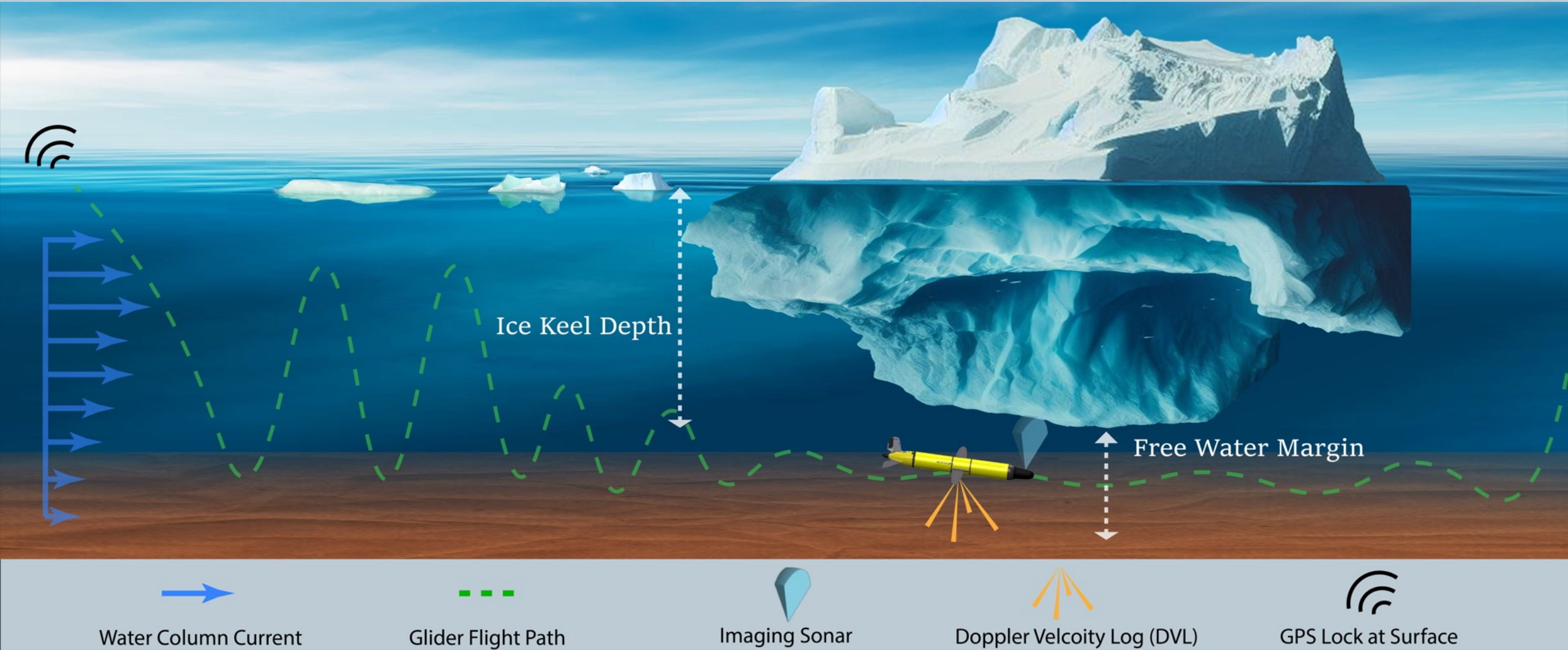


Under-ice Assessment of the Arctic Marginal Ice Zone with an Autonomous Underwater Glider

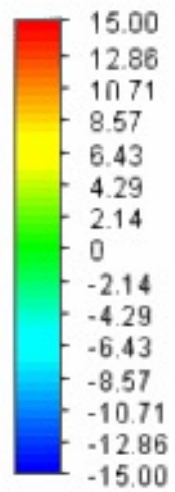
R. Camilli, T. Maksym, A. Phung, G. Billings, S. Suman, A. Mallios

International Underwater Glider Conference 2024
Gothenburg Sweden, June 10-14

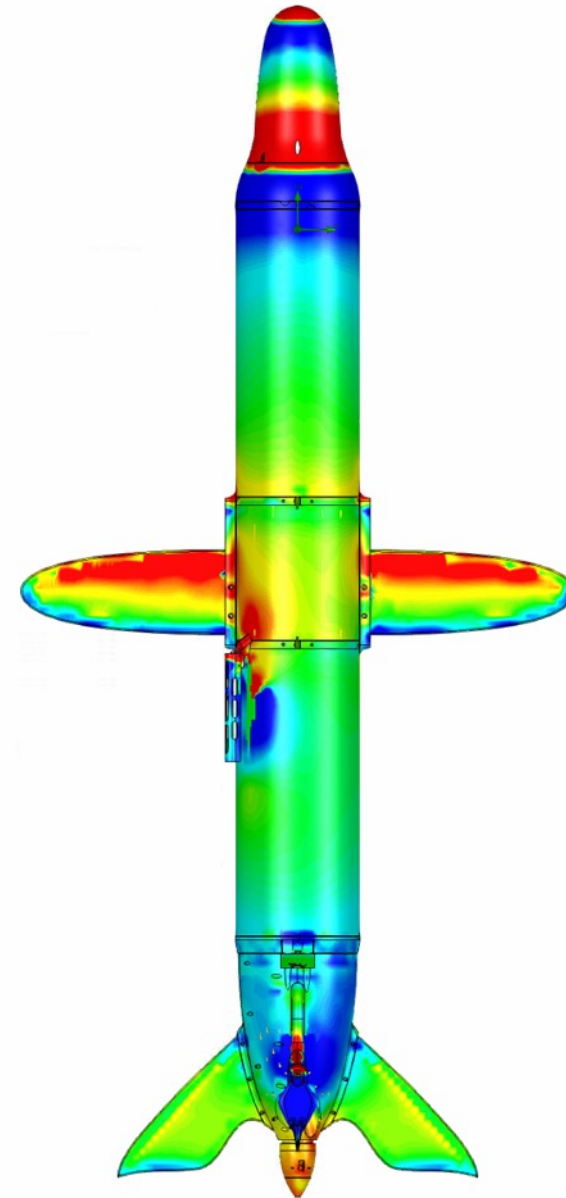
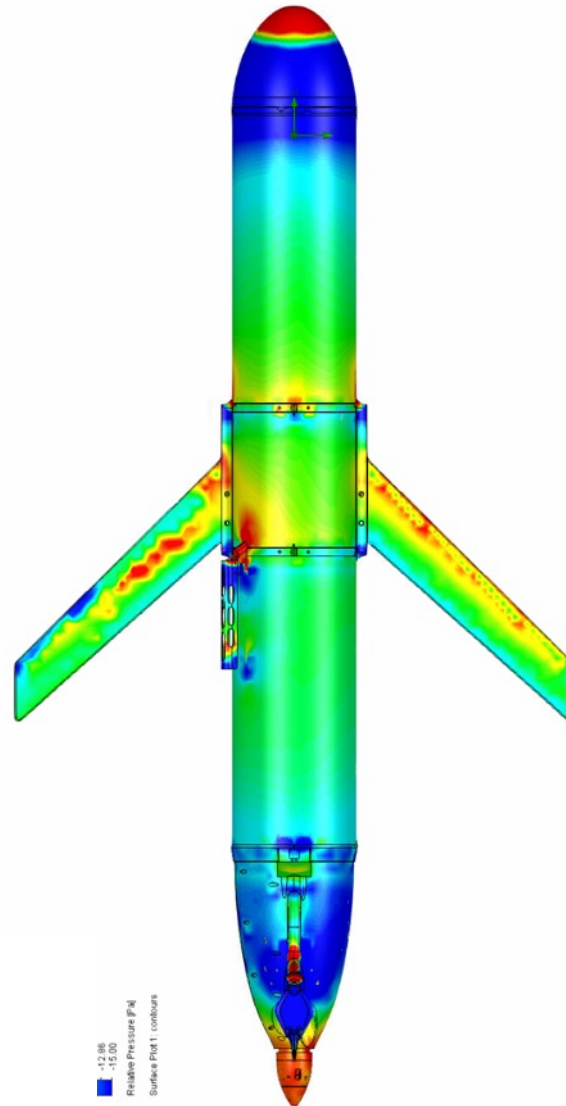
MISSION CONCEPT

