Eelgrass Mapping in Eeyou-Istchee using Landsat-8 and Sentinel-2 imagery with Random Forests Classifier

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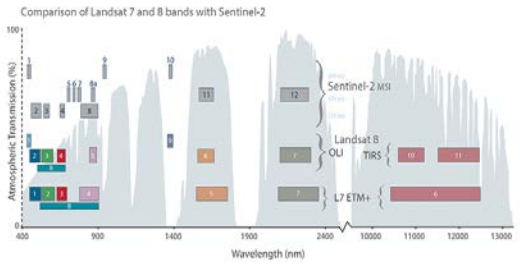
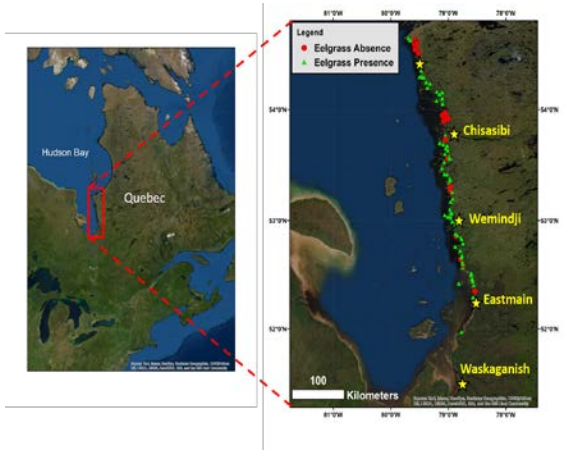
The eastern coastline of James Bay contains vast subtidal eelgrass meadows, but the inaccessibility of the coastline makes it nearly impossible to assess their scale and distribution. My research is evaluating the use of multispectral satellite imagery to detect and map these eelgrass beds.

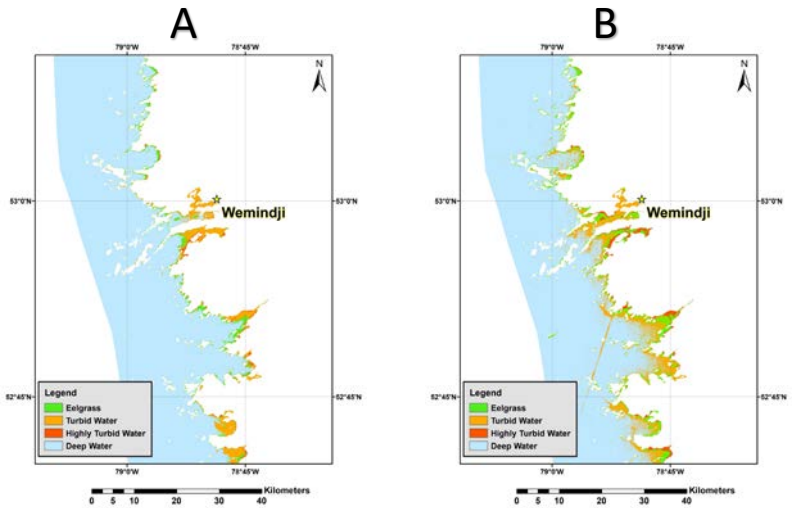


- Landsat-8 and Sentinel-2 offer freely available, global satellite coverage with 30m and 10m pixel sizes respectively.

- The study area encompasses the eastern coastline of James Bay (part of the indigenous Cree territory of Eeyou-Istchee).

- 147 Field data points evaluating eelgrass presence were obtained in 2019 and used to validate our map.





Classified (A) Landsat-8 and (B) Sentinel-2 image around the Cree village of Wemindji

- The overall accuracy of the image classifications (for the entire coastline) were 76.9% for Landsat-8 and 74.7% for Sentinel-2 imagery.
- Water containing eelgrass is discernable from shallow sandy water, as well as optically deep water.
- Eelgrass is not visible underneath turbid water.

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