Intro to AI/ML
&
Sea Ice Lead Classification

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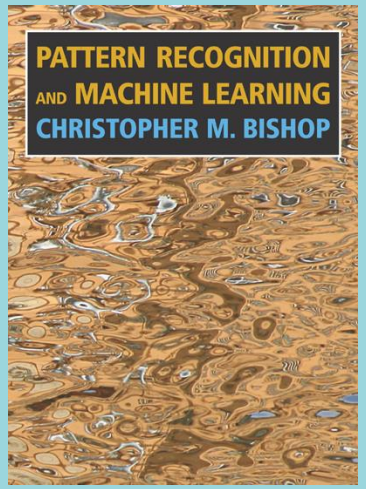
Overview

Part 1 - Introduction to AI/Machine Learning

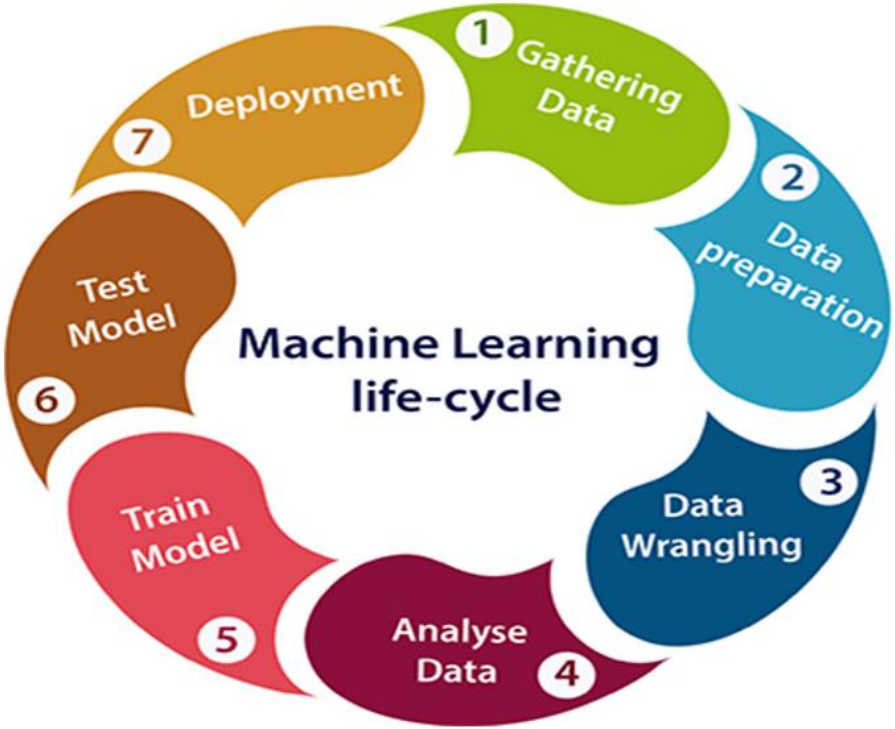
- Machine Learning Processing Chain
- Regression or Classification
- Supervised or Unsupervised learning
- Overfitting or Underfitting



Part 2 – Sea-ice and Lead Classification

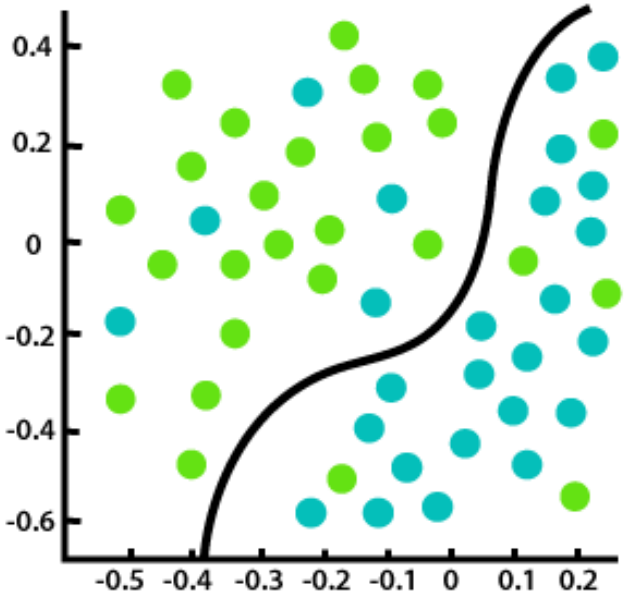
- Why does sea ice and leads matter?
- How do we observe them from space