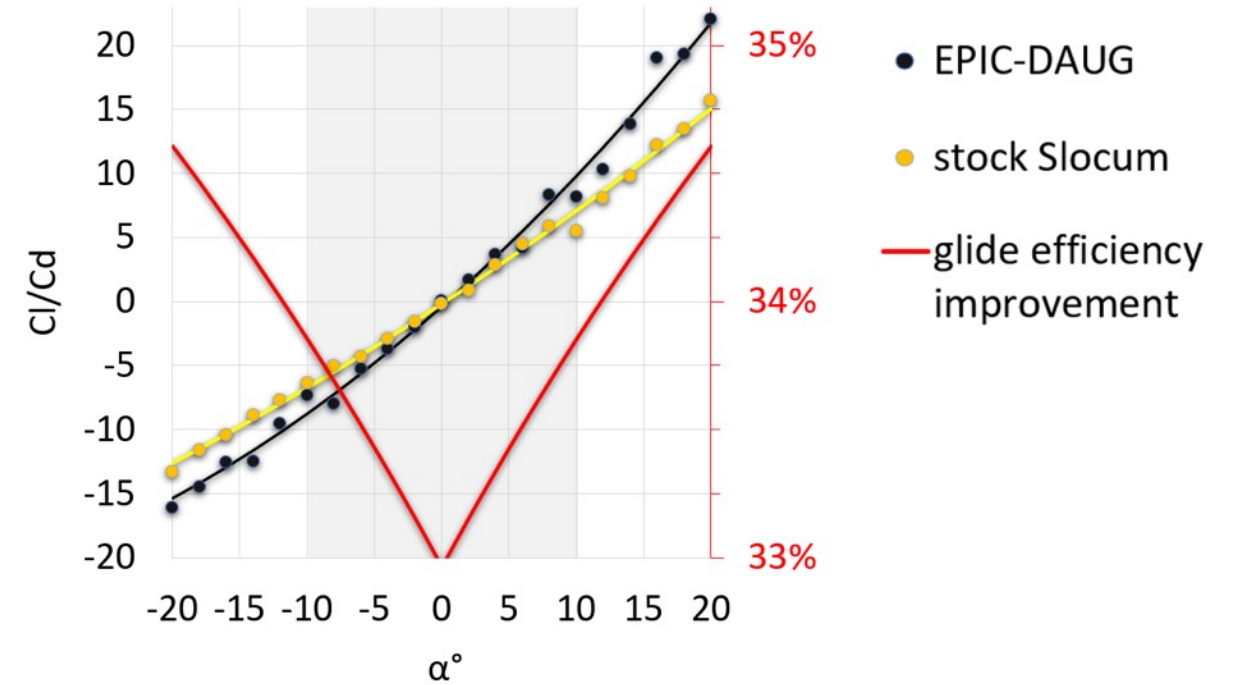
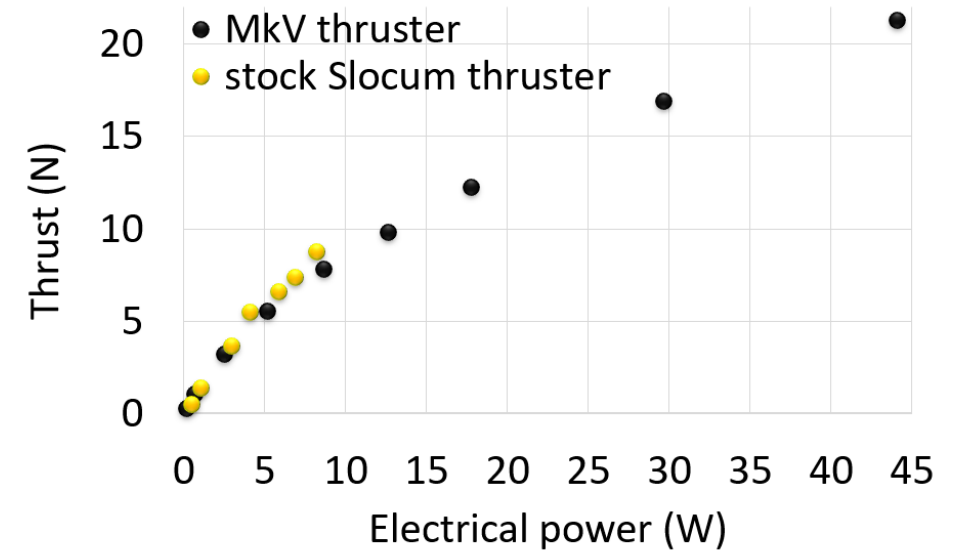
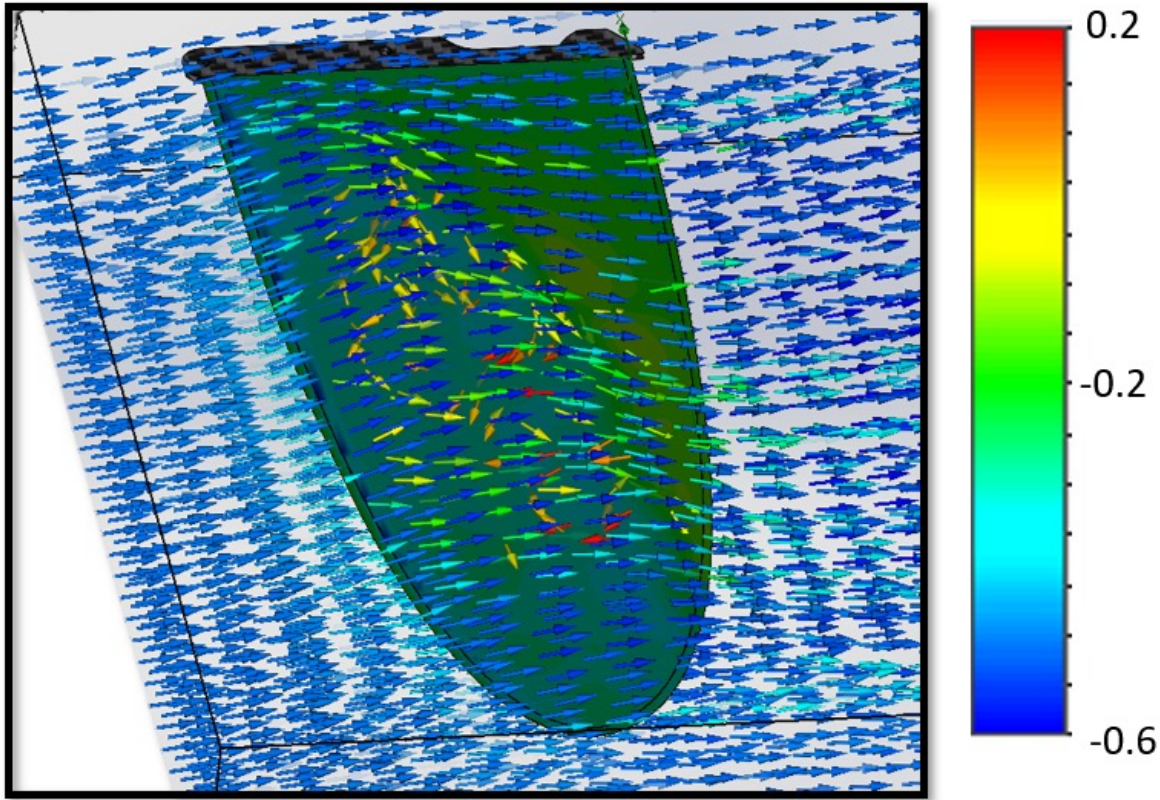
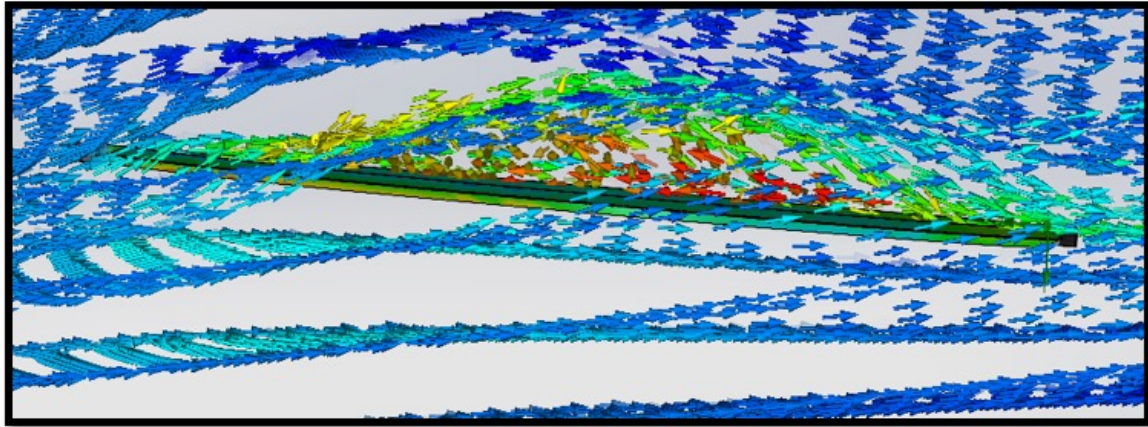


