

4-1-2016

Sedimentation Patterns in the Damariscotta River Estuary

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Sedimentation Patterns in the Damariscotta River Estuary



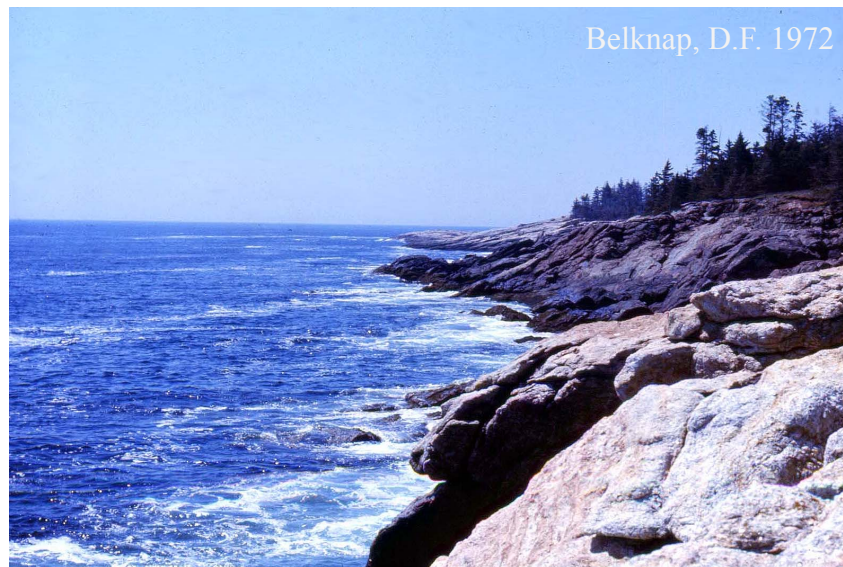
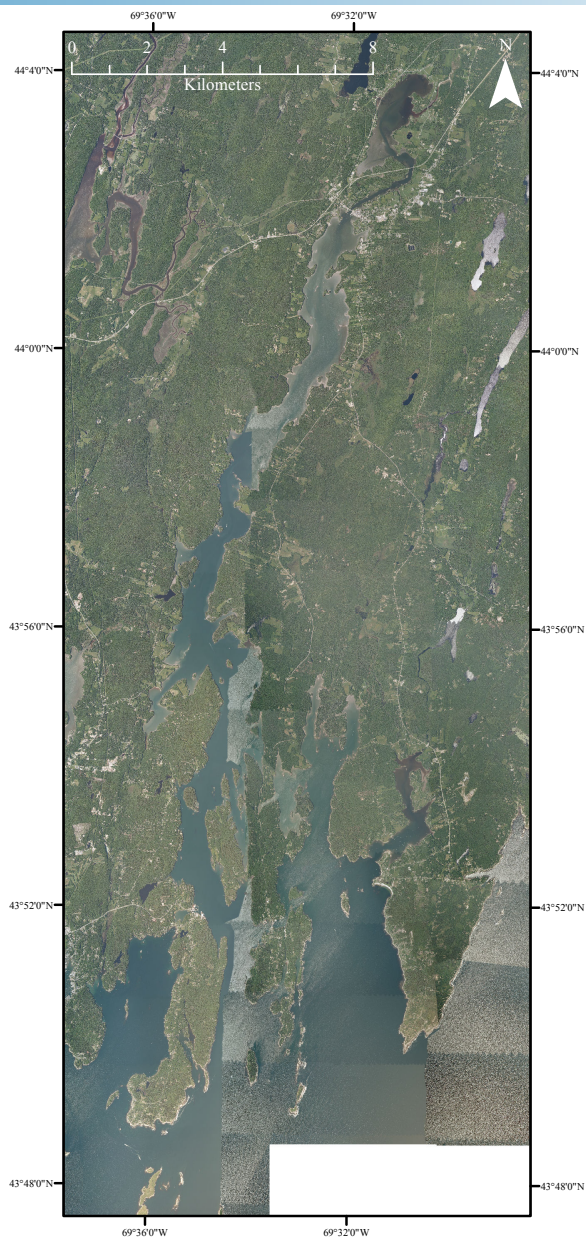
Emily A. Chandler, Joseph T. Kelley & Daniel F. Belknap
School of Earth & Climate Sciences
University of Maine



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Damariscotta River Estuary





Present Study

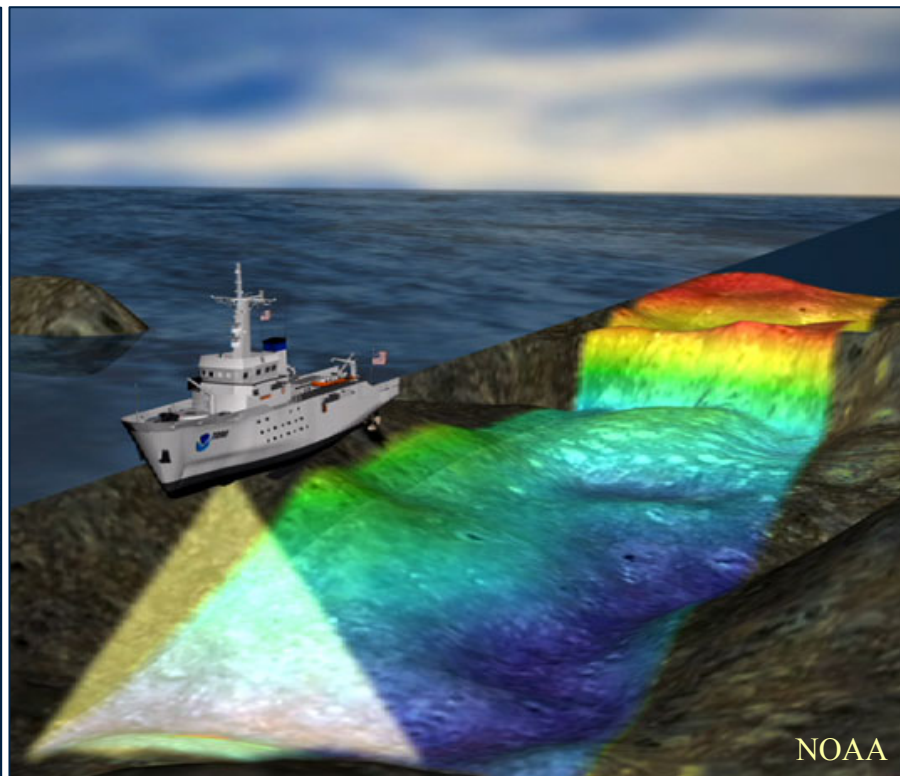
- High Resolution Bathymetry.
- Characterize sediment & sediment distribution throughout estuary.
- Assess temporal & spatial trends in sediment accumulation.



