



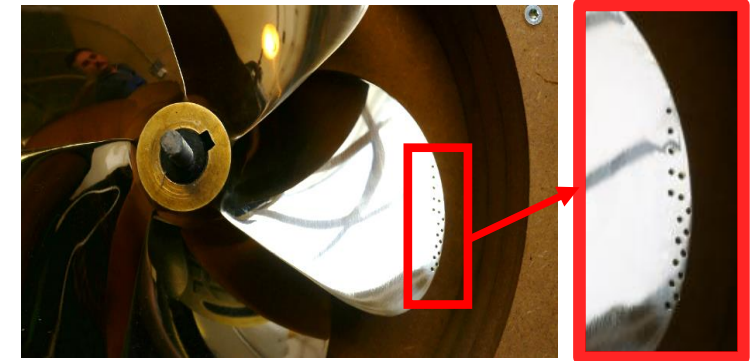
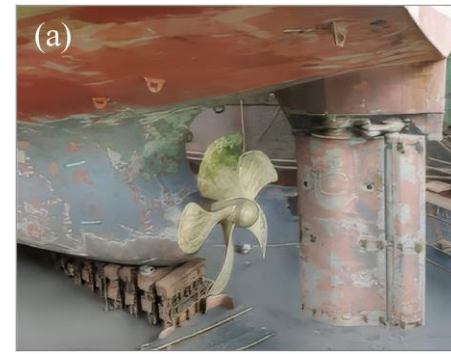
University of
Strathclyde
Glasgow

Effective and Quieter Energy Saving Devices for Ships

Dr Batuhan Aktas
Chancellor's Fellow in Futureproof Ship Design

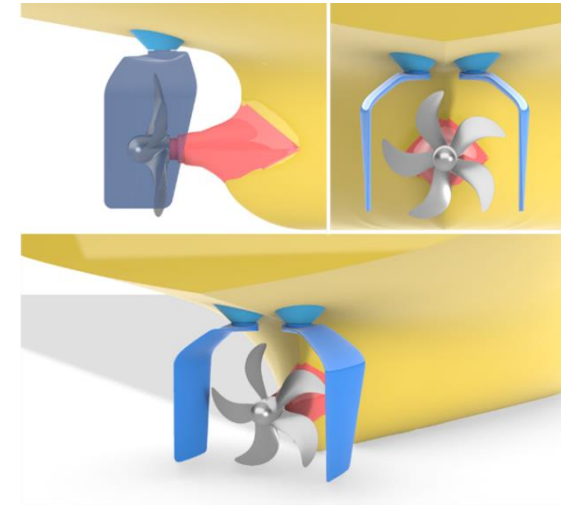
Presentation Overview

- **Gate Rudder System** technology for effective propulsion & steering
- **Pressure Pores** technology at the propeller blade tips to reduce Tip Vortex Cavitation
- **Eco Boss Cap** technology for propeller boss to reduce Hub Vortex Cavitation

