

# Mer effektiv fiskeleting med autonome farkoster

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FHF's Hvitfiskseminar 2024  
Tromsø 7. november





# uncrewed surface vehicles for marine monitoring



Sonardyne  
Uncrewed Surface Vehicles - Sonard...



Seiche  
Coastal Monitoring of ...



Sonardyne  
Uncrewed Surface Vehicles - Sonardyne



OceanX  
Autonomous and Unmanned Surface Vessels for Marine Monitoring, Surveying and Rescue



Seiche  
Unmanned Vehicles: Wave P...



Unmanned Systems Technology  
Unmanned Surface Vehicle USV | A...



Frontiers  
Frontiers | Kayak Drone – a silent acoustic u...



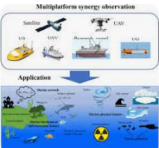
OceanAlpha  
ESM30 | Unmanned Surface Vehicle | Oce...



Unmanned Systems Technology  
Oceanalpha Develops Unmanned Sur...



New Atlas  
Argus unmanned surface vessel d...



ScienceDirect.com  
Marine environmental mon...



ResearchGate  
Components of the integrated system. USV, un...



Offshore Engineer Magazine  
Norway: IMR to Use Kongsberg U...



Sonardyne  
Uncrewed Surface Vehicles - Sonar...



OceanAlpha  
ESM30 | Unmanned Surface Vehicle...



NOAA Ocean Exploration - N...  
Uncrewed Surface Vessels



Embention  
USV (Unmanned Surface Vehicle), applications a...



Unmanned Systems Technology  
UNMANNED MARINE SYSTEMS  
USV, AUV, LSV & Autonomous Boat Control



Smart Maritime Network  
Norway orders four autonomous vessels...



Maritime Robotics  
Revealing the Mariner X USV Platform



Geo-matching  
HK Water Supplies Department Introduces ...



SEA-KIT  
USVs for commercial & o...



NOAA Ocean Exploration - National Oceanic...  
Uncrewed Surface Vessels



Wikiwand  
Unmanned surface vehicle - Wikiwa...

Populære søk

- unmanned surface vehicle
- autonomous surface vehicles
- usv drone



MDPI  
Sensors | Free Full-Text | Study on Dy...



eoPortal  
AutoNaut USV (Unmanned Surface ...



Unmanned Systems Technology  
Autonomous Surface Vehicles | AS...



www.oceanalpha.com  
Unmanned Surface Vehicle ...



Wikipedia  
Unmanned surface vehicle - Wi...



ixblue  
Uncrewed Surface Vehicles - ixblue



Naval News  
Meet Singapore's New Maritime Secur...



MDPI  
Sensors | Free Full-Text | Design and Exp...



www.maritimrobotics.com  
Maritime Robotics | Innovative U...



The Australian Institute of Marine Science  
Autonomous surface vessels (ASVs) | AIMS