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Multibeam Bathymetry

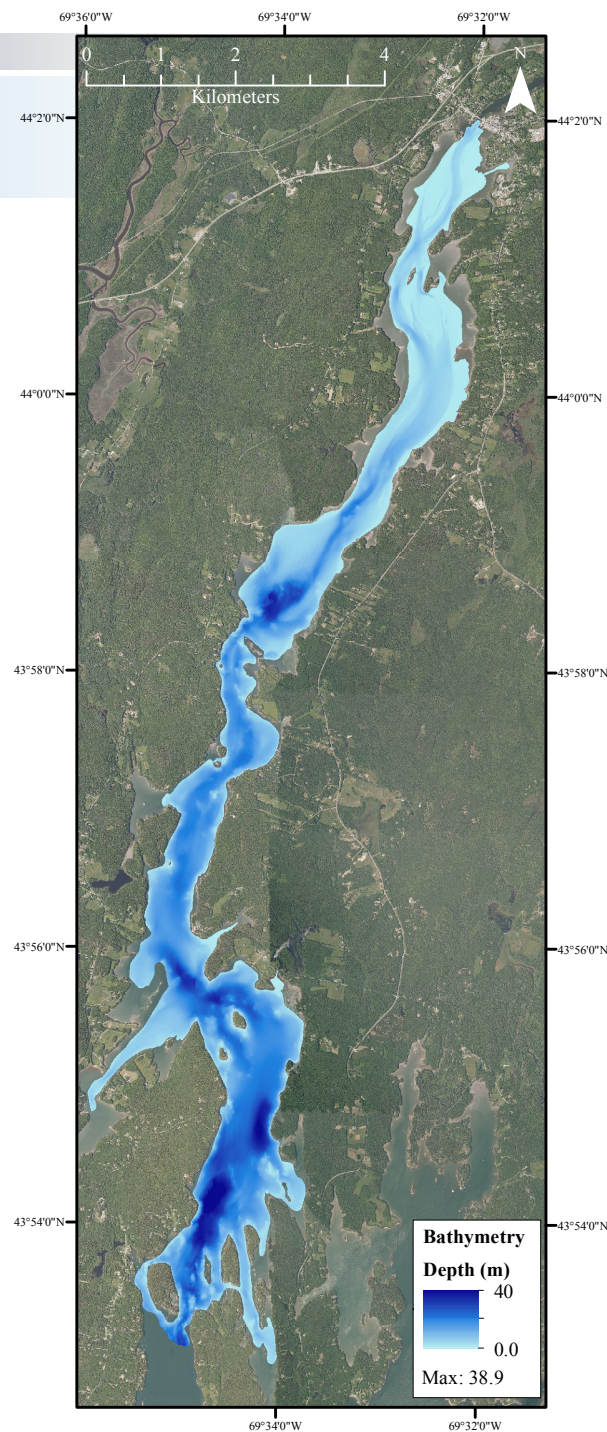


Coupled WASSP/Olex System
Resolution: $23 \text{ cm}^2 = 9 \text{ inches}^2$
Swath width = $\sim 2 \times$ depth



Mapping Extent

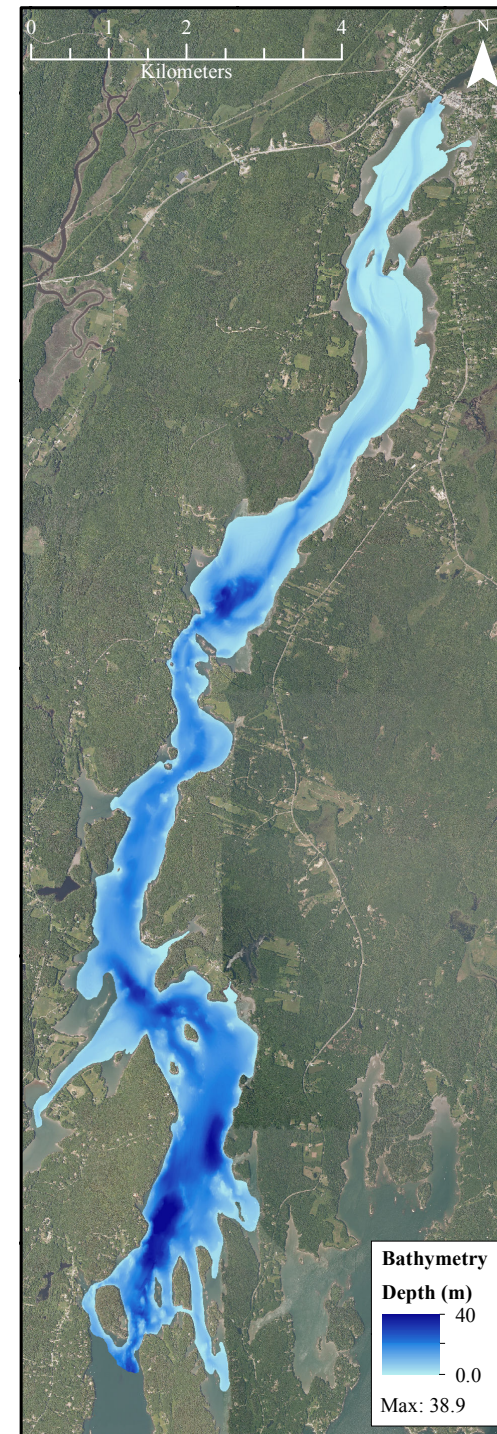
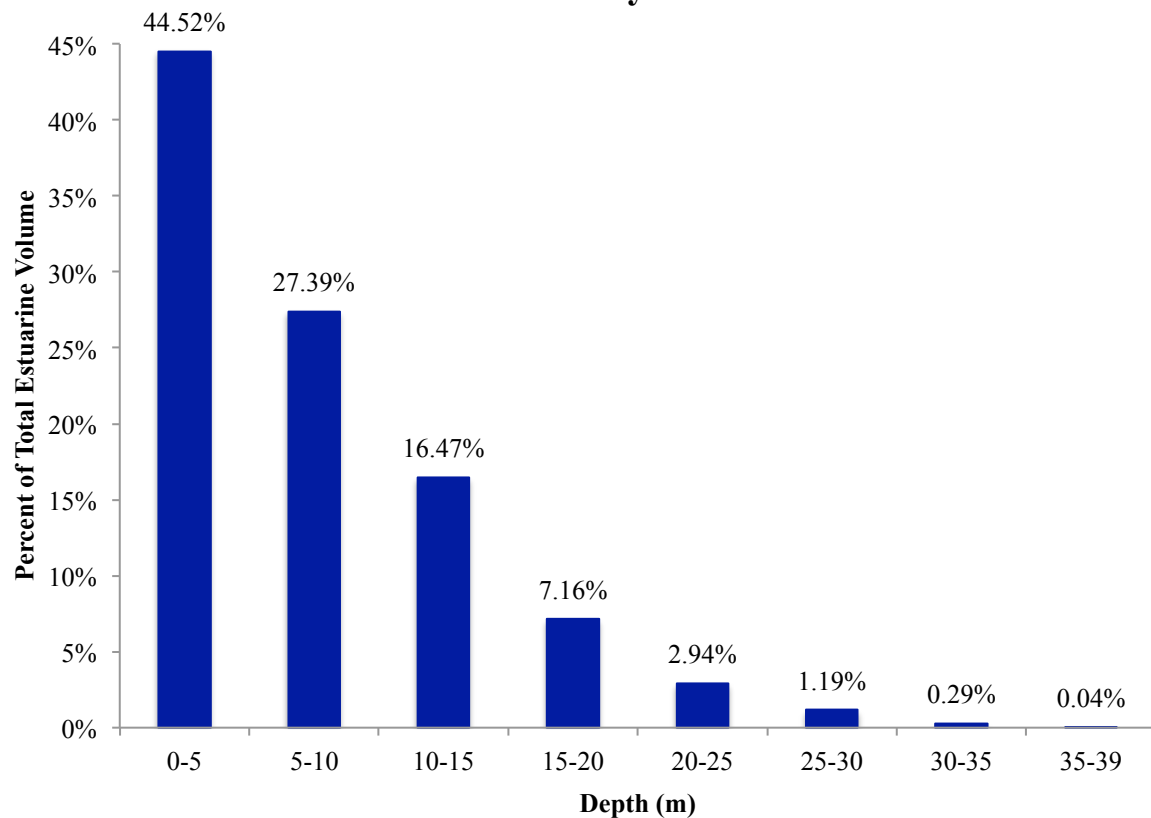
- Area = 14.12 km²
- Volume = 1.24 x 10⁸ m³
- Max Depth: 38.9 m = 128 ft
- Time: 27 days (June, July 2015)
- Tide Correction: Pemaquid Harbor