EPIC-DAUG

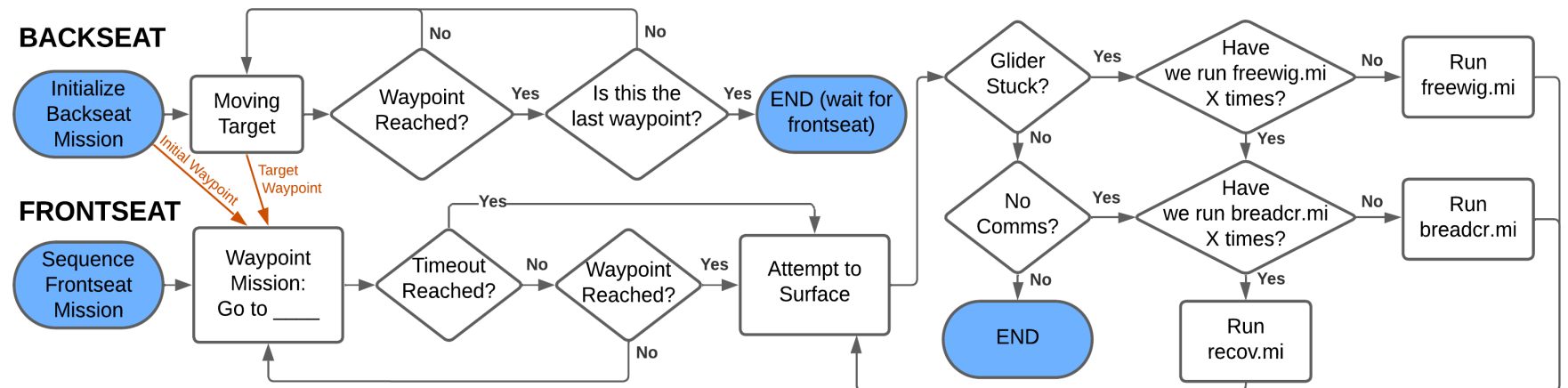
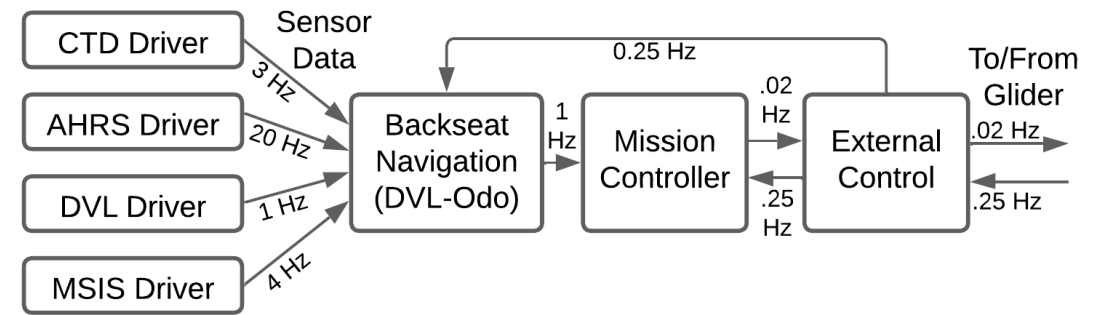
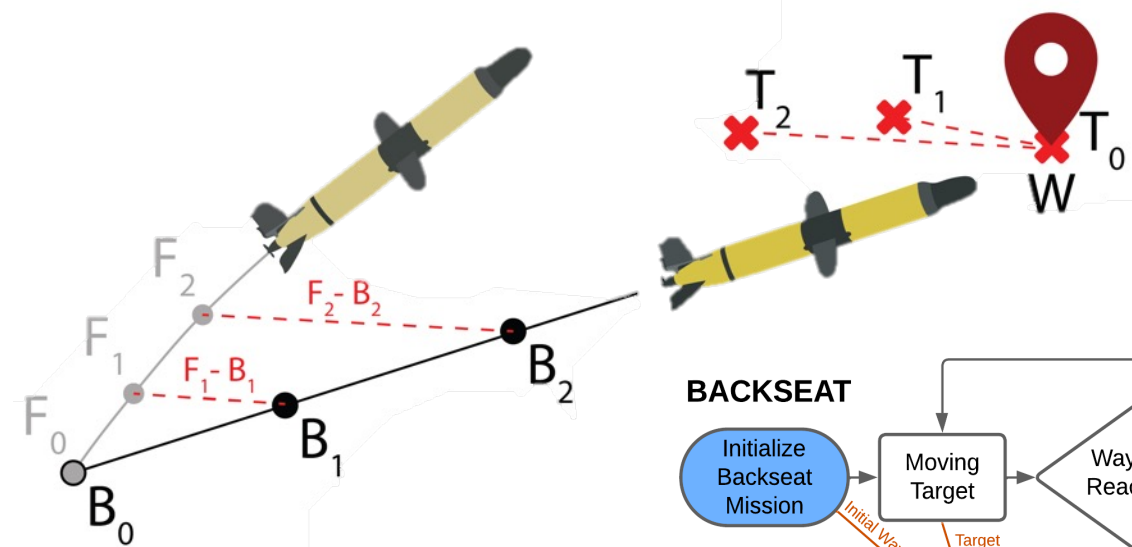
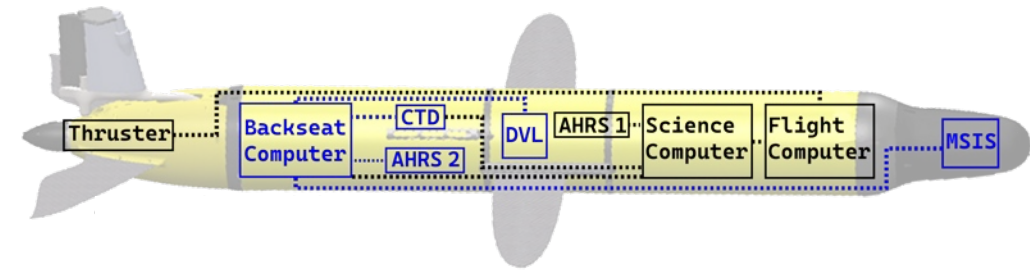
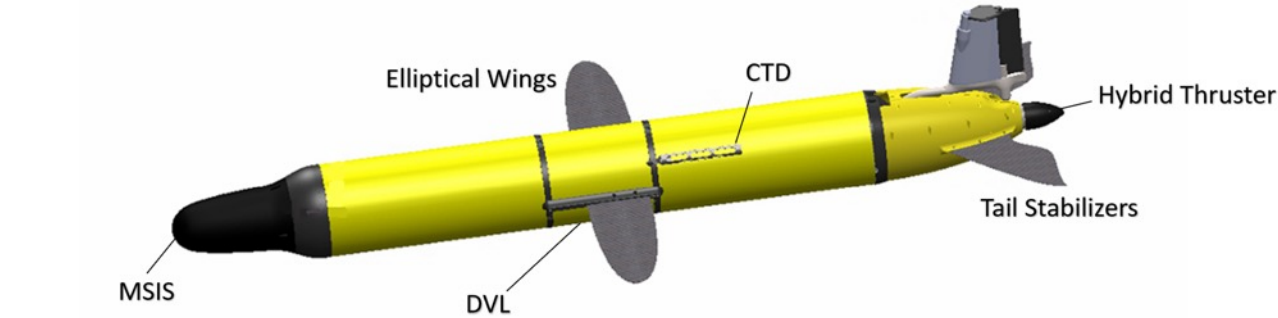