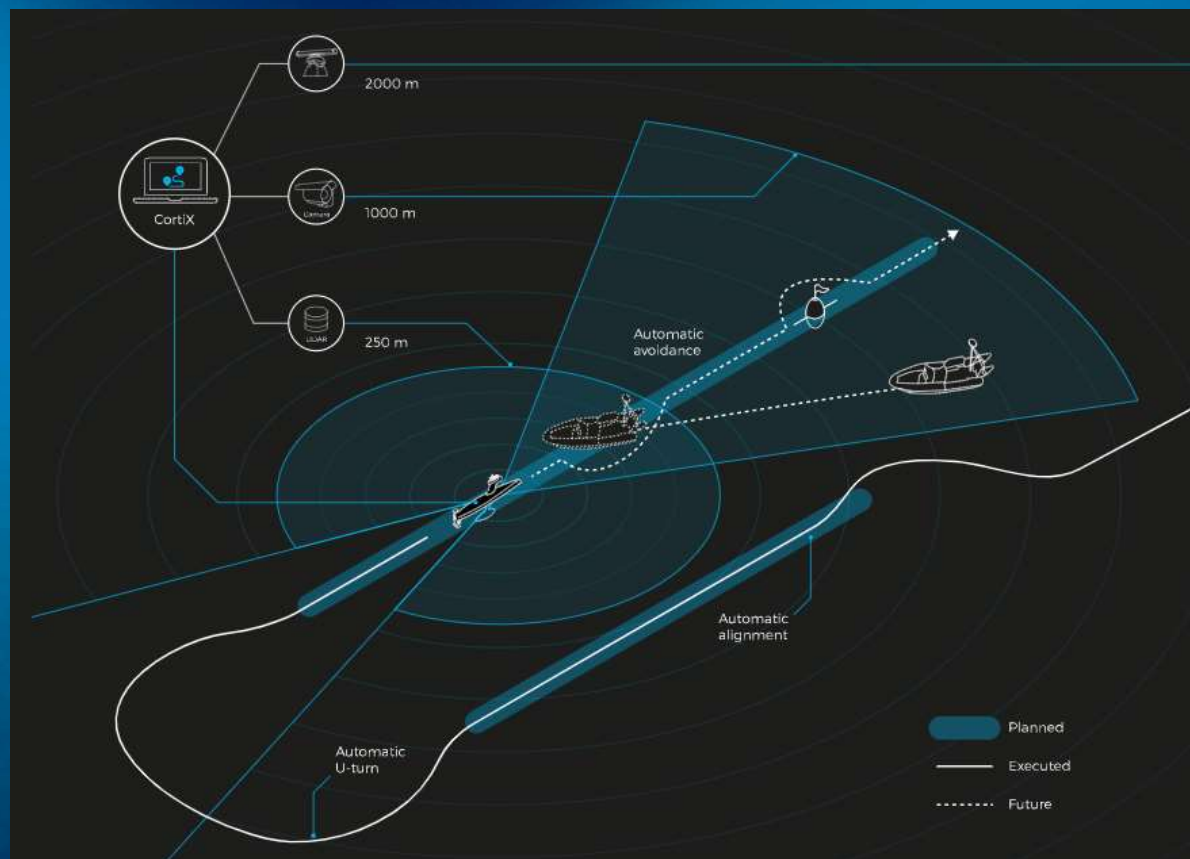


Eco Marine Power  
Aquarius Unmanned Surface Vessel | ...





# Autonome farkoster er ikke tilgjengelig enda. Alle krever en form for pilotering



<https://www.ixblue.com/north-america/maritime/maritime-autonomy/uncrewed-surface-vehicles/>