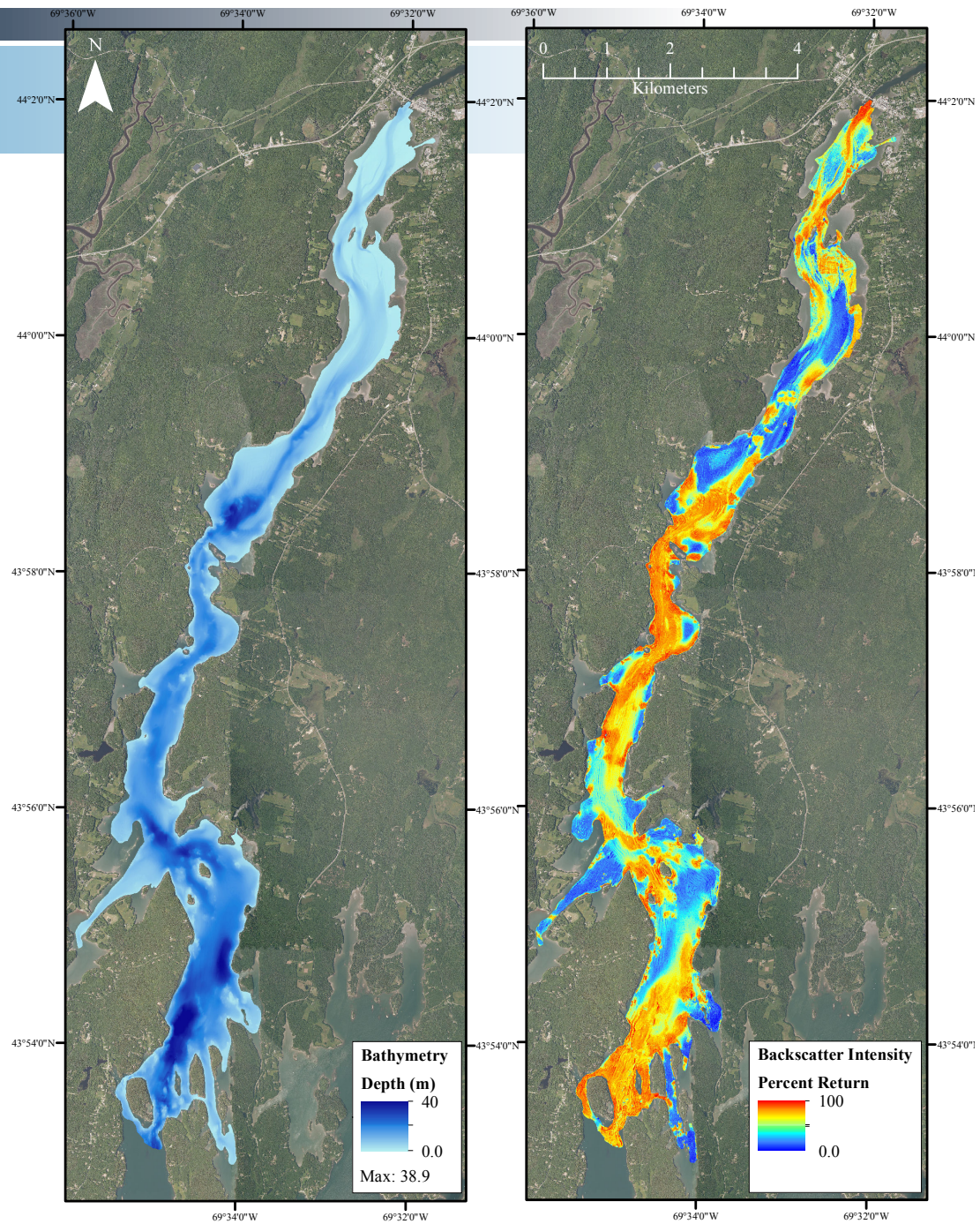


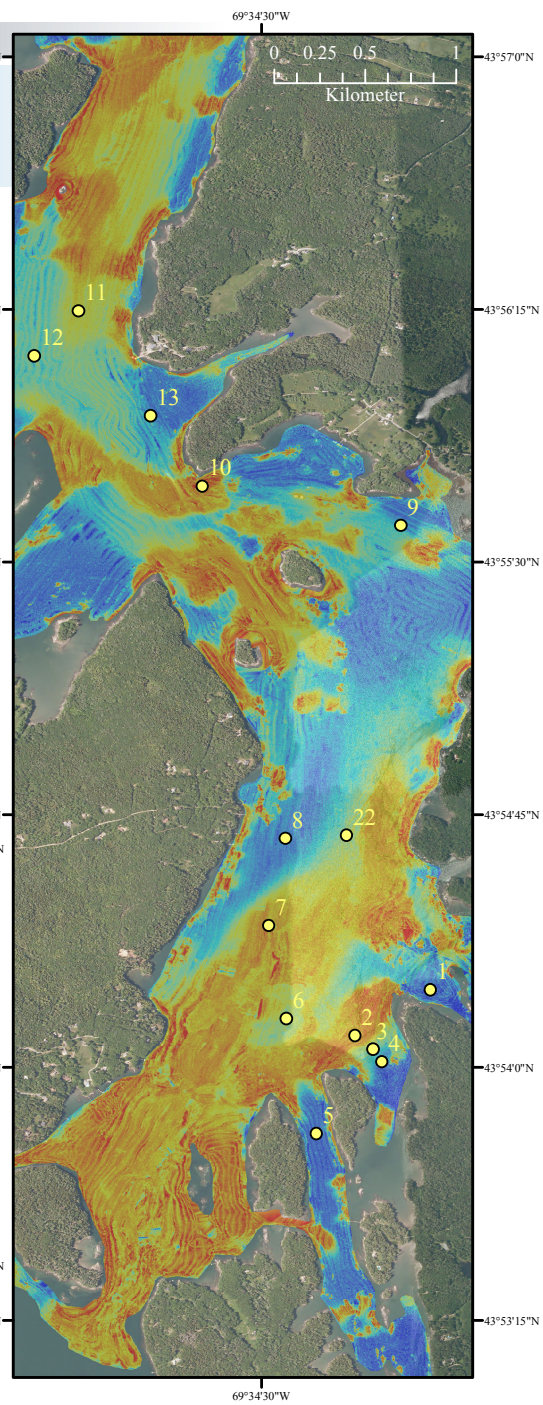
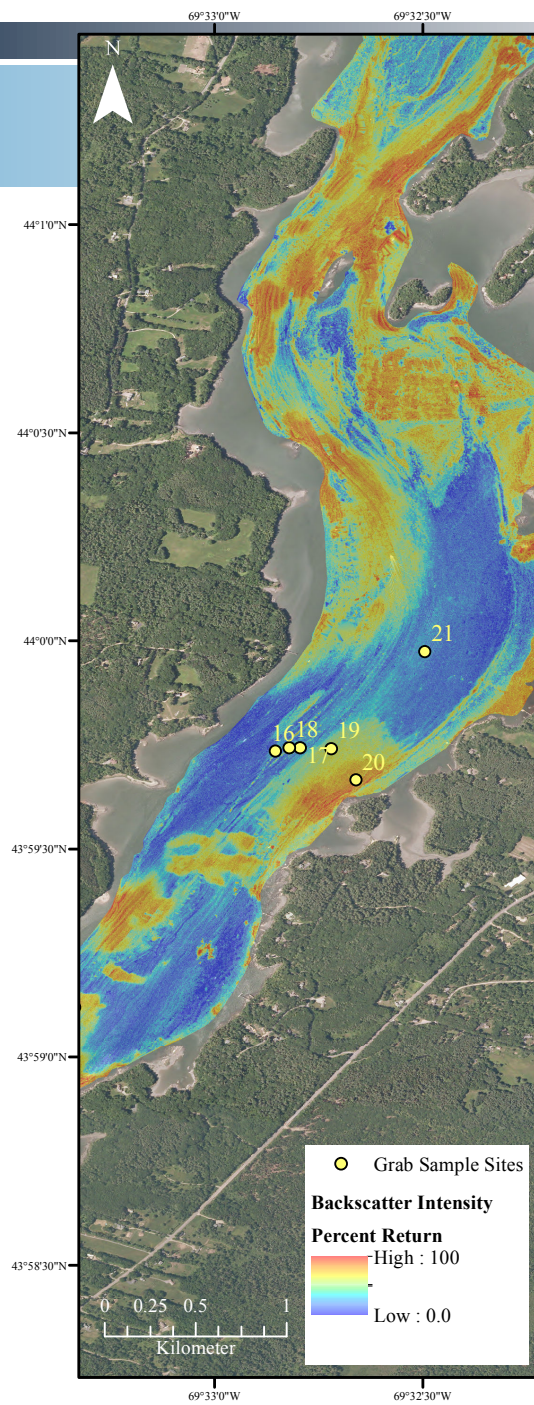