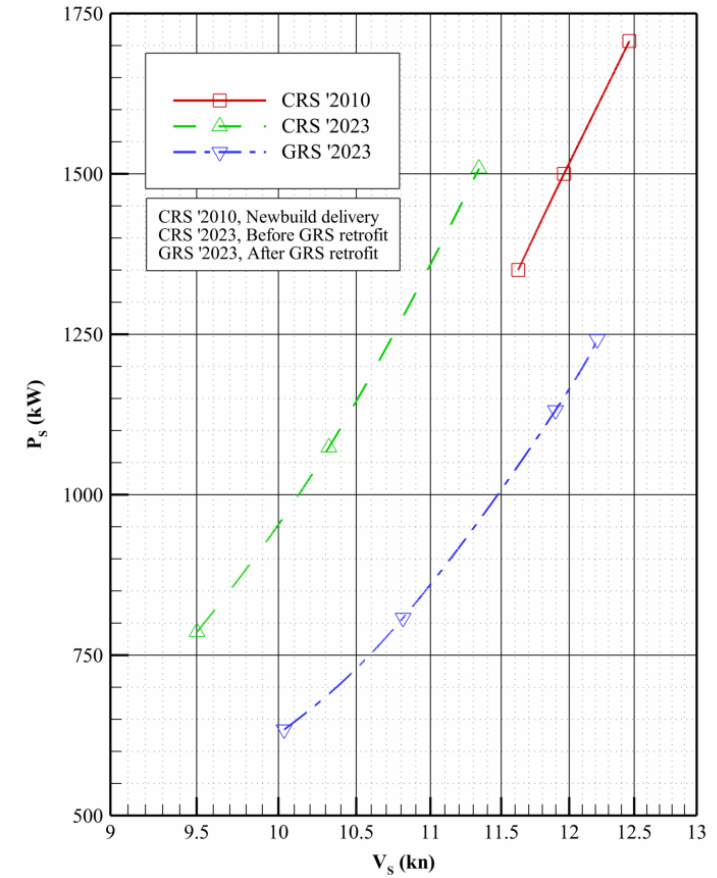
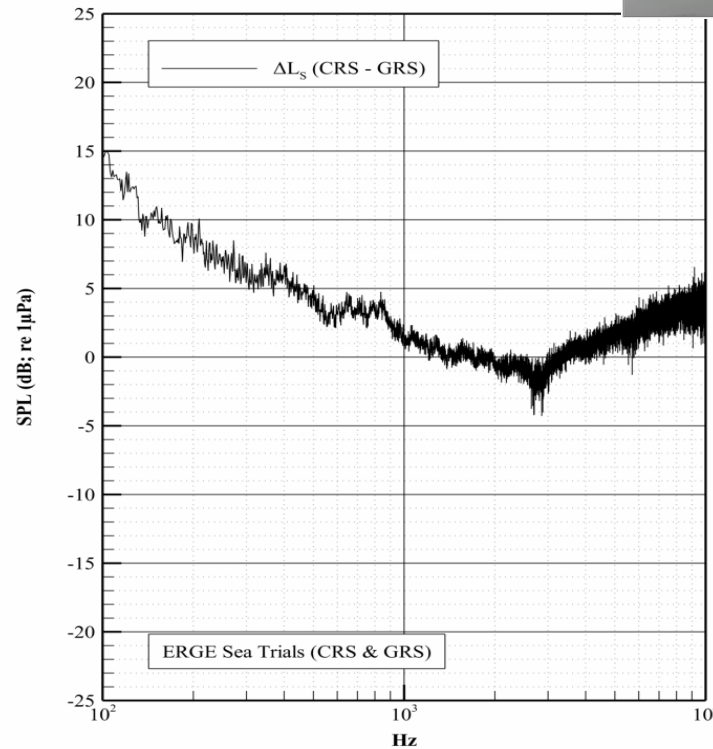
