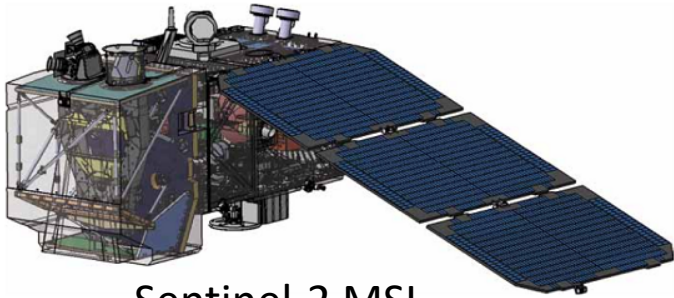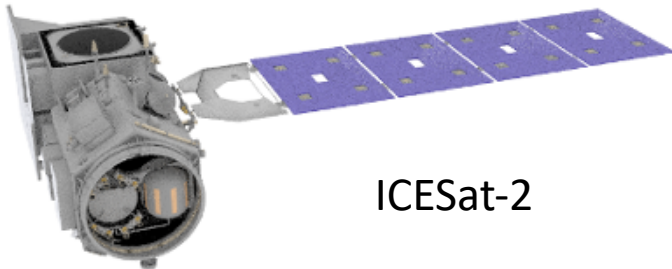# We extract melt pond parameters from high resolution satellite data to better understand melt pond characteristics.
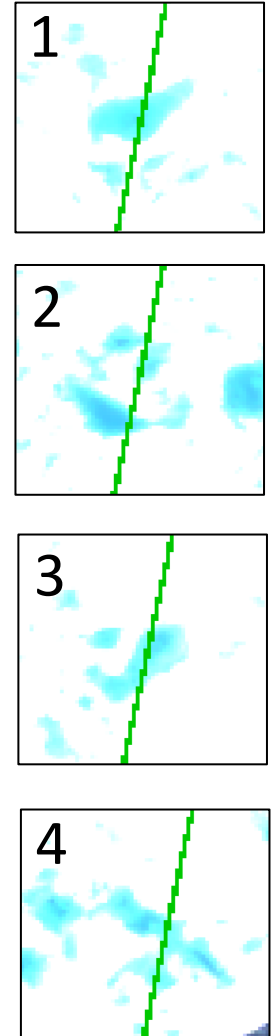