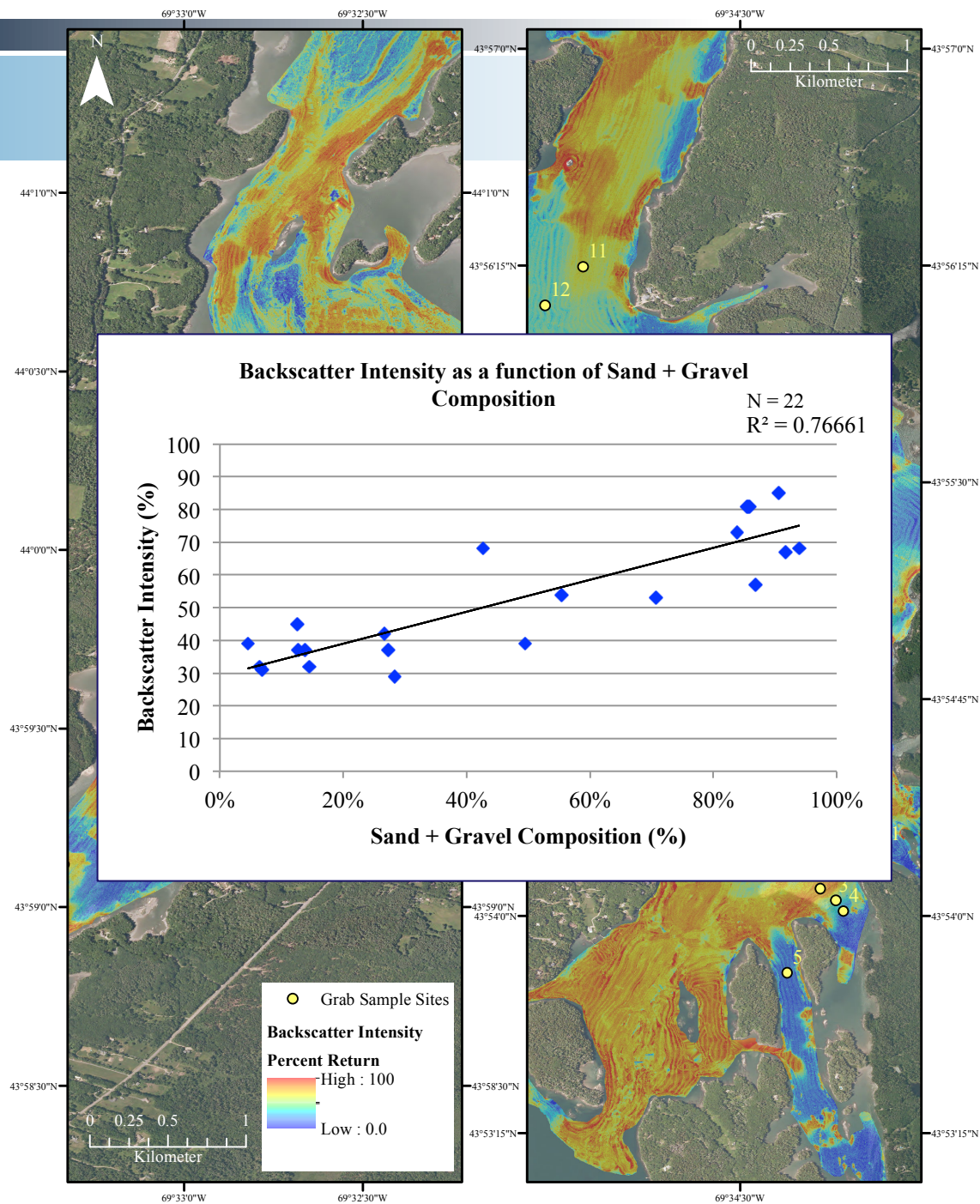
Damariscotta River Hypsometry

Distribution of Water Volume in the Damariscotta River Estuary





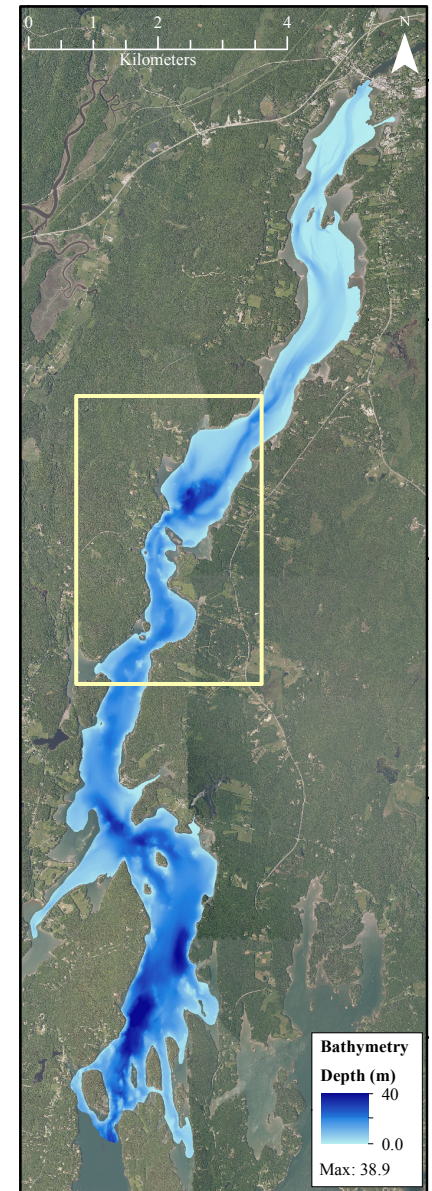
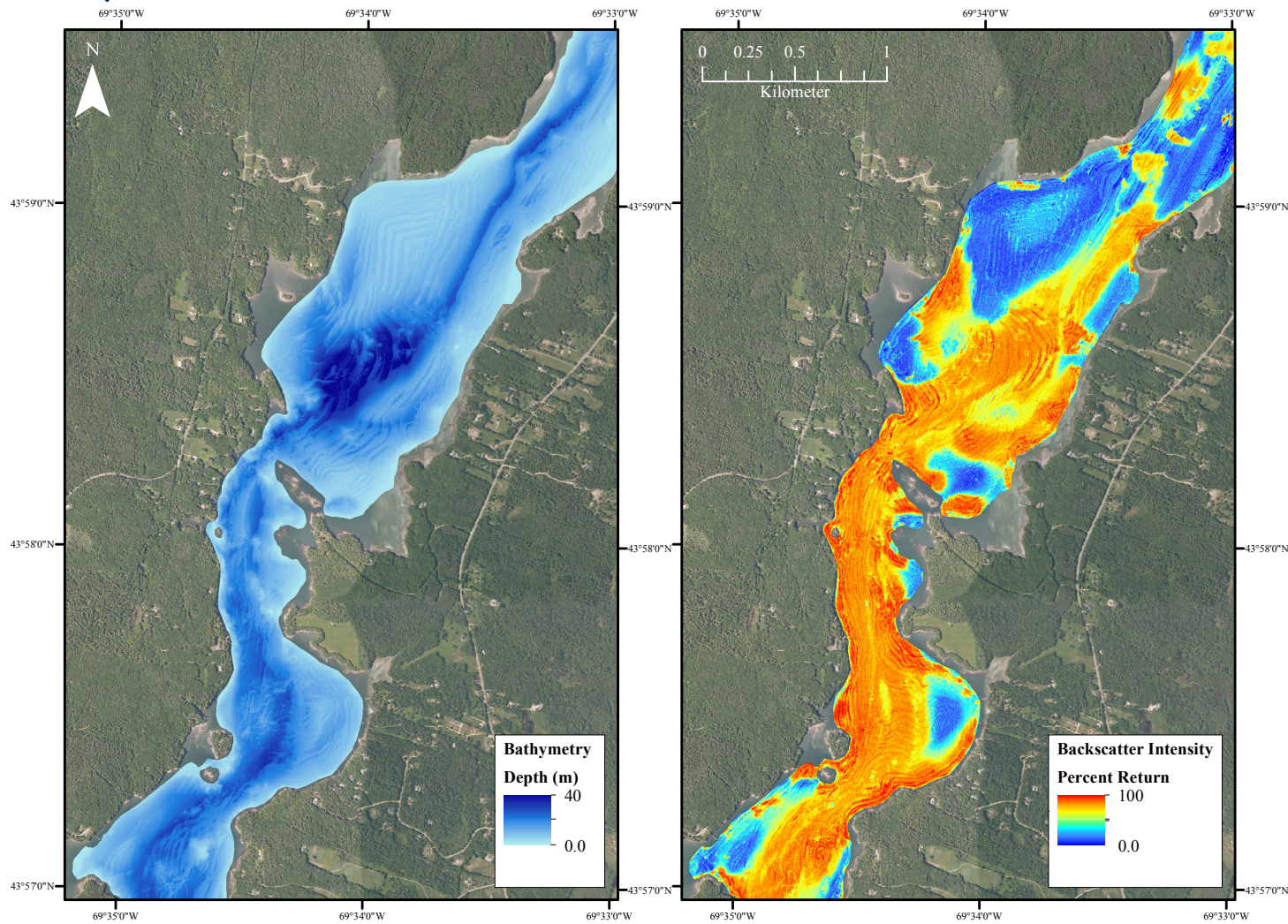