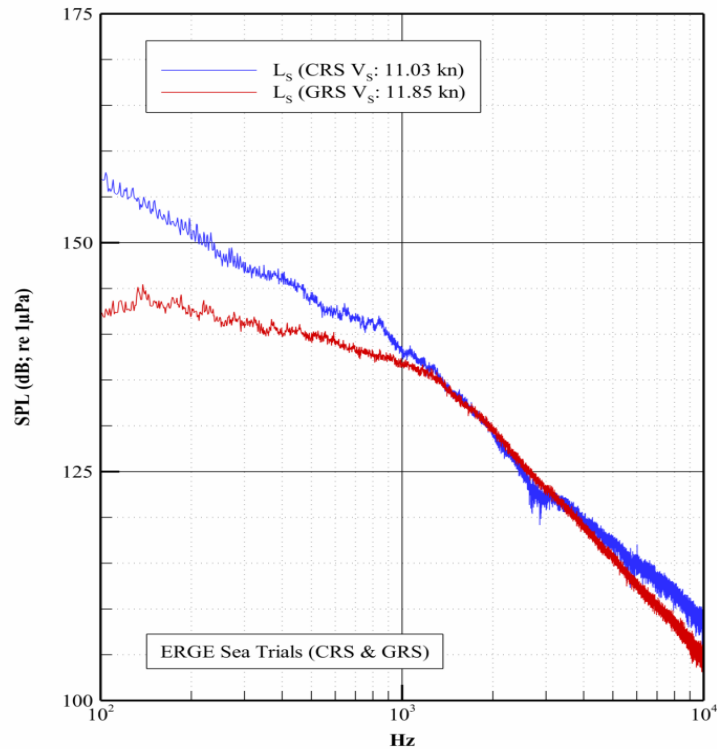
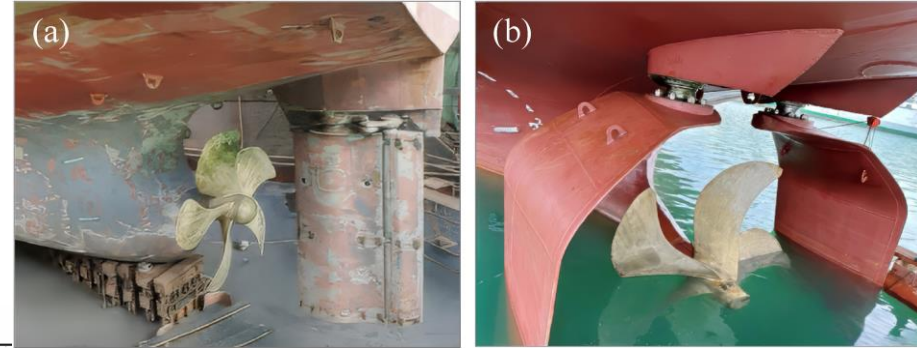