# Piloter i Bergen og USV i Hardanger

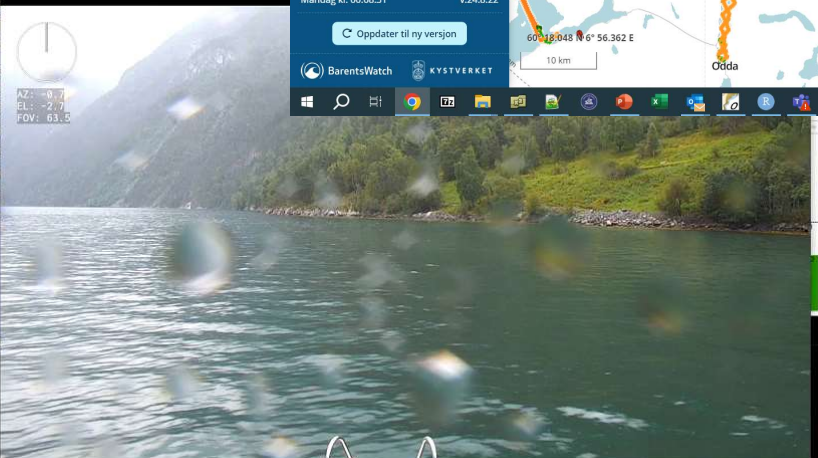
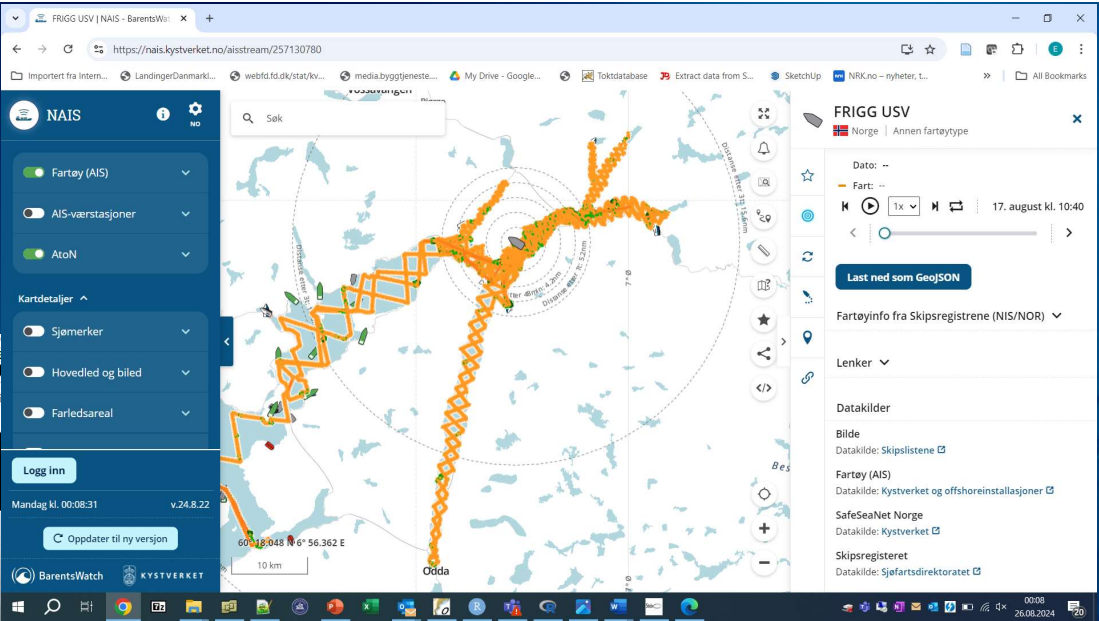
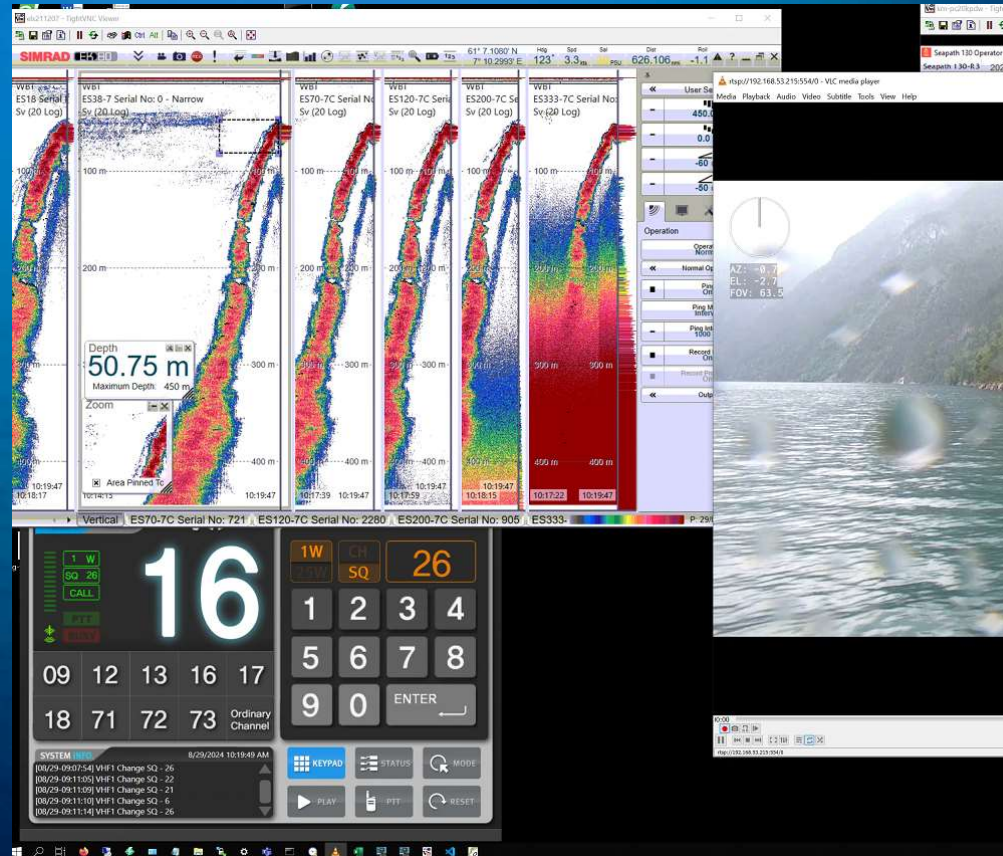
## Kommunikasjon med starlink og 4G