Sentinel-2 MSI

- Melt pond fraction

ICESat-2

- Melt pond width
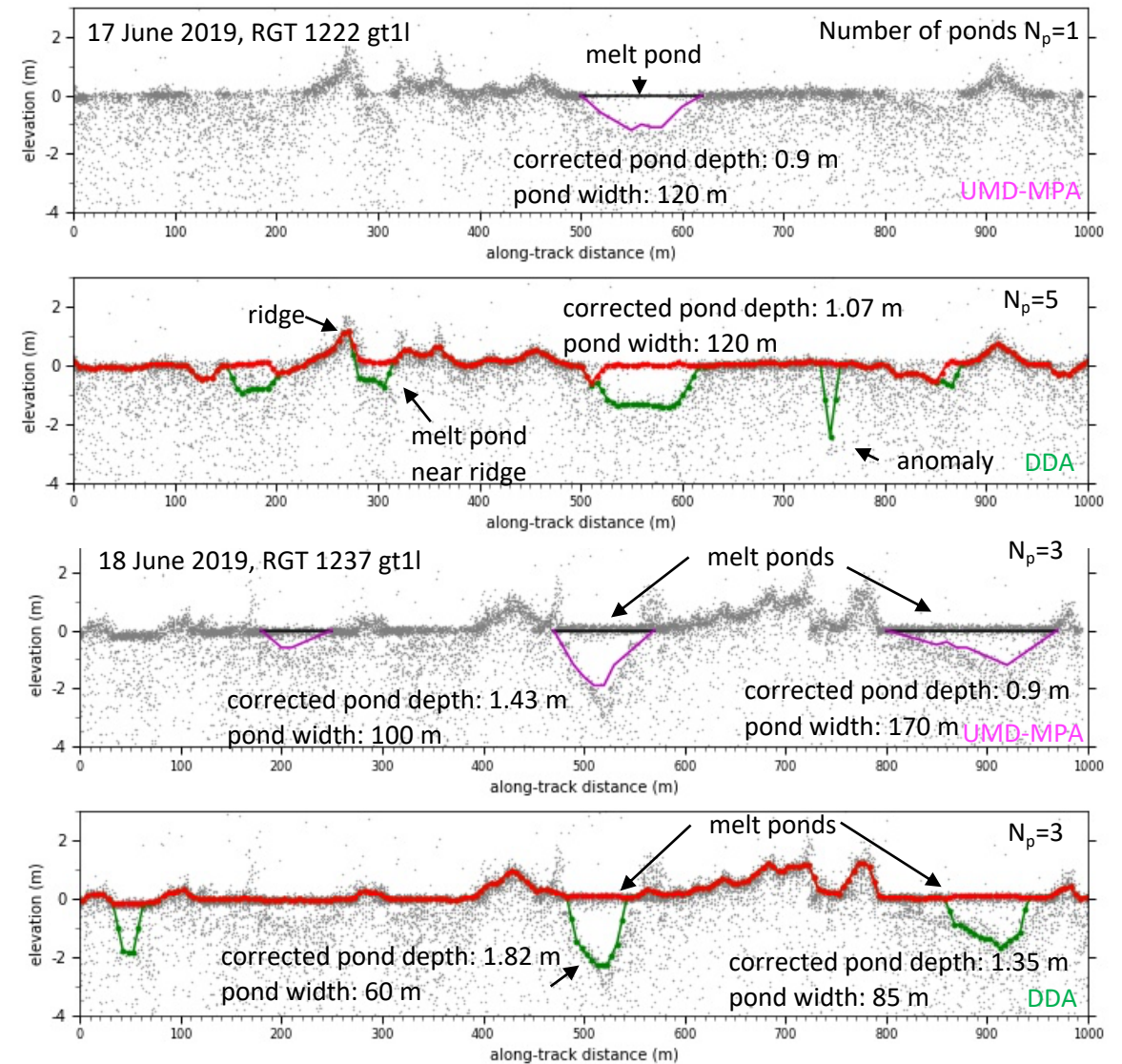- Melt pond depth

ICESat-2 Tracks

1

2

3

4
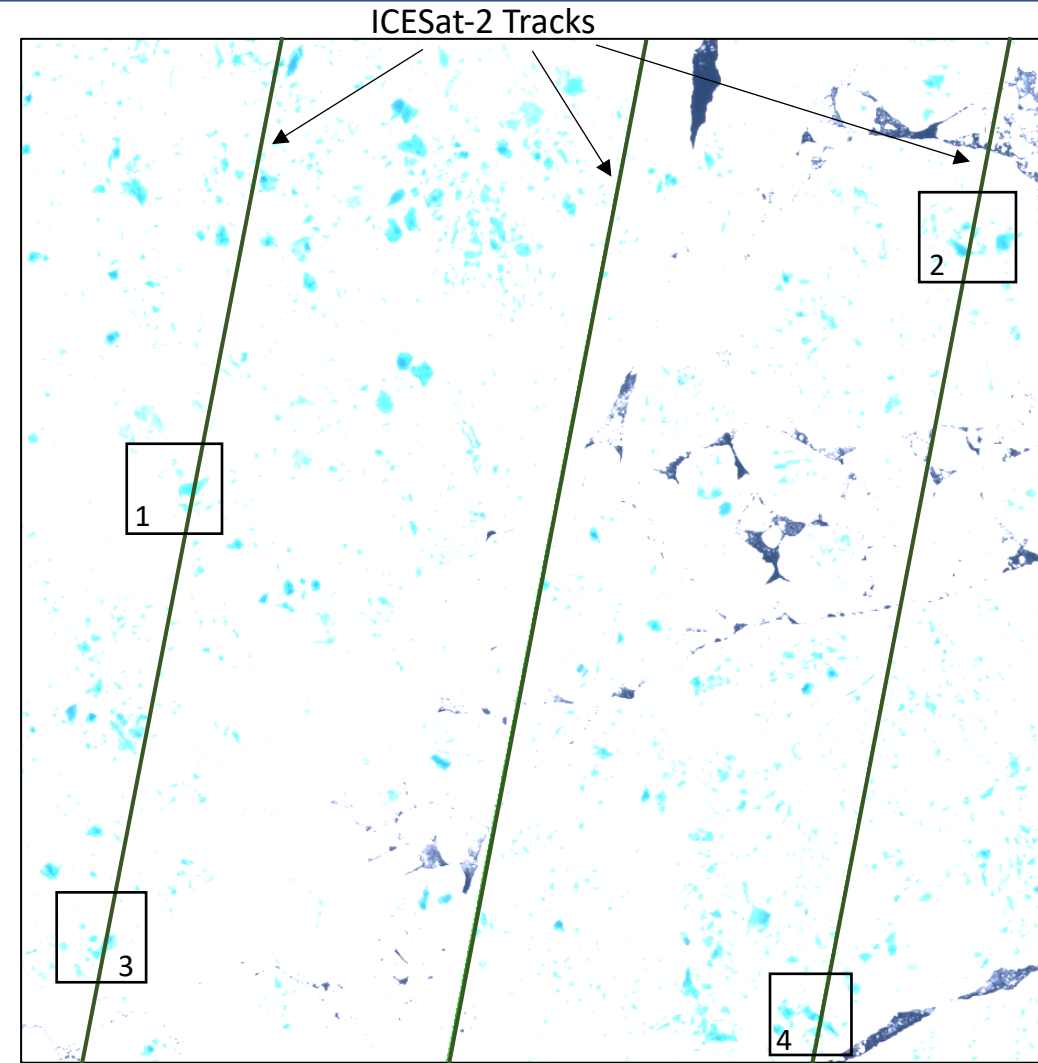
Coincident Sentinel 2 and ICESat-2 data. 22 June, 2019. Δt= **38 minutes**