Gate Rudder System

Parameter	MV Erge			
	Symbol	Units	Ballast Load	Full Load
Length overall	L_{OA}	(m)	89.95	
Length between perpendiculars	L_{BP}	(m)	84.95	
Breadth	B	(m)	15.4	
Draught (midship)	T	(m)	3.30	6.46
Draught (AP)	T_A	(m)	3.80	6.46
Draught (FP)	T_F	(m)	2.80	6.46
Displacement	Δ	(ton)	3585	7280

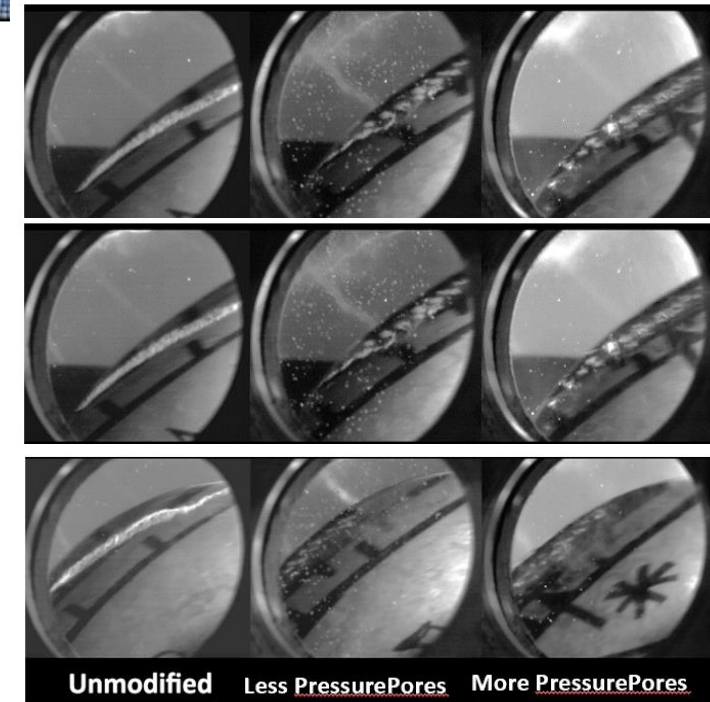
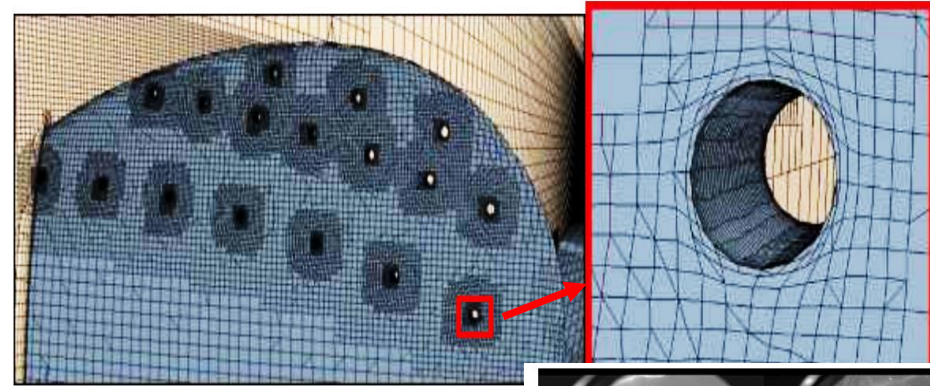
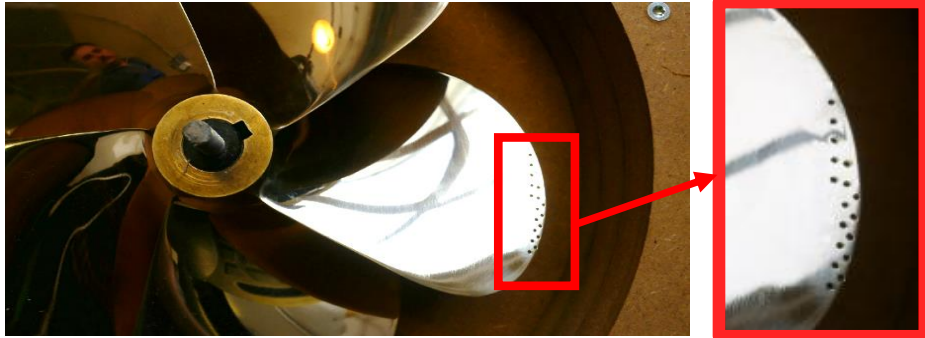


Difference Between GRS and CRS

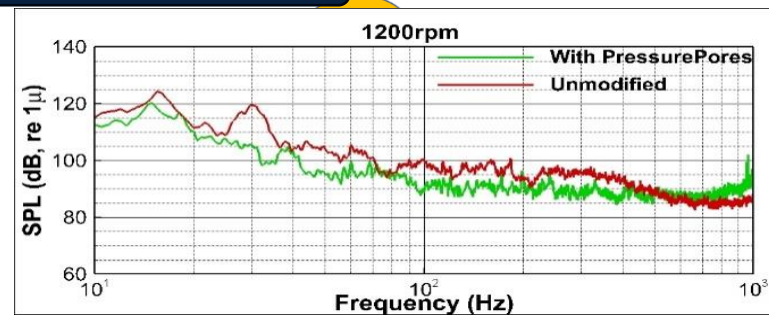
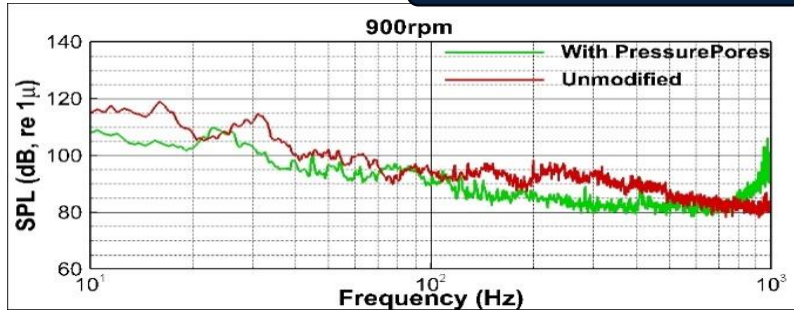