Kay Jørgensen



# Gode ekkolodd data og effektiv navigering

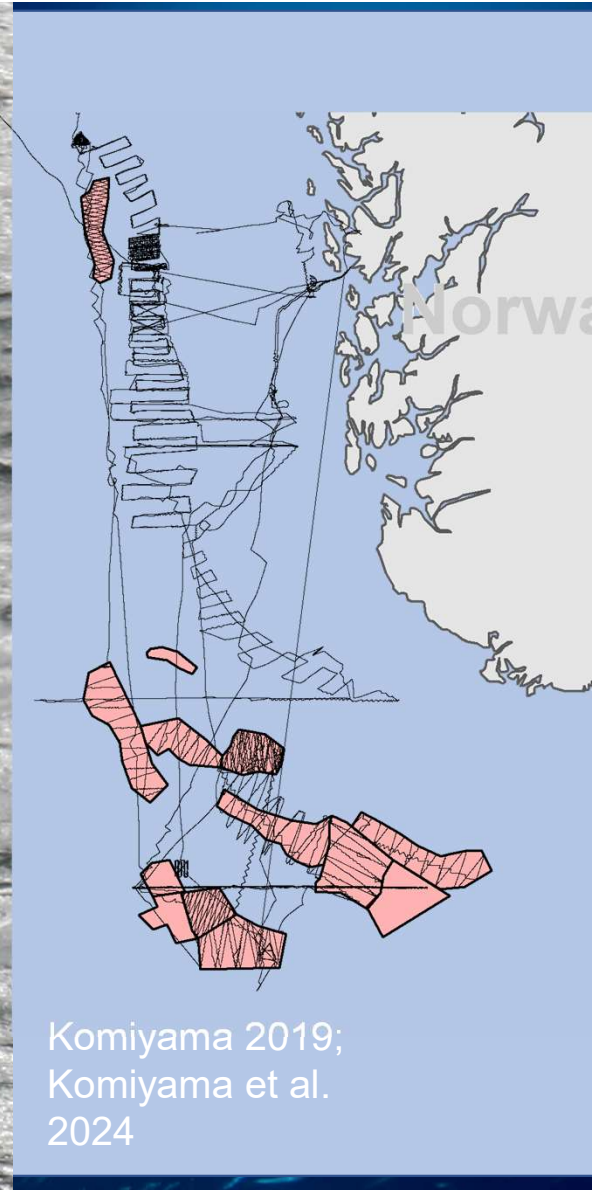


# Muligheter og begrensinger

- Sjødyktighet, rekkevidde og seilehastighet
- Sensor payload og strøm
- Kostnad
- Kommunikasjon (båndbredde)
- Sanntids dataanalyse
- Dataflyt