C017-01: ICESat-2 observations of melt ponds on Arctic sea ice
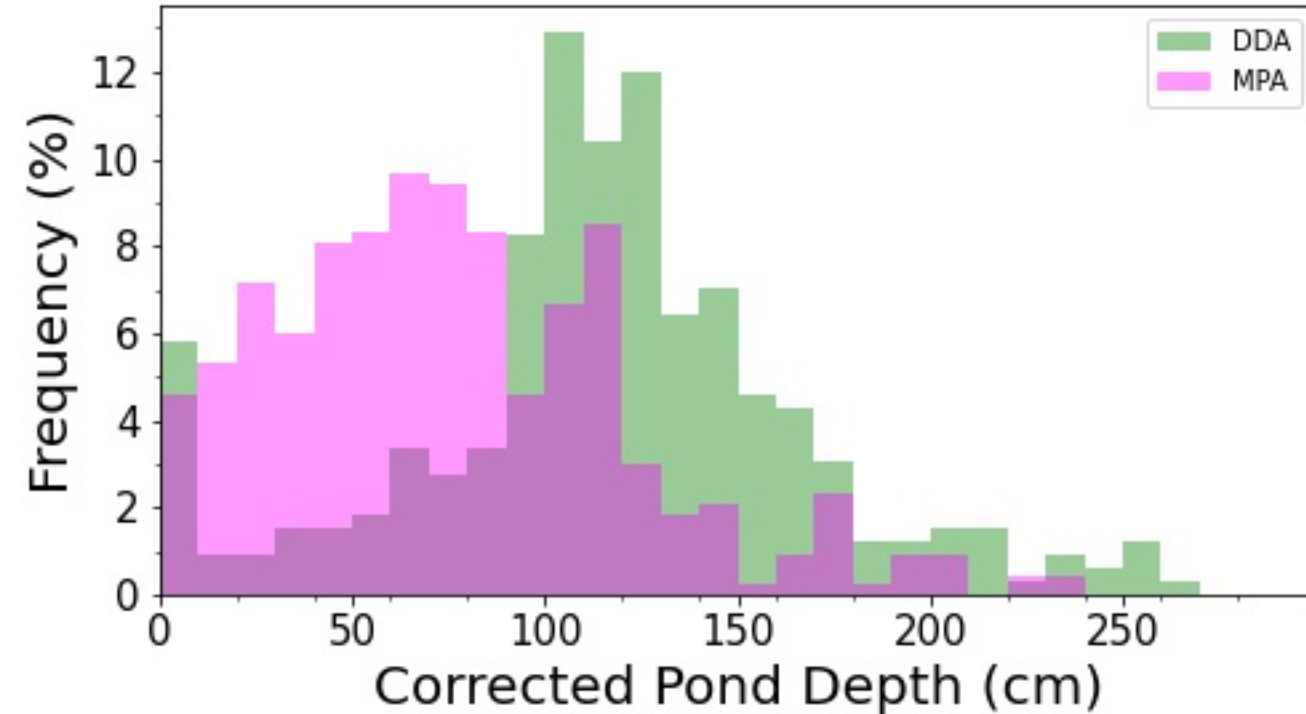Ellen Buckley (buckley@umd.edu), Sinead Farrell, Kyle Duncan, Ute Herzfeld, Matt Lawson, Tom Trantow

We use two surface tracking algorithms: the density dimension algorithm – bifurcate (DDA) and the UMD melt pond algorithm (UMD-MPA)