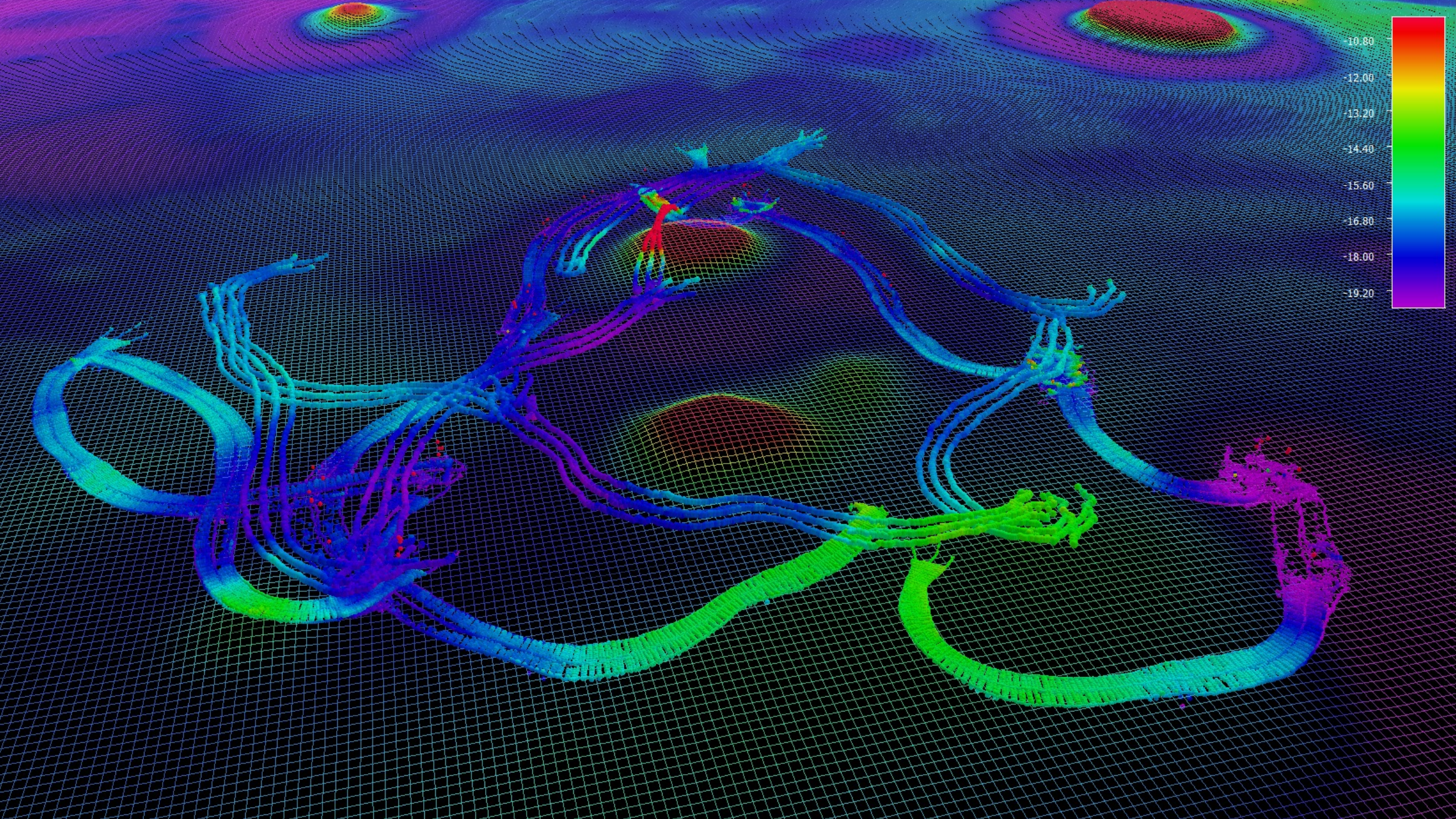
Relative Pressure [Pa]