Machine learning processing chain

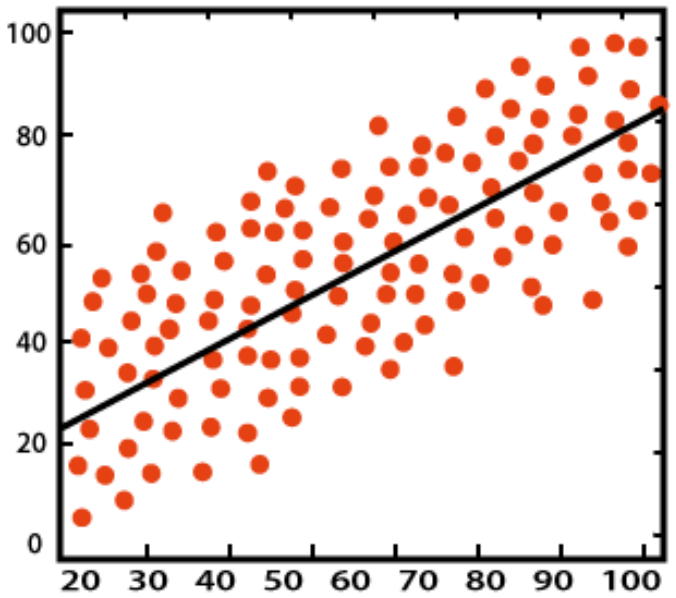


https://medium.com/@sabihaali1/machine-learning-lifecycle-80c4a265e589

Regression vs Classification



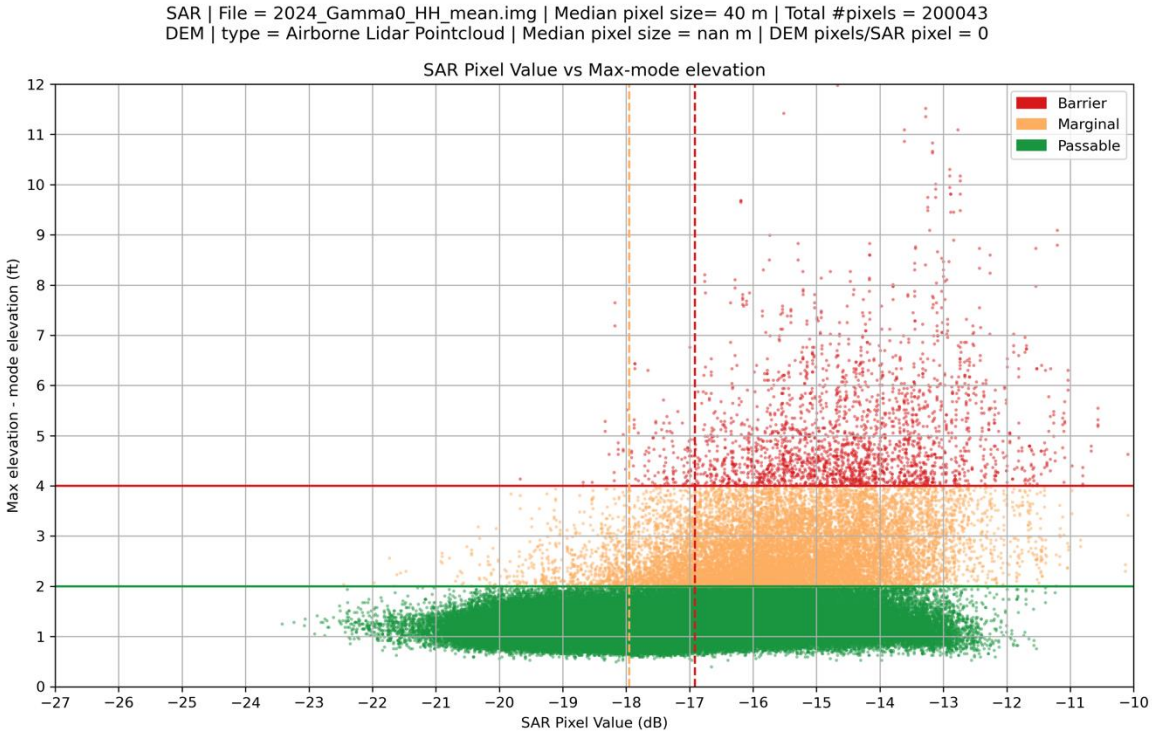