- Up to 15dB URN Reduction
- In low frequency region
- Up to 25% reduction in delivered power at design Speed

Pressure Pores



Measured comparative URN Levels

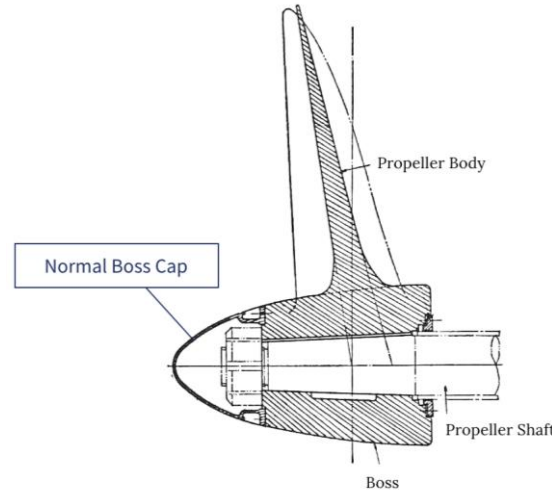


800 rpm cavitation views.

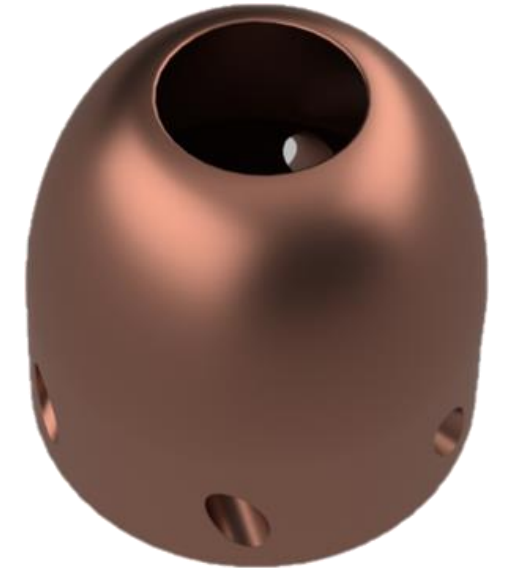
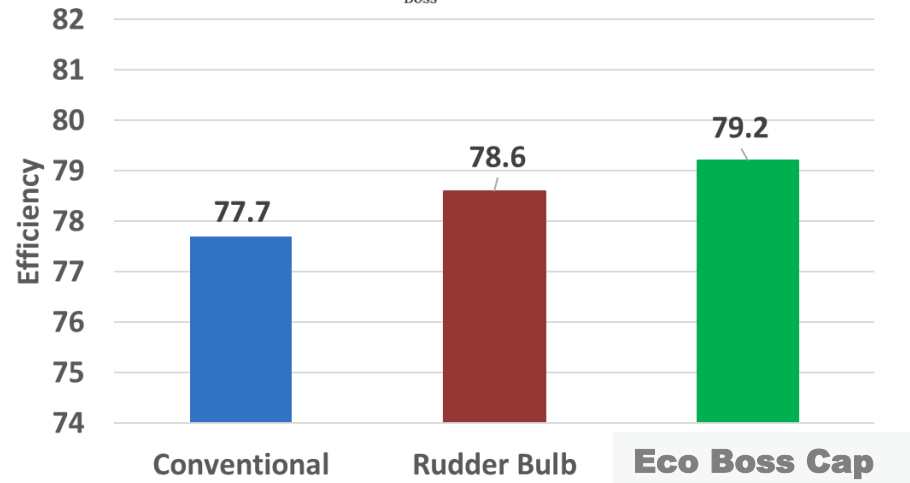
Eco Boss Cap