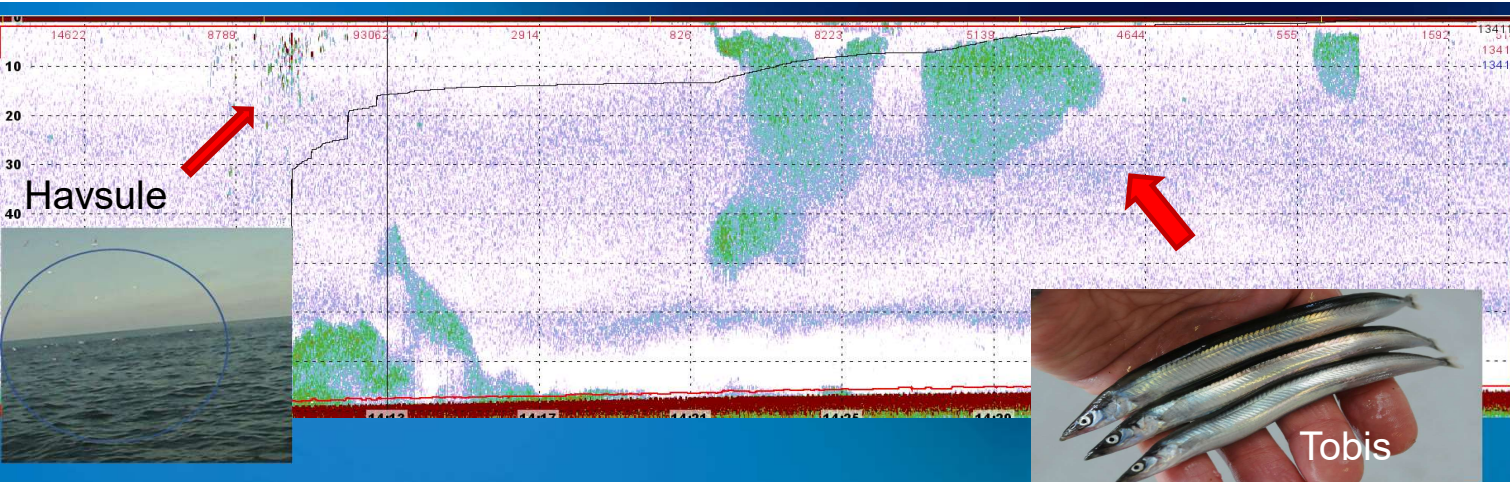


Sjødyktighet, rekkevidde og seilehastighet

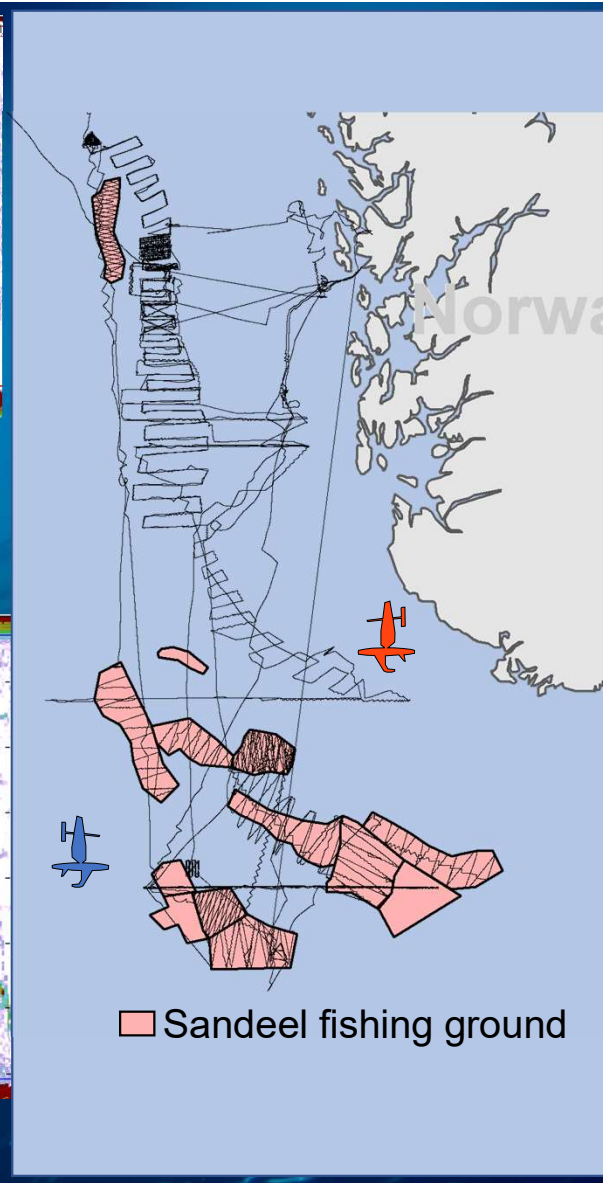
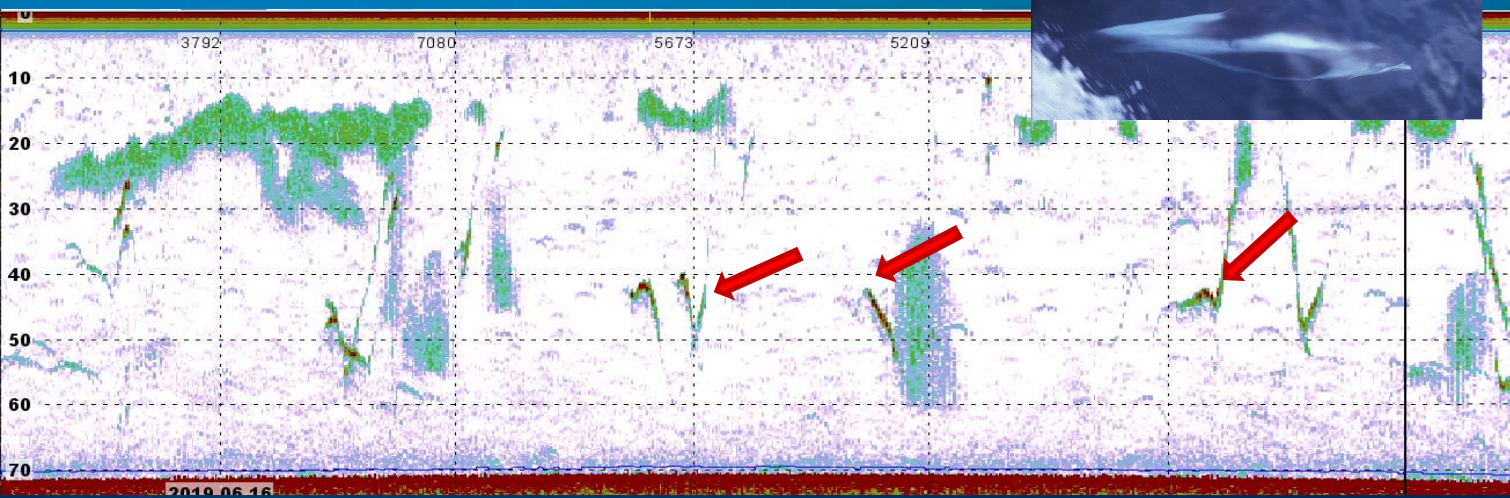