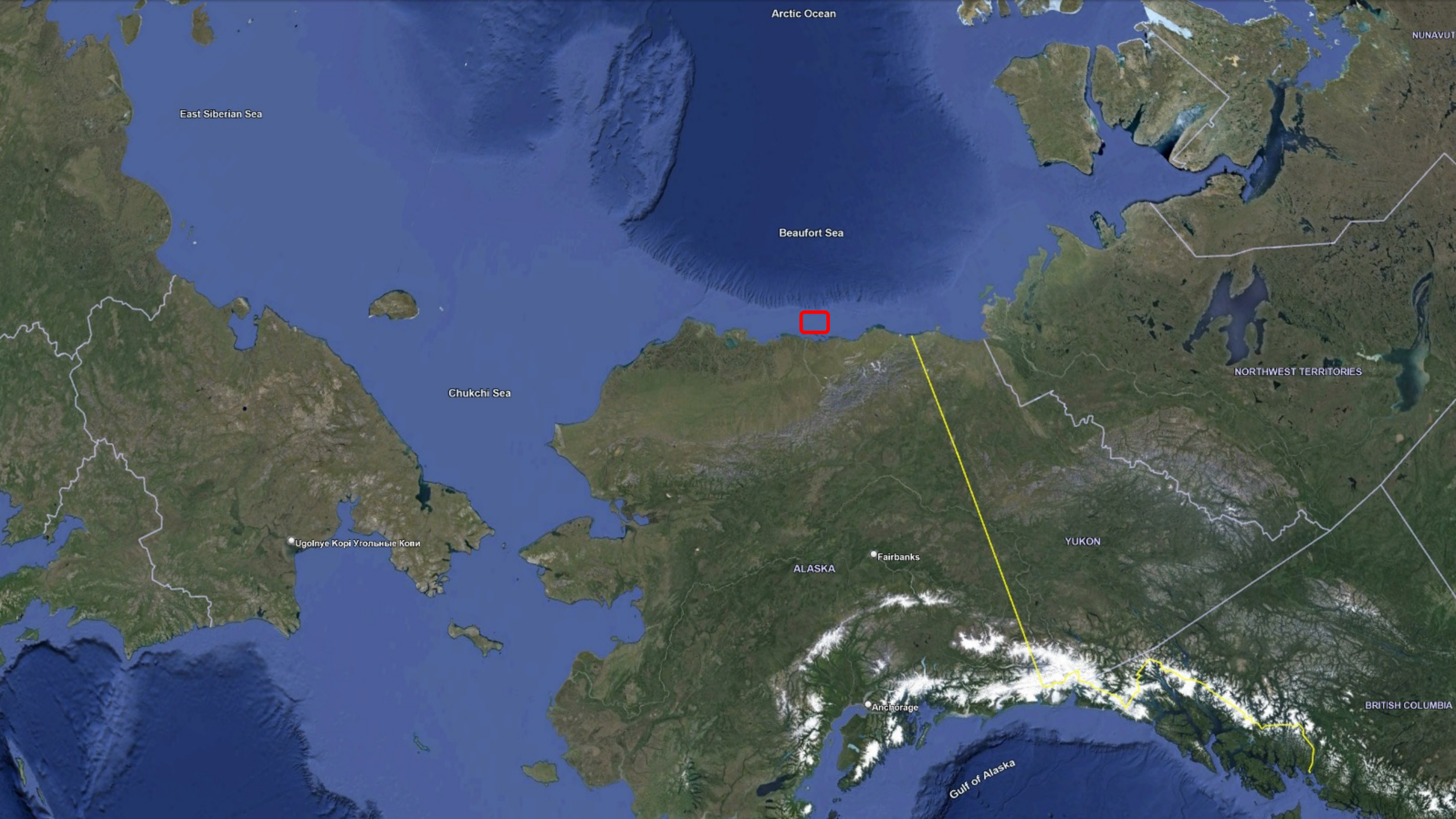




EPIC-DAUG







Arctic Ocean

NUNAVUT

East Siberian Sea

Beaufort Sea

Chukchi Sea

NORTHWEST TERRITORIES

YUKON

ALASKA

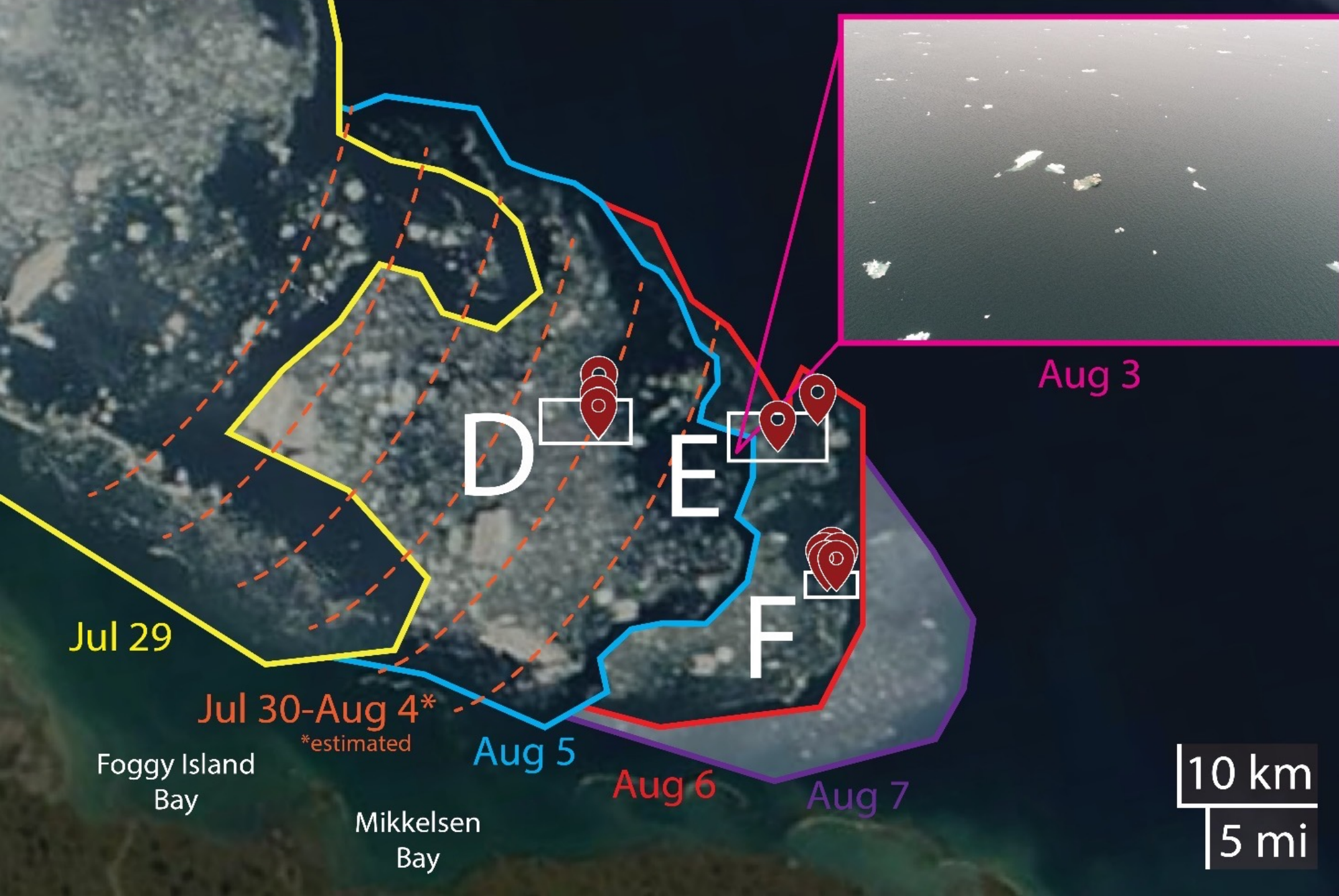
BRITISH COLUMBIA

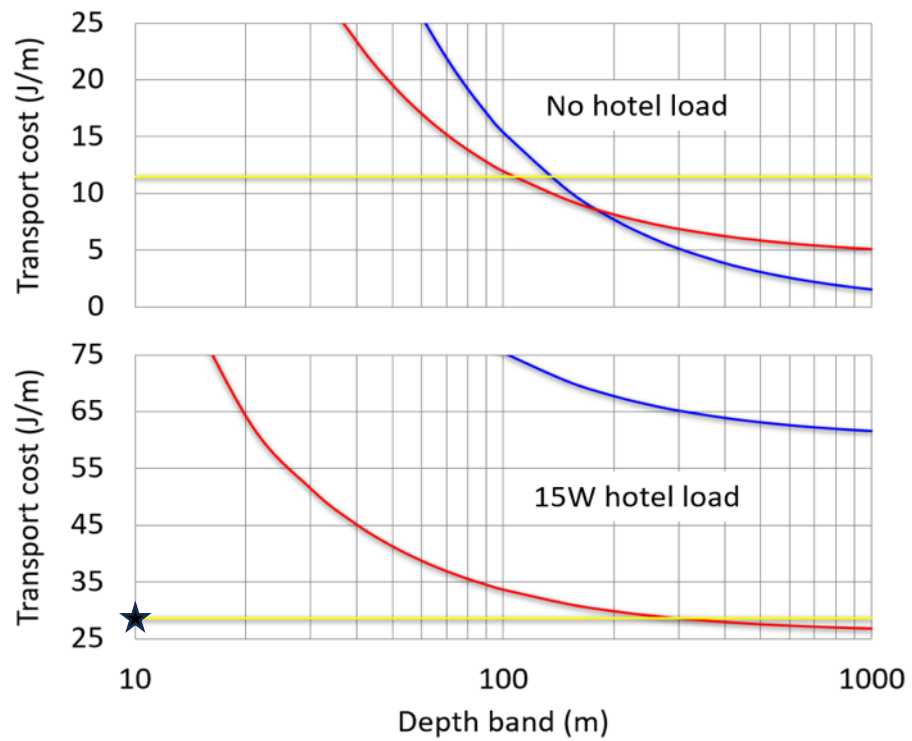