**Propeller Hub Vortex
Cavitation
3-8% efficiency loss**



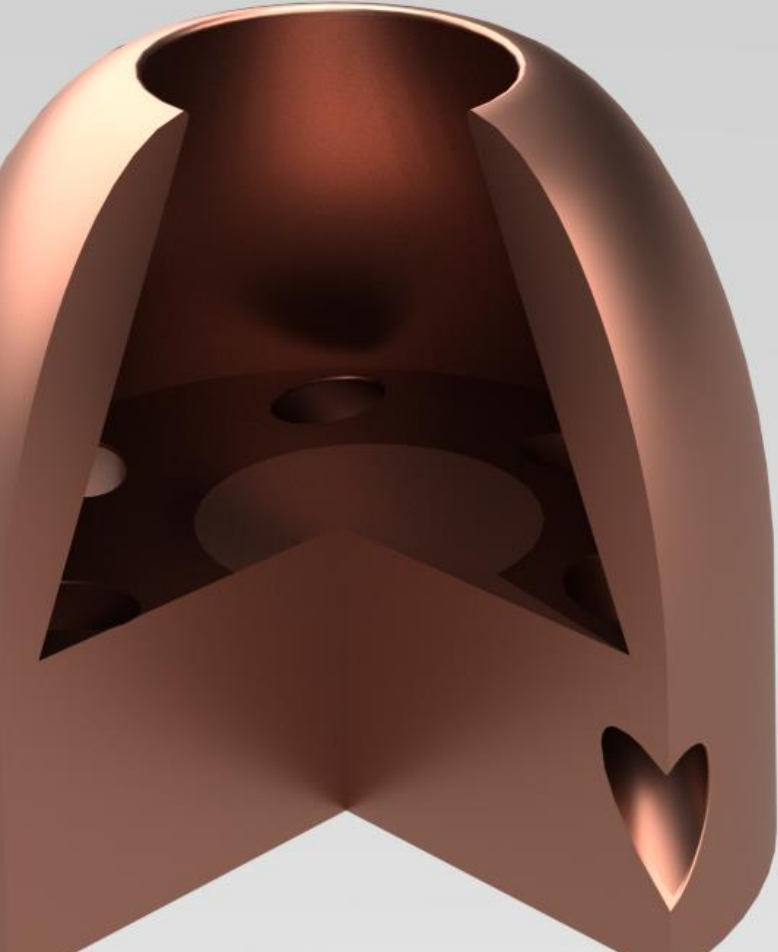
- **Prototype Testing at Kongsberg Marine (TRL 6)** shows **up to 2.1%** Propeller Efficiency Improvement.





EcoMarine Innovations

PROPELLING A GREENER FUTURE



- Up to 5% energy efficiency
- RoI period of less than 1 year for various ship type
- Cheaper to manufacture with better margins
- Most cost-effective Hydrodynamic Energy Saving Device on the market

