or ashore.

Validated on real data CPA/TCPA screening predicts real vessel closest-approaches to a median 0.52 km on real NOAA AIS traffic — not just synthetic.

Built for

Under-ice & subsurface awareness · illegal-fishing / dark-shipping detection · strait & chokepoint watch · approaches ASW planning · training & analysis.

Aligned to

NORAD modernization

Arctic sovereignty

Maritime domain awareness

ASW / undersea

Critical-infrastructure protection



ASW sonar-barrier coverage