Gulf of Alaska

Fairbanks

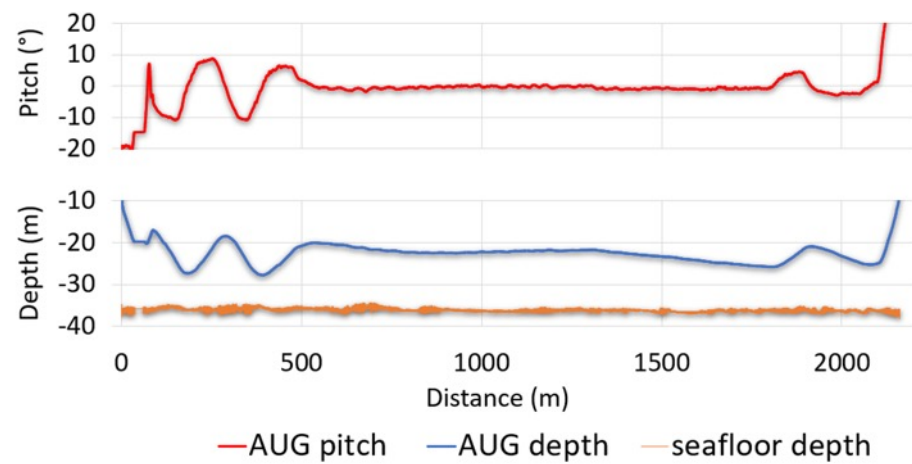
Anchorage

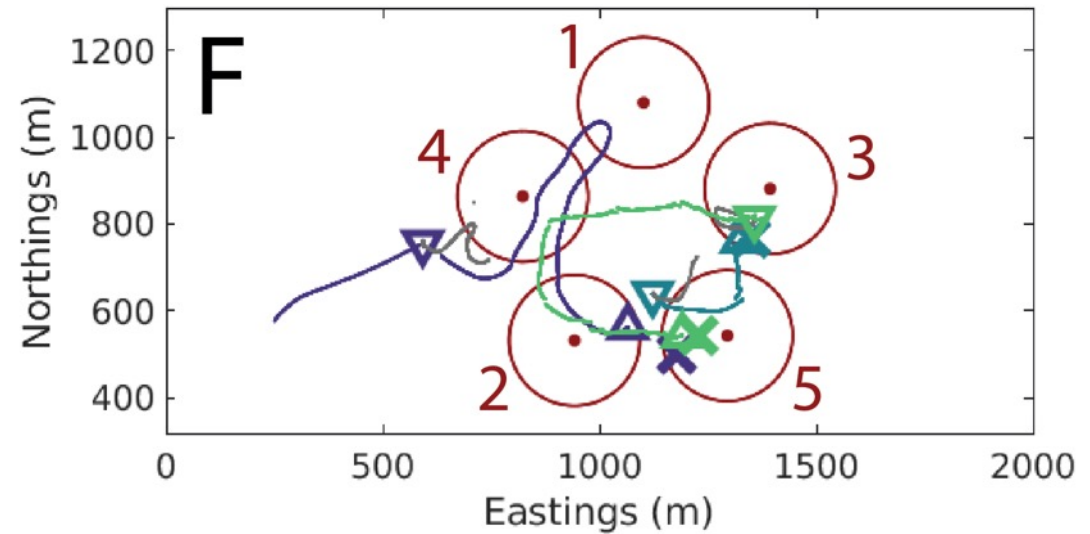
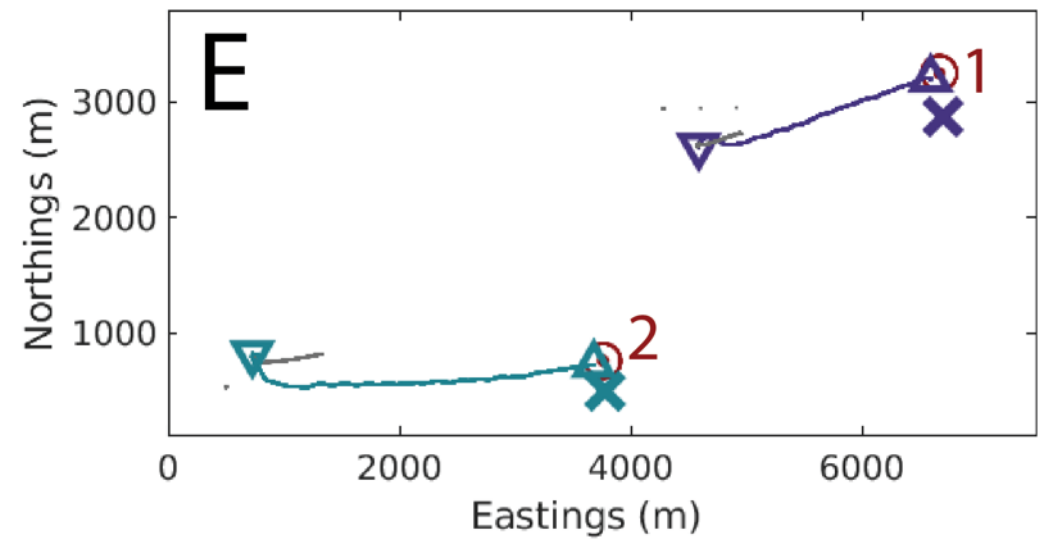
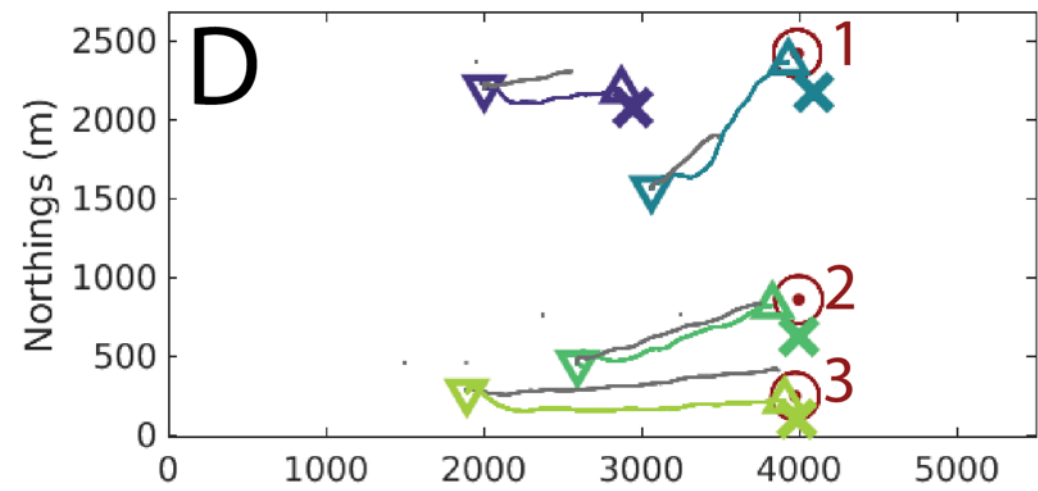
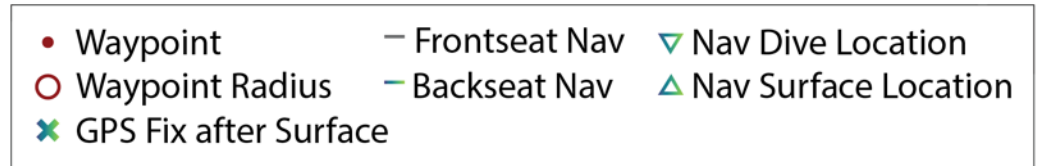
Ugolnye Kopi Угольные Копи