Classification

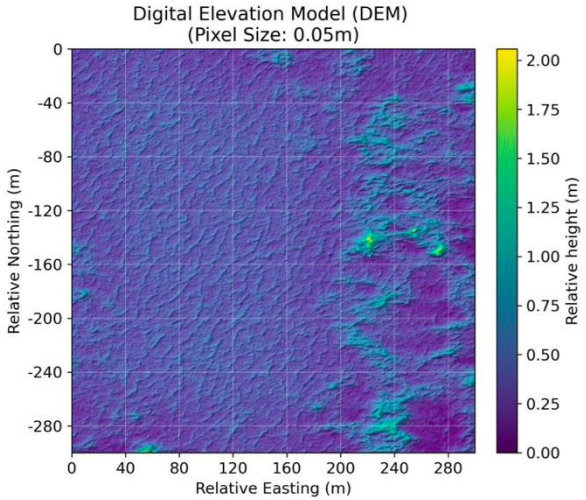


Regression

https://www.javatpoint.com/regression-vs-classification-in-machine-learning

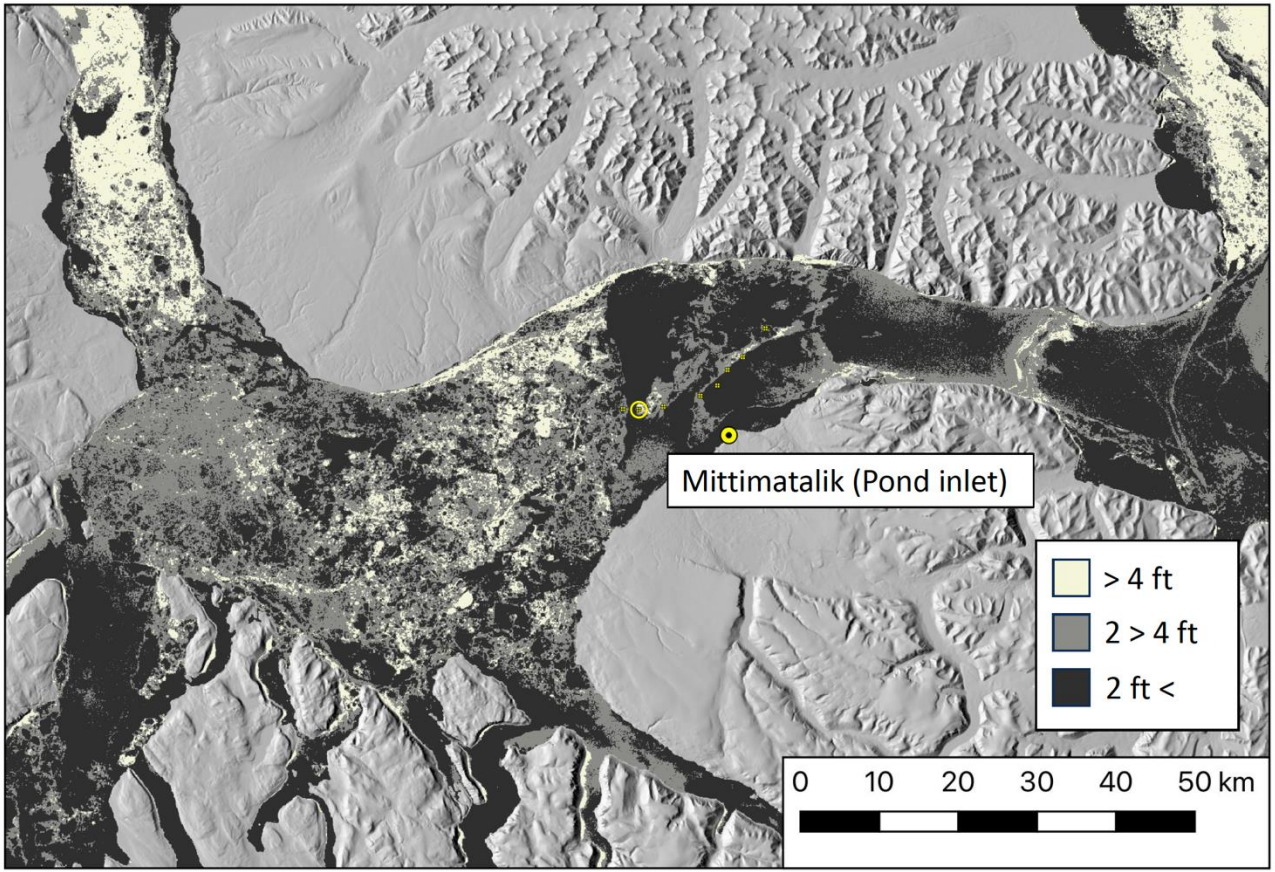
Regression vs Classification