MODIS 22 June 2019

Sentinel-2 22 June 2019
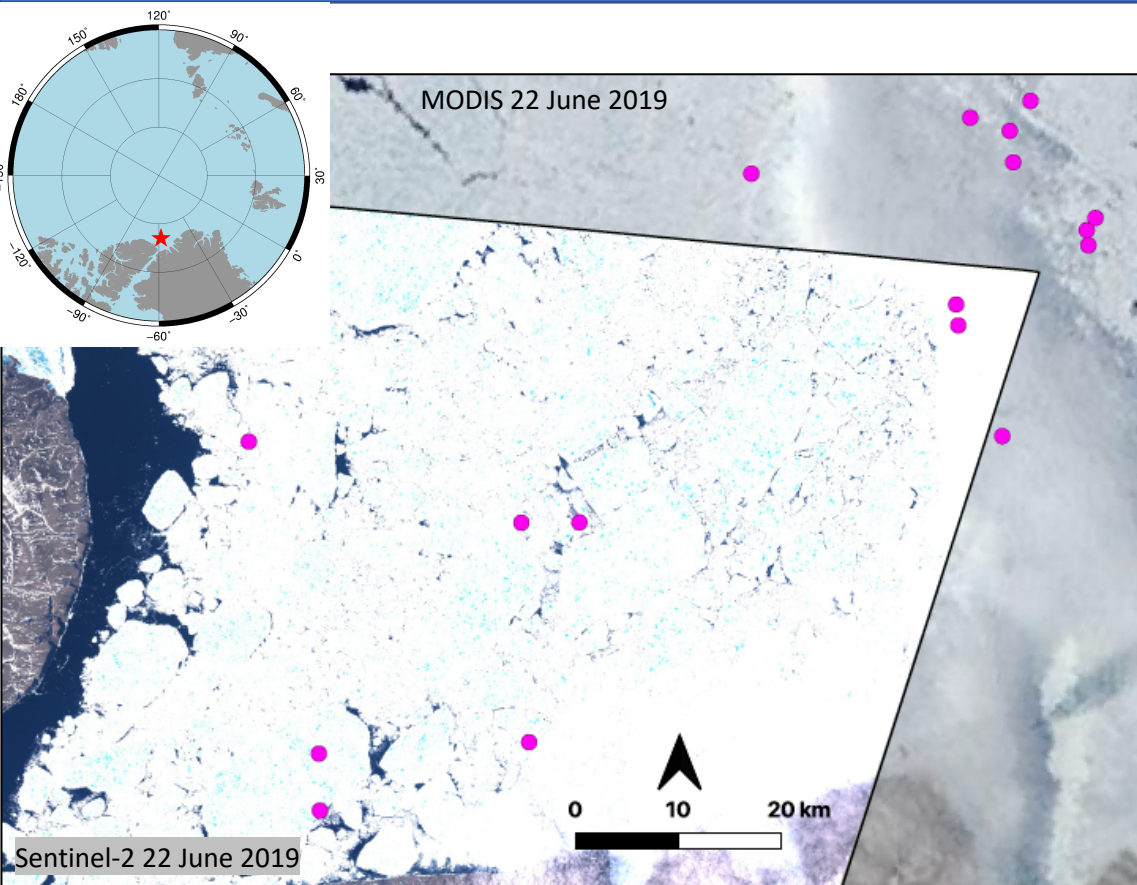
17 melt ponds in the Lincoln Sea tracked by both MPA and DDA algorithms from 17-22 June 2019

17 June 2019, RGT 1222 gt1l — Number of ponds $N_p=1$
melt pond
corrected pond depth: 0.9 m
pond width: 120 m
UMD-MPA

ridge — corrected pond depth: 1.07 m — pond width: 120 m — $N_p=5$
melt pond near ridge — anomaly — DDA

18 June 2019, RGT 1237 gt1l — melt ponds — $N_p=3$
corrected pond depth: 1.43 m — pond width: 100 m
corrected pond depth: 0.9 m — pond width: 170 m — UMD-MPA

melt ponds — $N_p=3$
corrected pond depth: 1.82 m — pond width: 60 m
corrected pond depth: 1.35 m — pond width: 85 m — DDA

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	MPA	DDA
Ponds tracked (#)	17	17
Depth measurements (#)	434	326
Corrected depth mean (m)	0.77	1.16
Corrected depth mode (m)	0.65 +/- 0.05	1.05 +/- 0.05
Corrected depth std (m)	0.47	0.52
Corrected depth max (m)	2.40	2.64
Percent of measurements less than 1 m (%)	71 %	30 %
Range of pond widths (m)	70 - 280	35 - 230
Integrated approximate pond volume (m^3)	~ 170,000	~ 130,000
Average approximate pond volume (m^3)	~ 10,000	~ 7,800

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