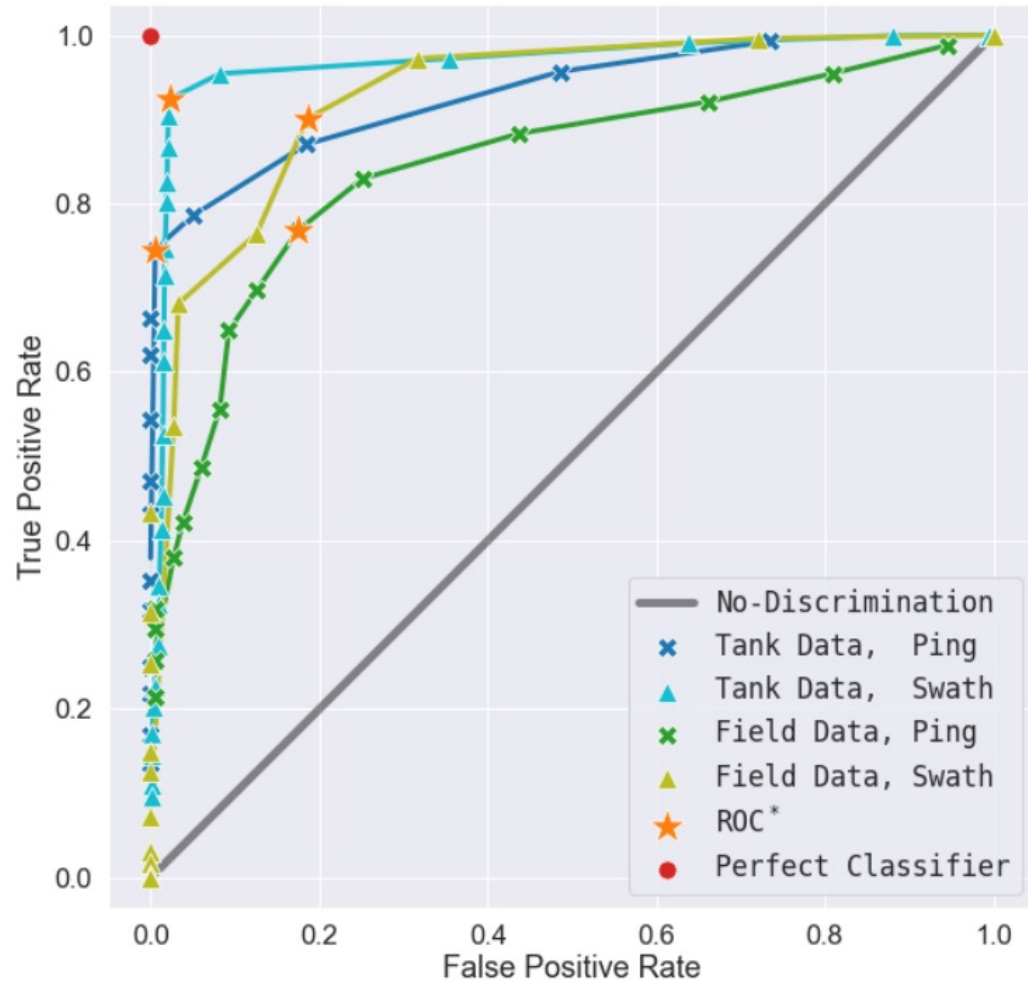
— $P = 15^\circ, B = \pm 200 \text{ cm}^3, T = 0\text{W}$ — $P = 0^\circ, B = 0 \text{ cm}^3, T = 9\text{W}$
— $P = 15^\circ, B = \pm 400 \text{ cm}^3, T = 3\text{W}$



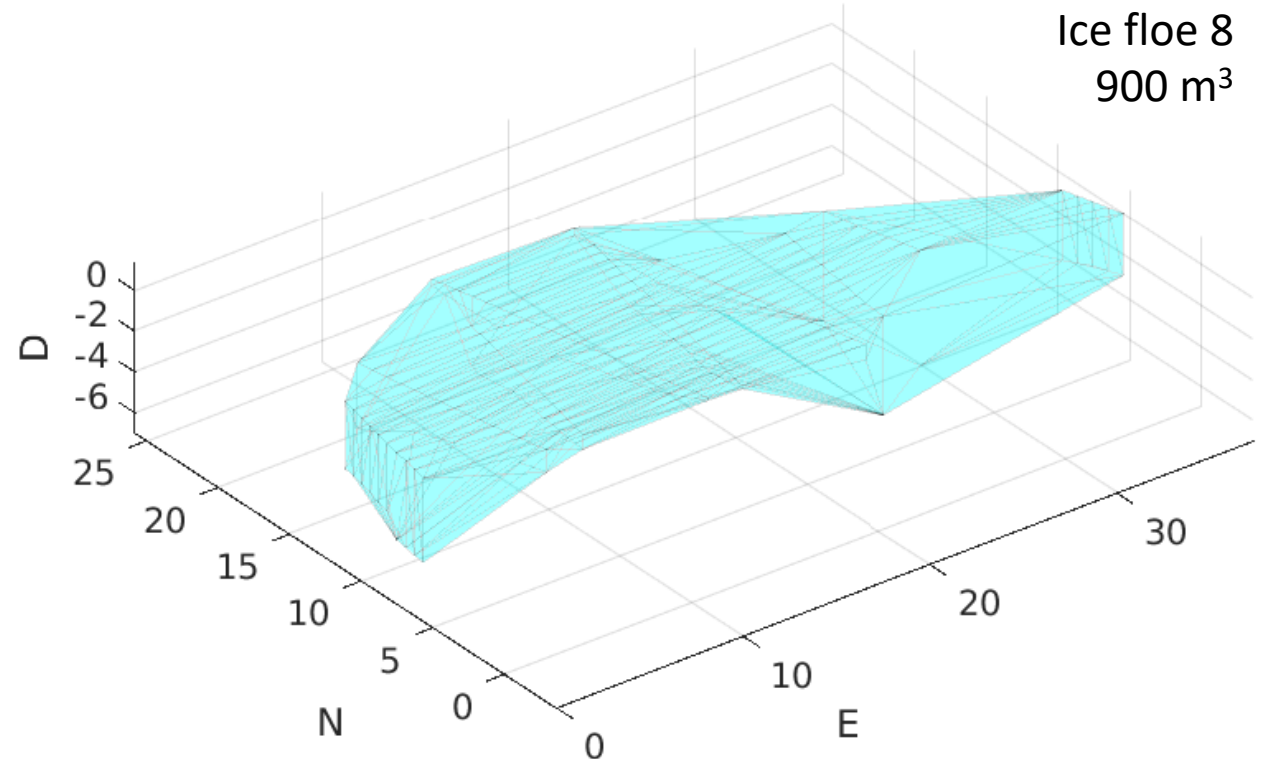


Leg	Dist (m)	FS error (m,%)	BS error (m,%)
D1	986	454 (46%)	131 (13%)
D2	1274	666 (52%)	249 (20%)
D3	1375	318 (23%)	257 (19%)
D4	2089	330 (16%)	141 (7%)
E1	2144	1743 (81%)	343 (16%)
E2	3135	2461(79%)	249 (8%)
F1	1617	485 (30%)	129 (8%)
F2	409	131 (32%)	22 (5%)
F3	989	270(27%)	37 (4%)
	Mean error	49%	11%