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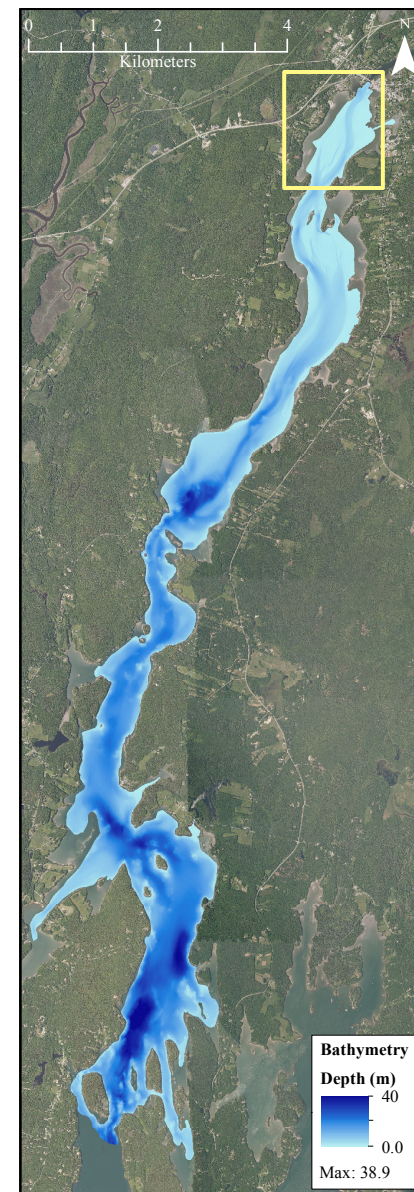
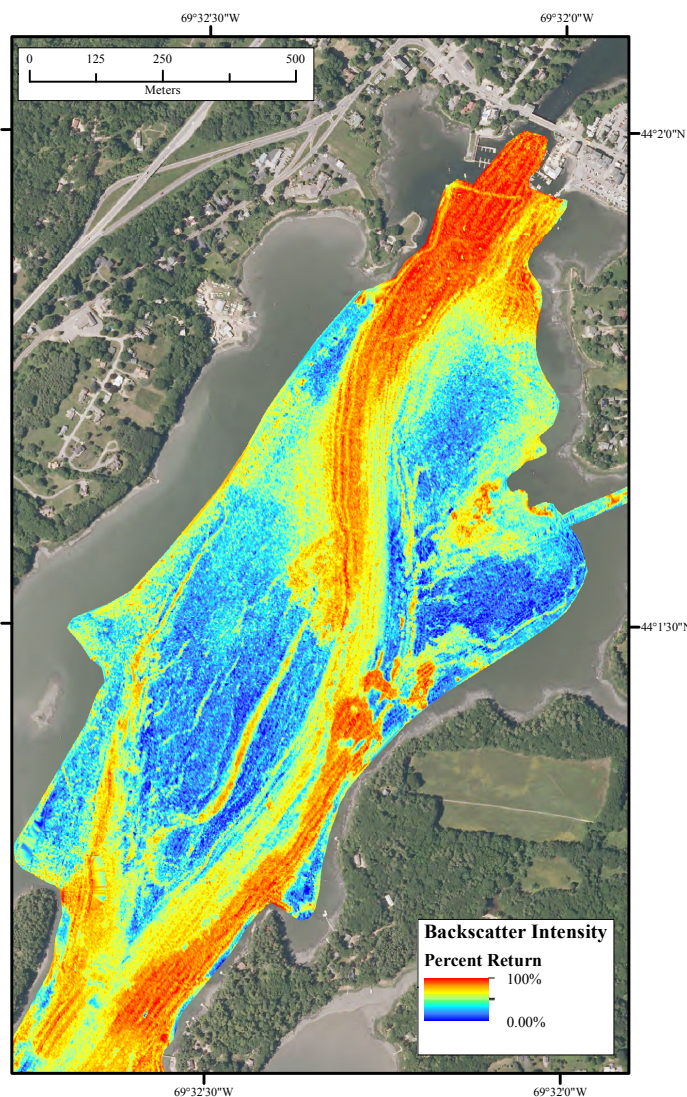
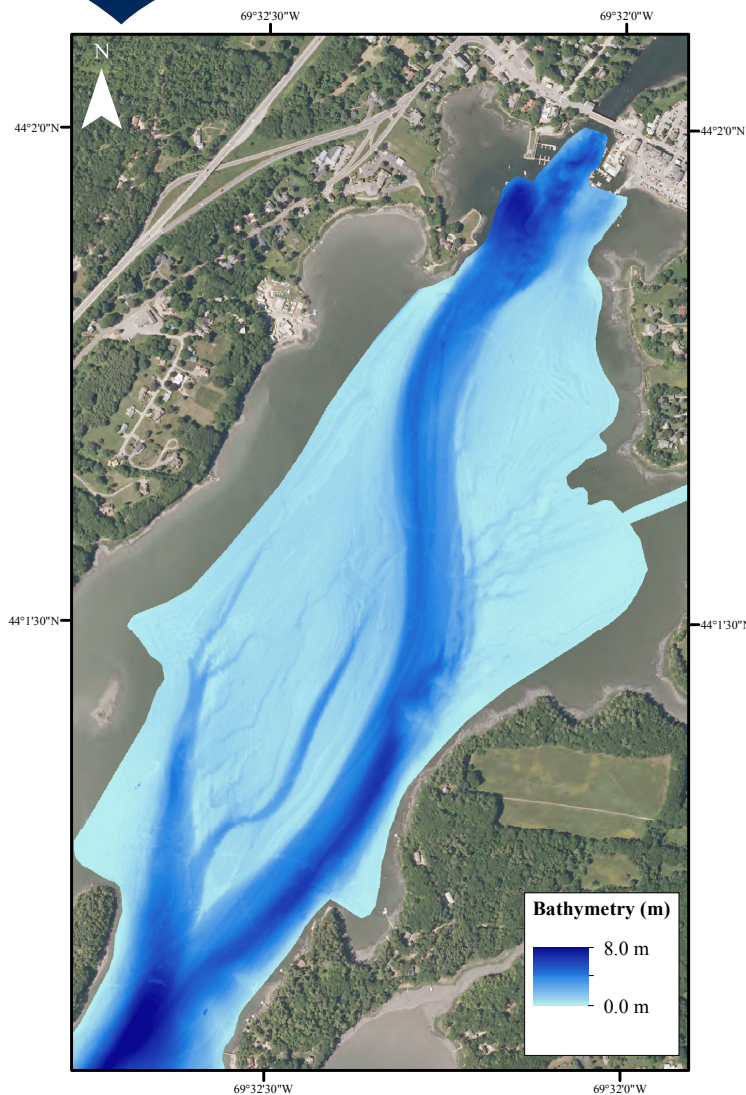