Komiyama 2019;  
Komiyama et al.  
2024





Sensor payload og strøm



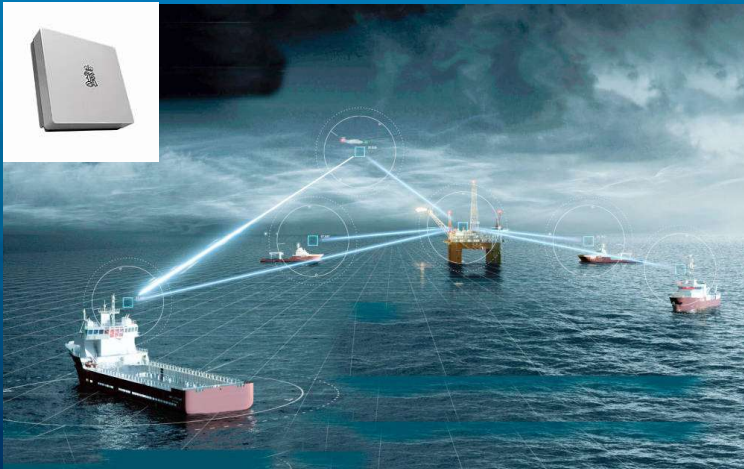
Komiyama, Holmin, Pedersen & Johnsen, in prep.







# Kommunikasjon og båndbredde



STARLINK

BOLIG BUSINESS REISE MOBILITET MARITIME LUFTFART TINGENES INTERNETT TEKNOLOGI SUPPORT

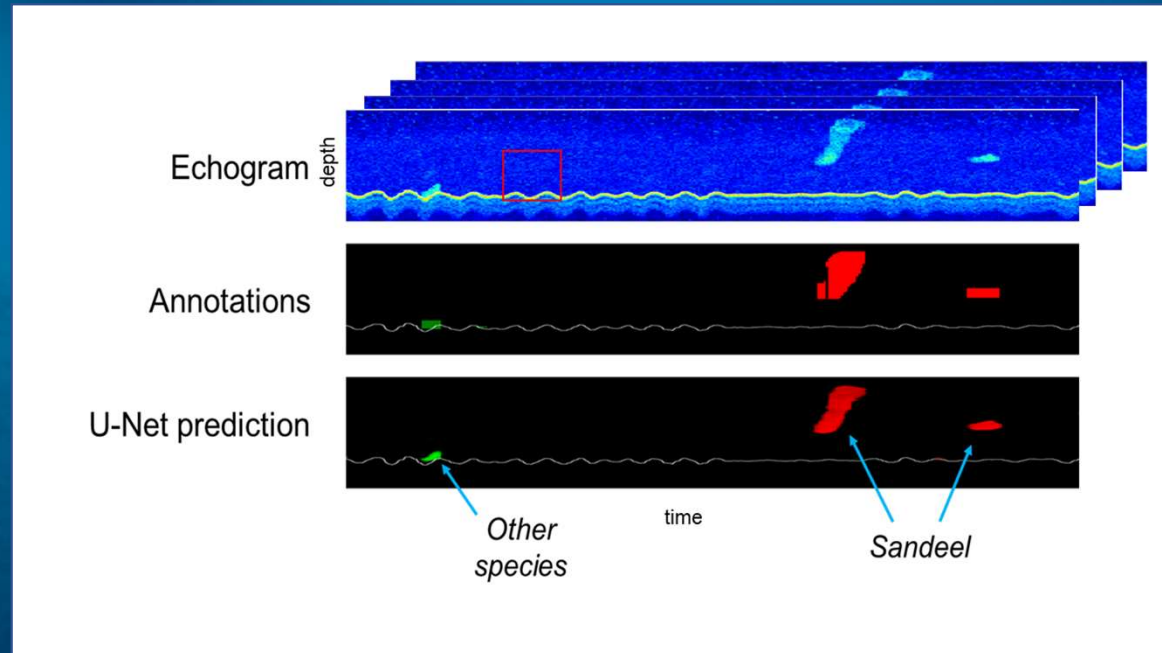
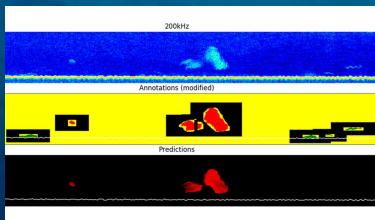
## STARLINK MARITIME