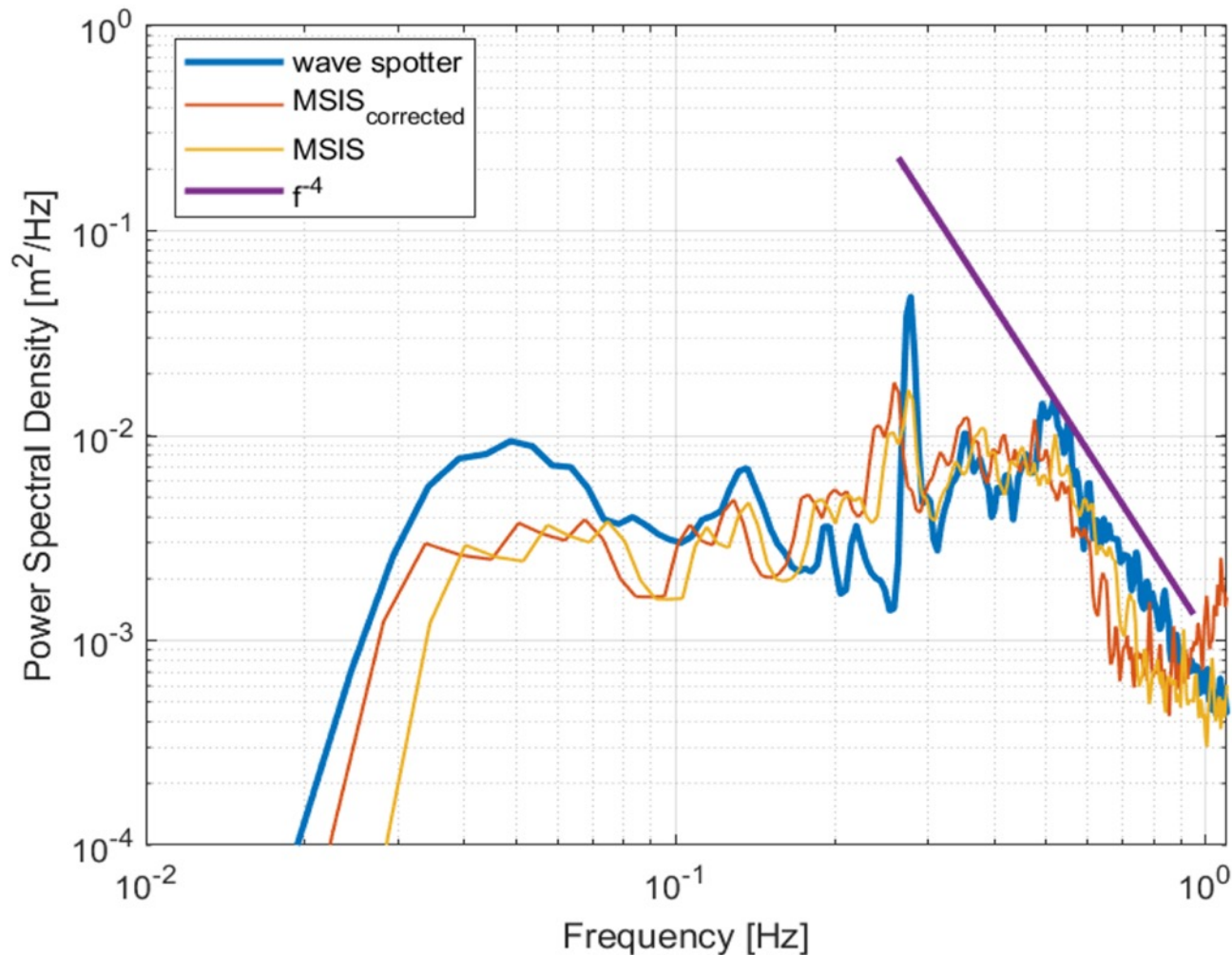
Automated ice floe detection and volume estimation



Duguid 2020

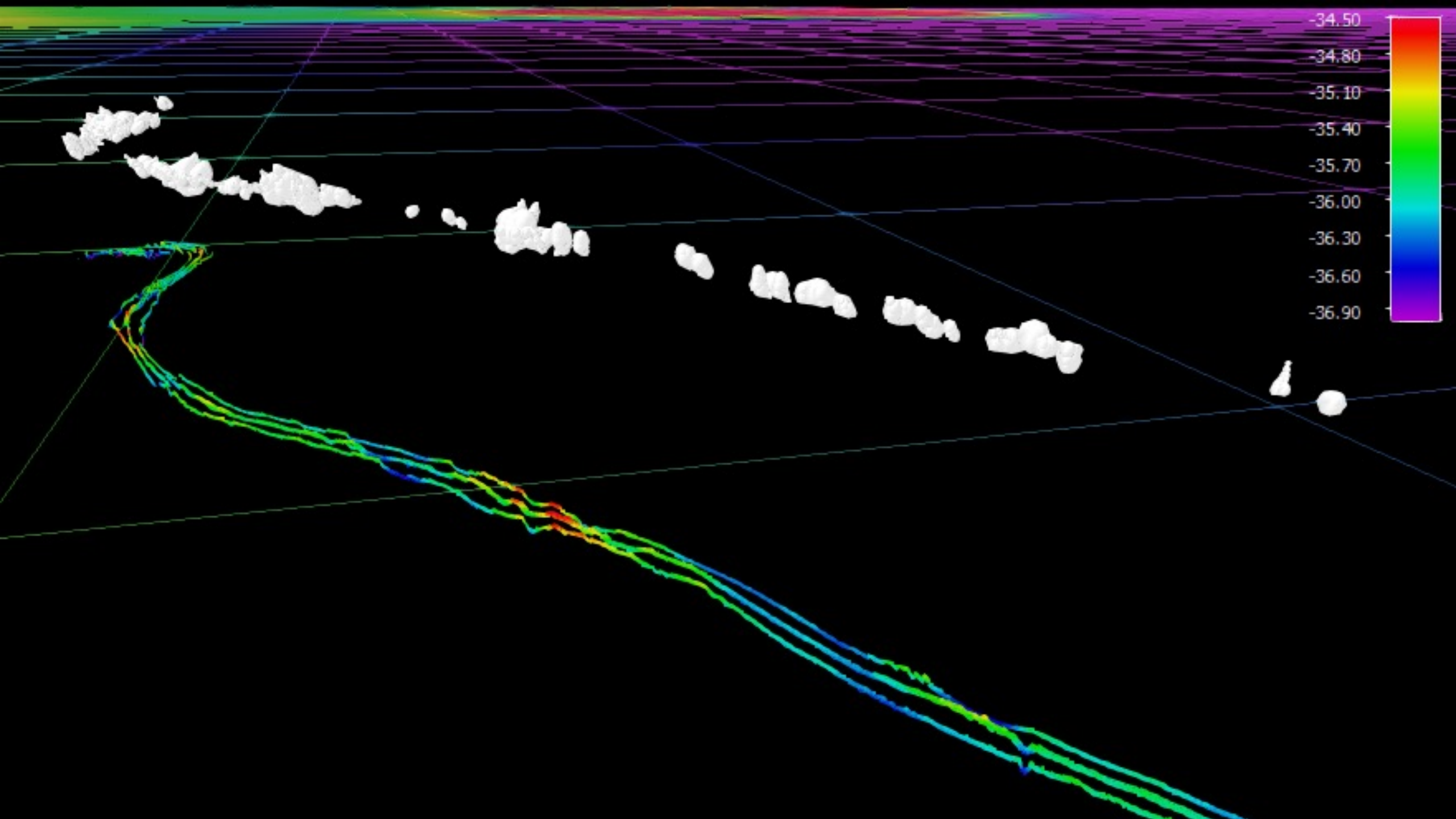


Wave spectrum analysis



Bulk parameter	MSIS	Wave Buoy	Discrepancy
H_s (m)	0.244	0.257	5.1%
$T_{p \text{ max}}$ (s)	2.88	2.71	-6.1%
$f_{p \text{ max}}$ (Hz)	0.375	0.413	9.2%
$T_{p \text{ weighted}}$ (s)	2.31	2.24	-2.9%
$f_{p \text{ weighted}}$ (Hz)	0.434	0.461	5.9%

Camilli et al. 2022





Thank you

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and

National Ocean Partnership Program grant #NA19OAR011040