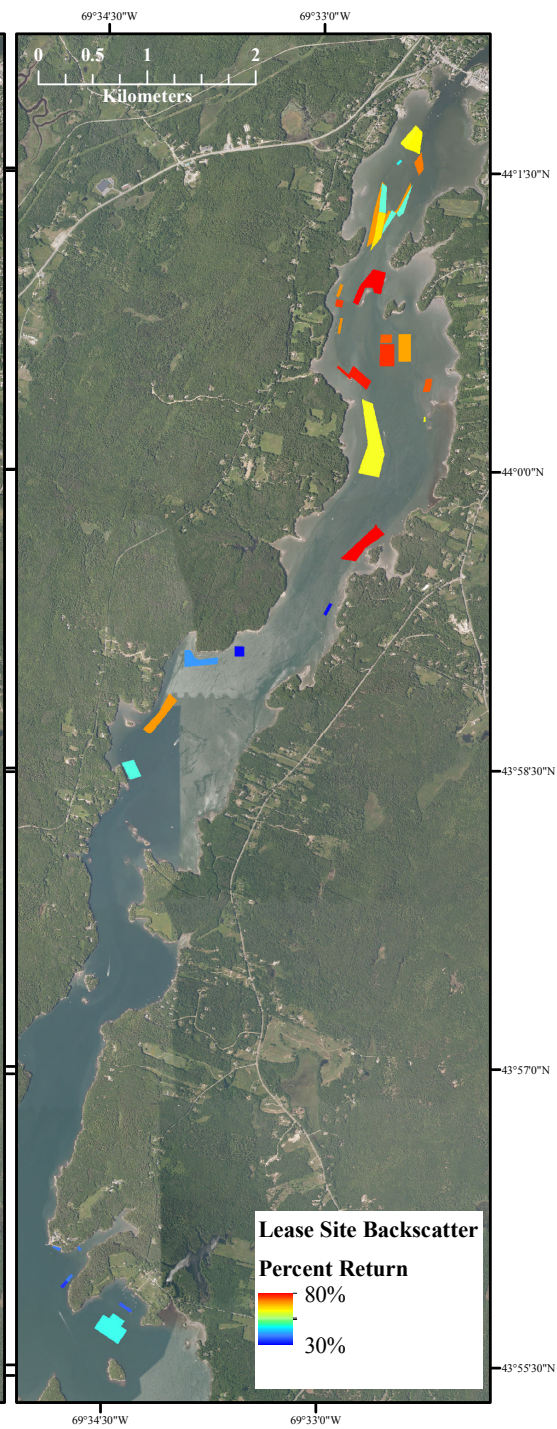
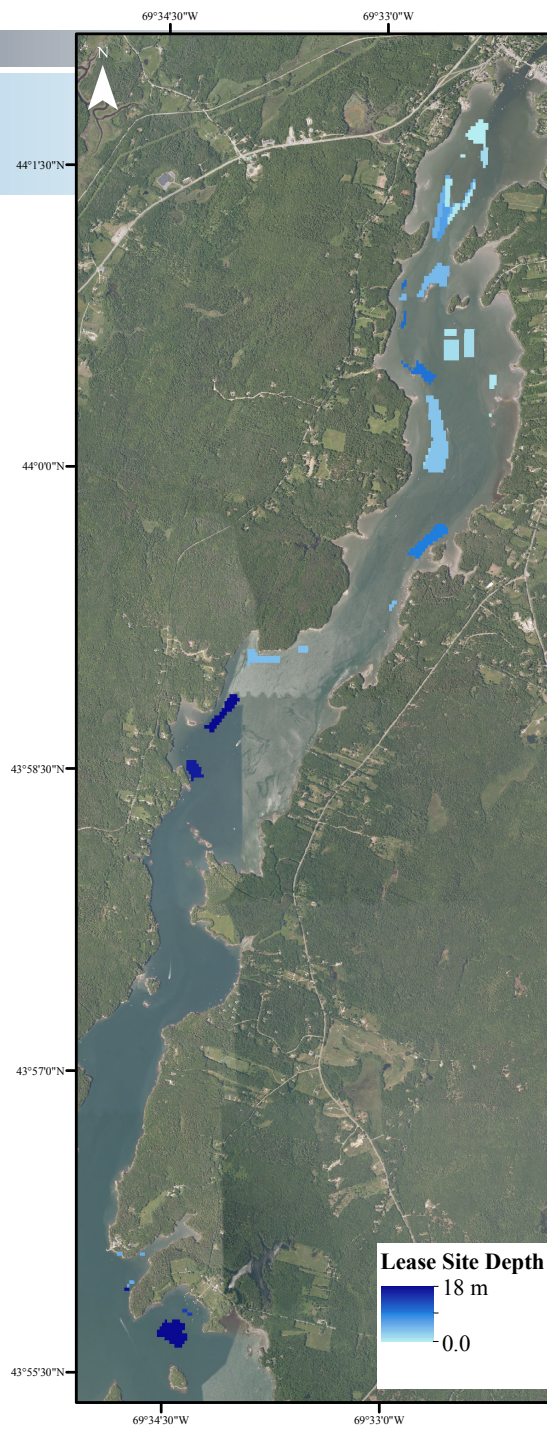
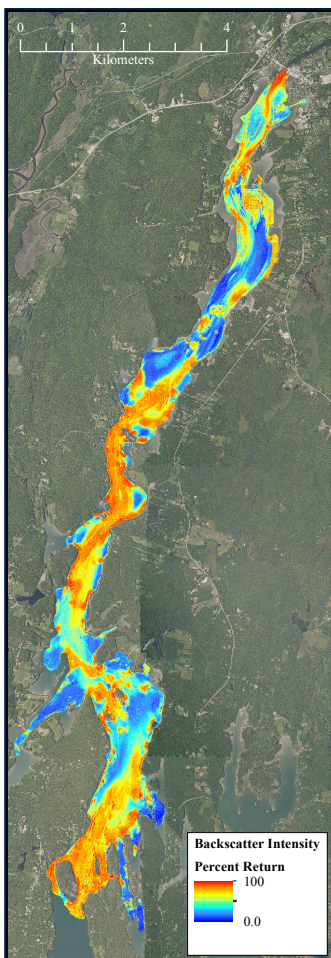
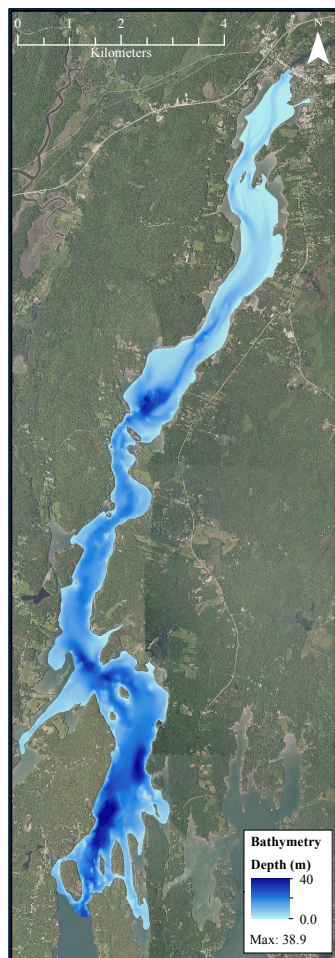
Dodge & Mears Coves

