Building and validating unsupervised wetland classification method based on remote sensing data at very high resolution for the Abitibi region

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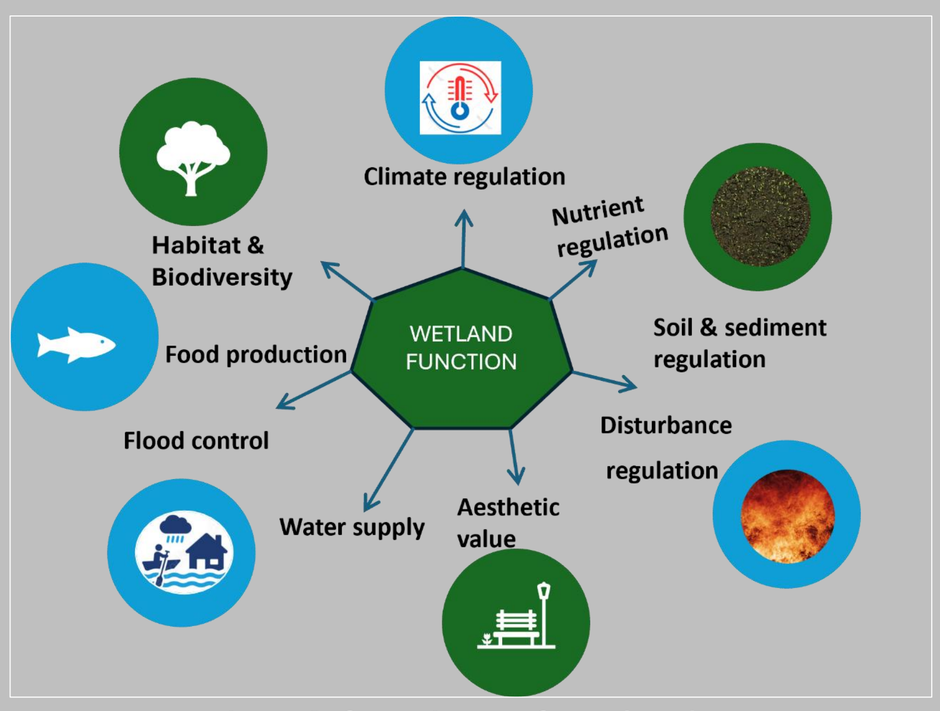
Context

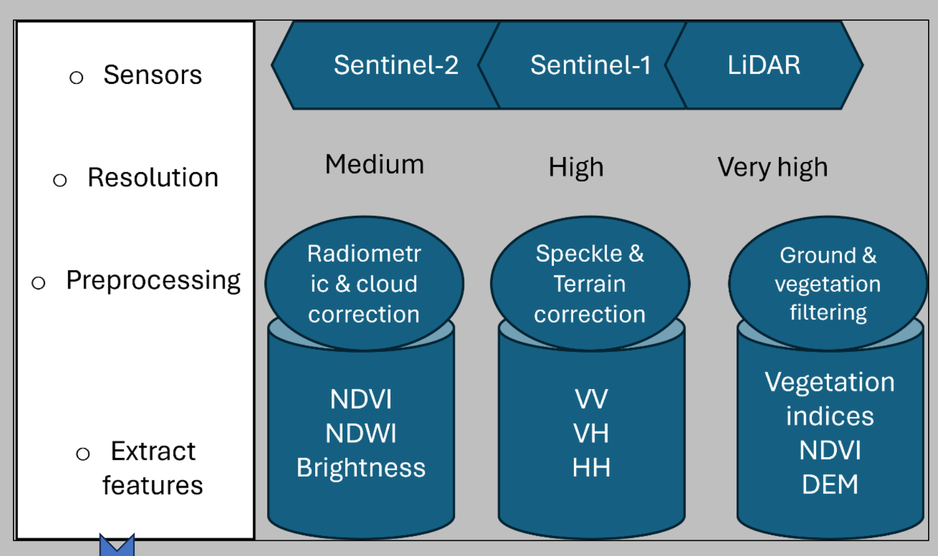
- Wetlands are complex entities making their boundaries difficult to define and map accurately.
- To address challenges associated with the characterization of wetlands, a robust classification approach is needed.
- A bottom-up classification has been developed contrary to the commonly used top-down.