13 CLIMATE ACTION



14 LIFE BELOW WATER



Conventional

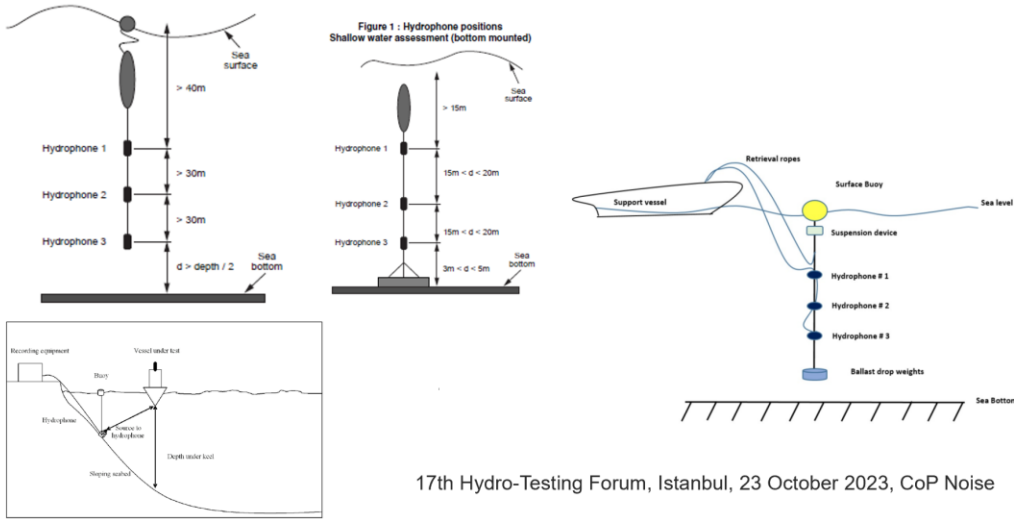


Eco Boss Cap



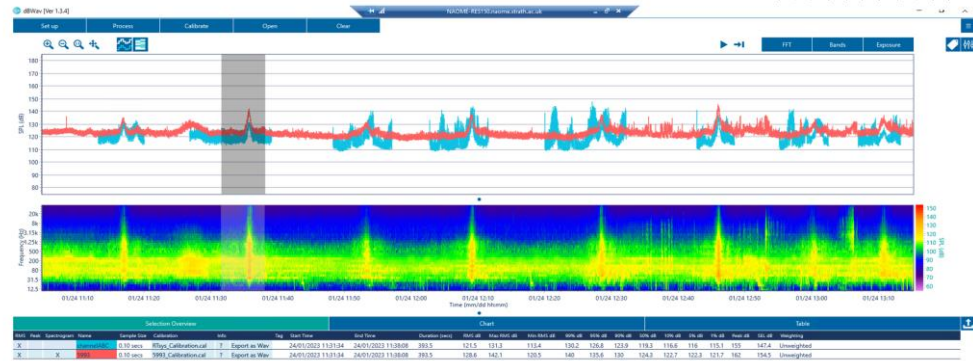
Hydrone

Traditional Methods



17th Hydro-Testing Forum, Istanbul, 23 October 2023, CoP Noise

Time Domain Data



Hydrone Concept

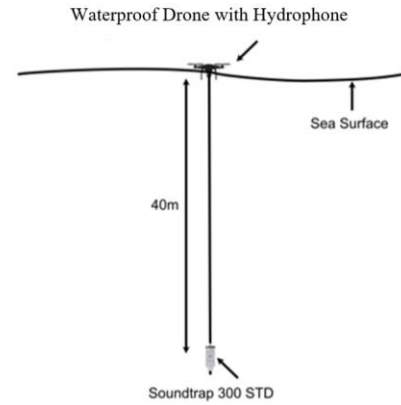
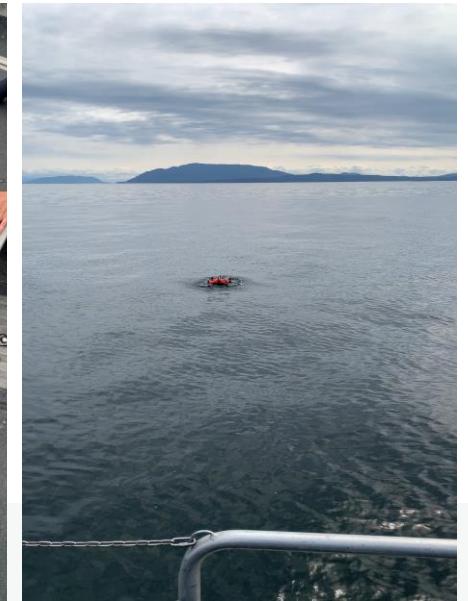


Diagram for illustrative purposes only, not to scale.





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