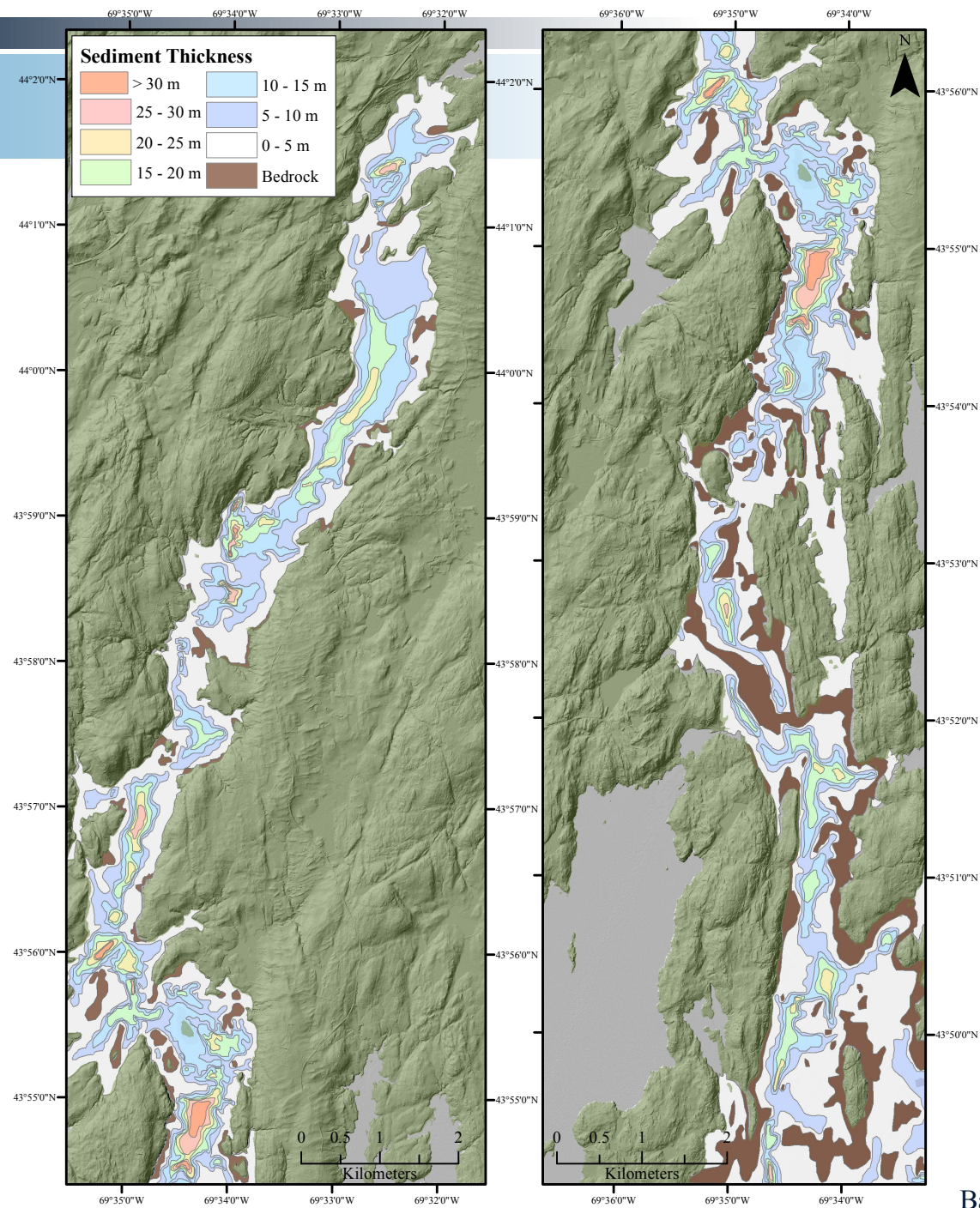




Damariscotta-Newcastle Basin



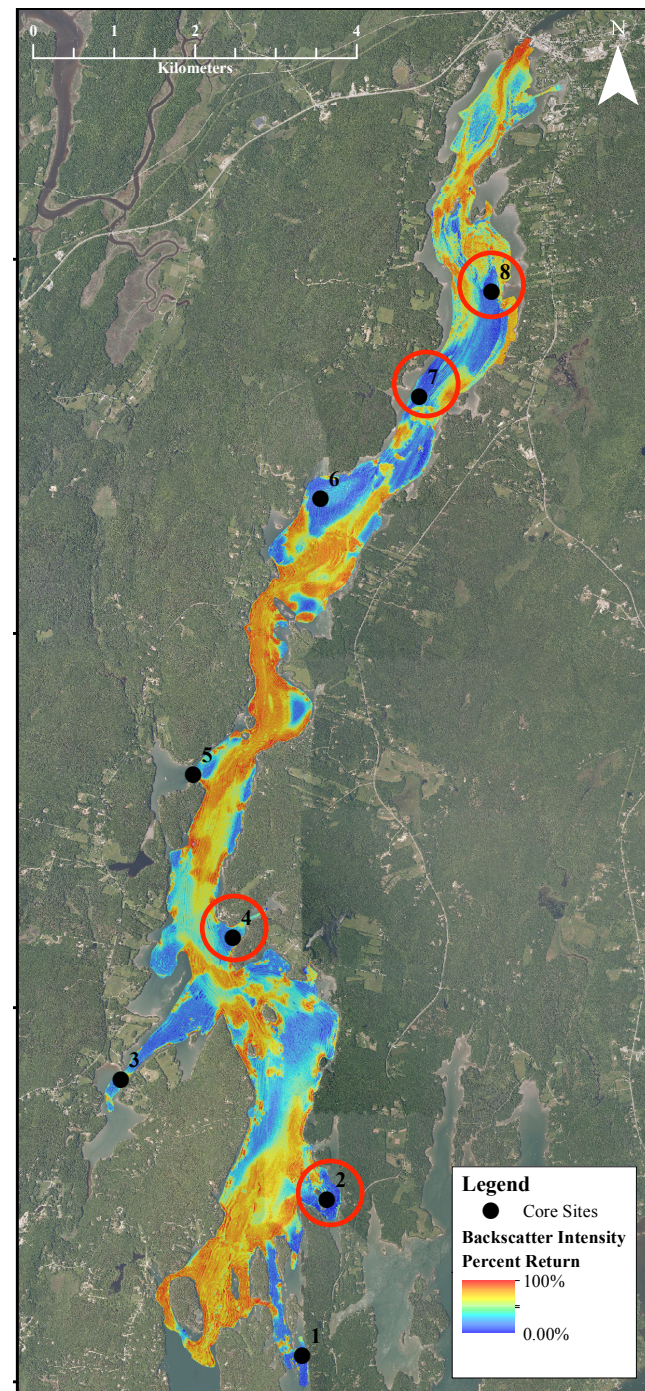


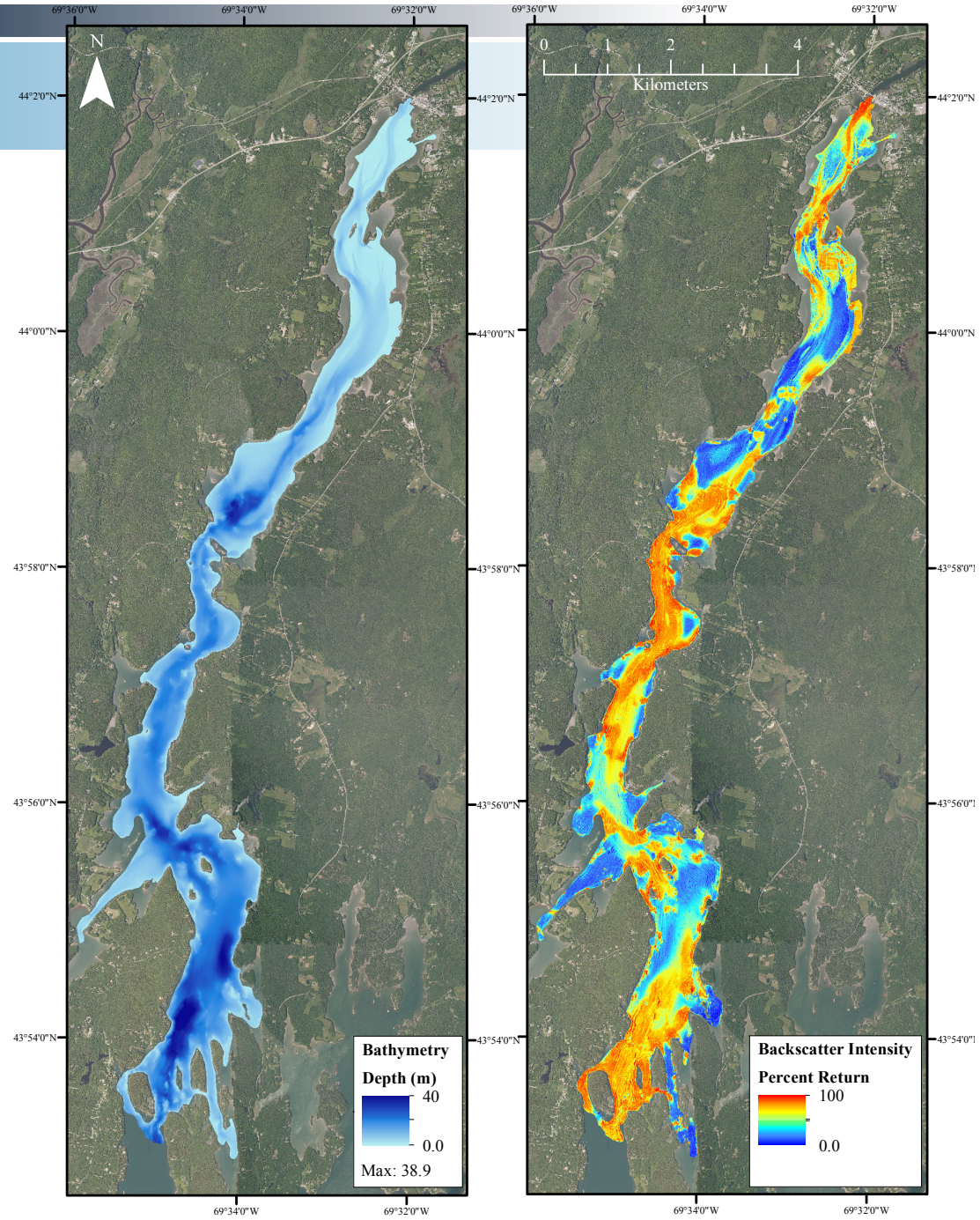


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Sedimentation Trends







Conclusions

- New high-resolution bathymetry & surficial sediment distribution.
- Zones of low sediment accumulation, extensive reworking, erosion.
- Sediment distribution related to bedrock framework & tides.





Acknowledgements

Dr. Joseph T. Kelley
Dr. Daniel F. Belknap
Dr. Lawrence M. Mayer



Maine EPSCoR SEANET Award: IIA-1355457



Long Cove, Damariscotta River: DR-PC-15-02, Core 2, Site