Global maritim dekning med opptil 220 Mbps nedlasting til sjøs. kr kr 3 074/mnd med en engangs maskinvarekostnad på kr 31 300 for høyttelsesterminale.

An aerial view of a white motorboat moving across the water, leaving a white wake behind it.

# Sanntids dataanalyse

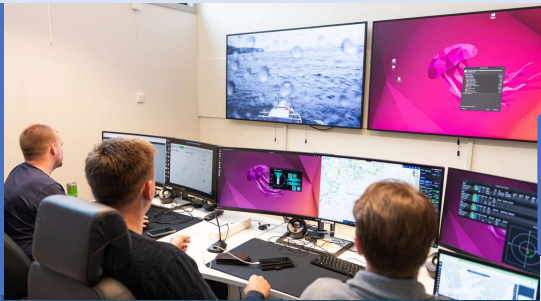
## Akustikk data





# Dataflyt

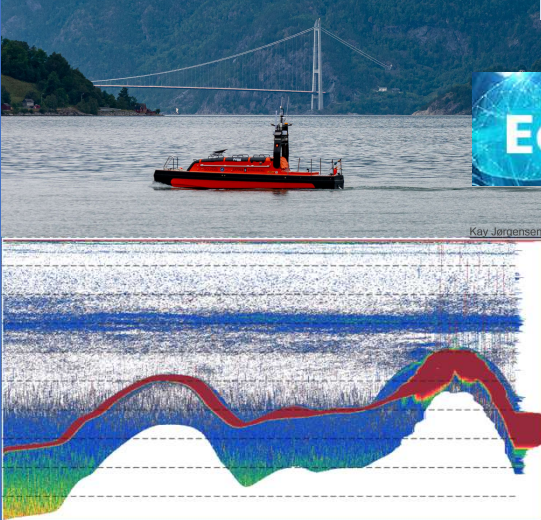
Kontroll + data kvalitet



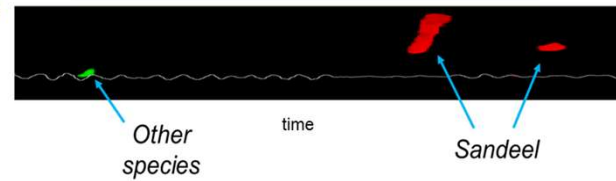
Desimerte data



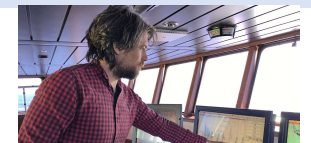
Sanntidsanalyse



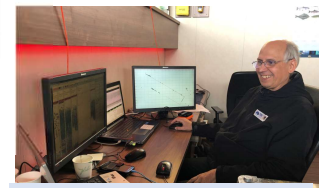
Informasjon



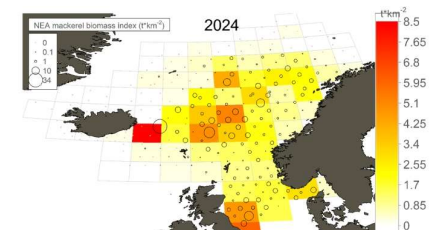
Manual inspeksjon



Eks. Fiskebåt #1



Eks. Fiskebåt #2



Eks. Data + kartplot (alle)

Spørsmål?