Services & functions of wetlands

Parameter	Bottom-up	Top-down
Data collection	Field measurement	Remote sensing/Existing datasets
Scale	Fine-scale	Coarse-scale
Scope	Site-specific	Regional
Information	Detailed	General
Resolution	High	Low
Complexity	Heterogeneity	Dominant feature
Accuracy	High	Low

Bottom-up vs top-down classification of wetlands

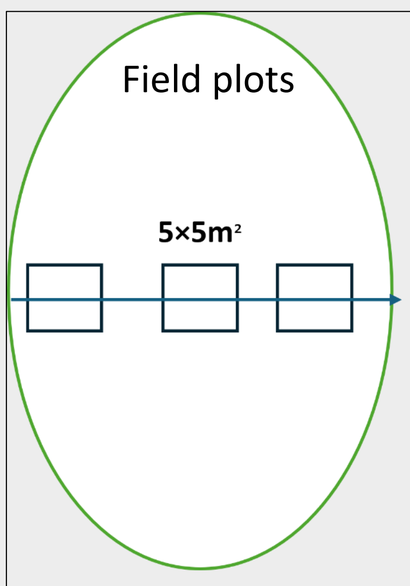


Remote sensing Indices

Objective

To validate the effectiveness of the bottom-up wetland classification model developed for the Abitibi region.

Method



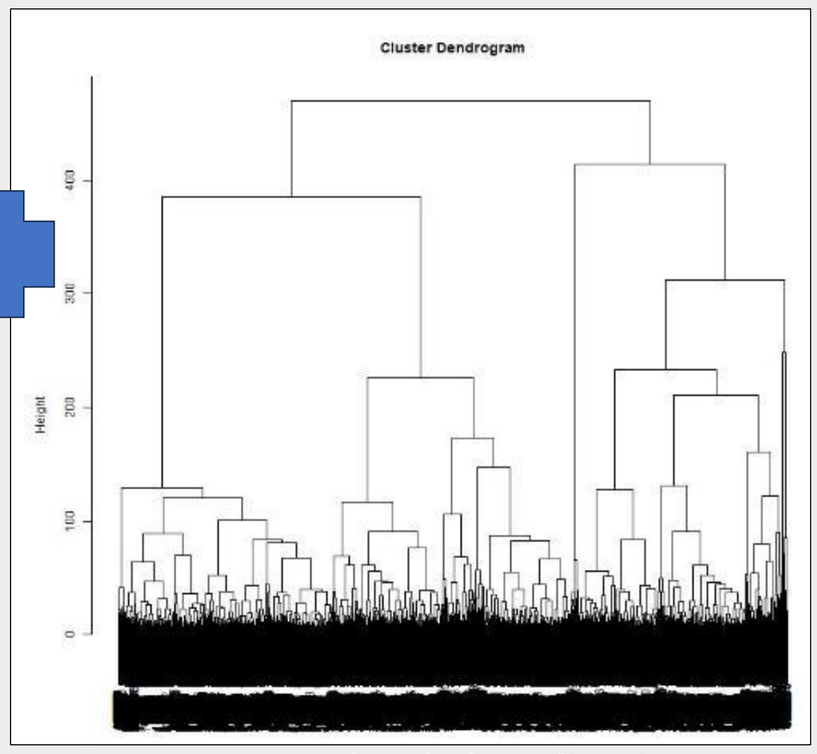
Environmental data

- Organic layer thickness
- Soil Nutrient
- Soil pH
- Water depth

Vegetation data

- Species identification
- Species % cover
- Microhabitat(bryophytes)

Field data collection



Bottom-up wetland classification

Analysis

- Determine diversity indices from vegetation community and explore the relationships between wetland classification using (PCA, and MDS).

Model Validation

- The bottom-up model will be validated by comparing it with field data and determining its performance using accuracy metrics (kappa coefficient).

Contribution

- It is expected to improve our knowledge in the characterization of wetland classes and advance wetland mapping capabilities.