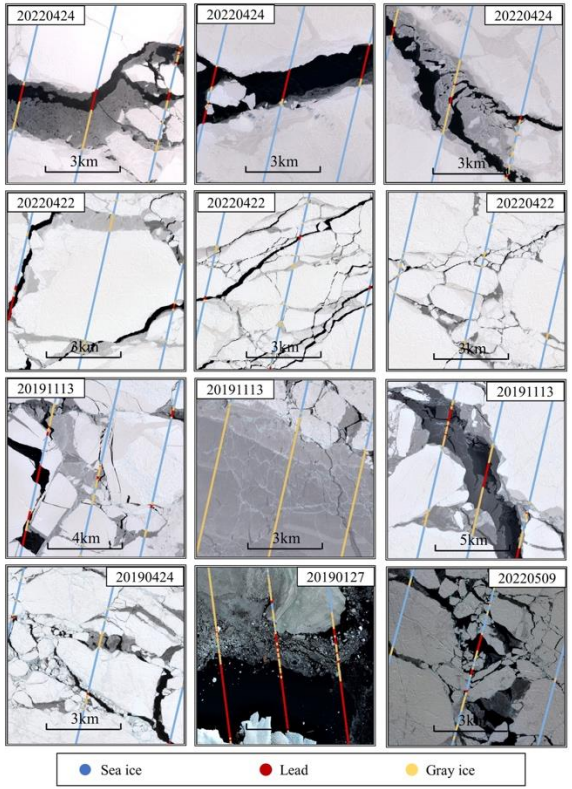


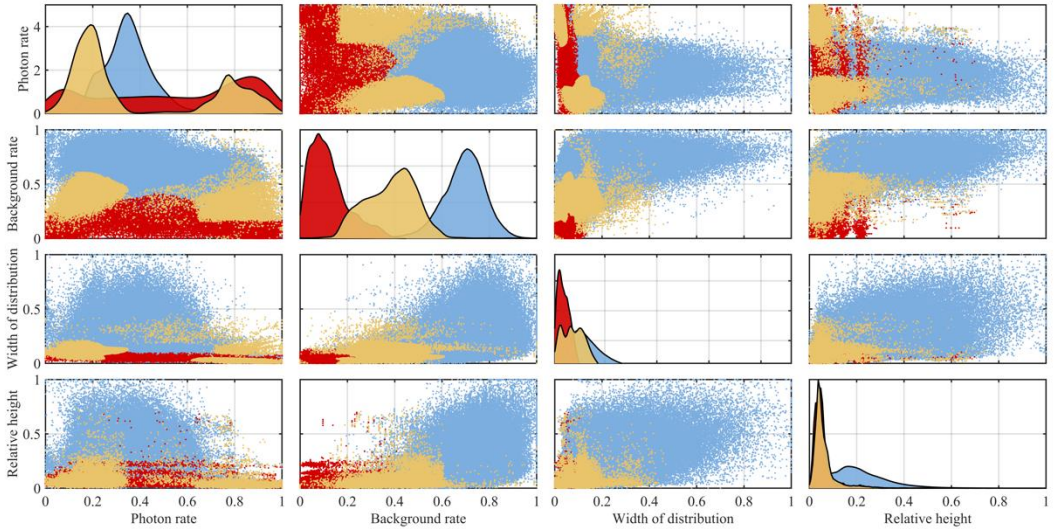
Credit: Tom Newman

Mittimatalik (Pond inlet) 2024 regional roughness map



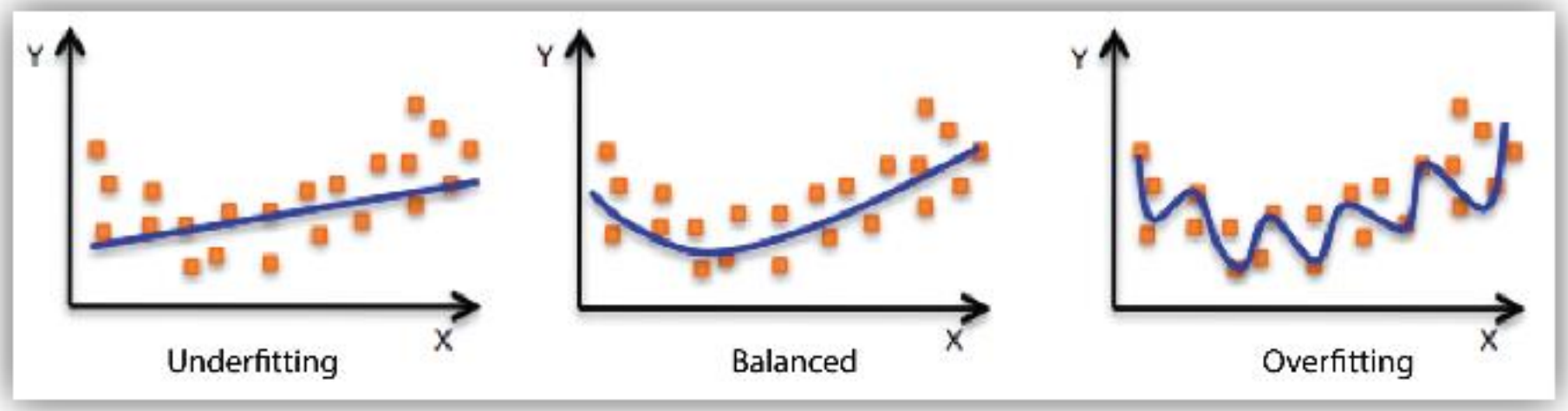
Supervised vs Unsupervised



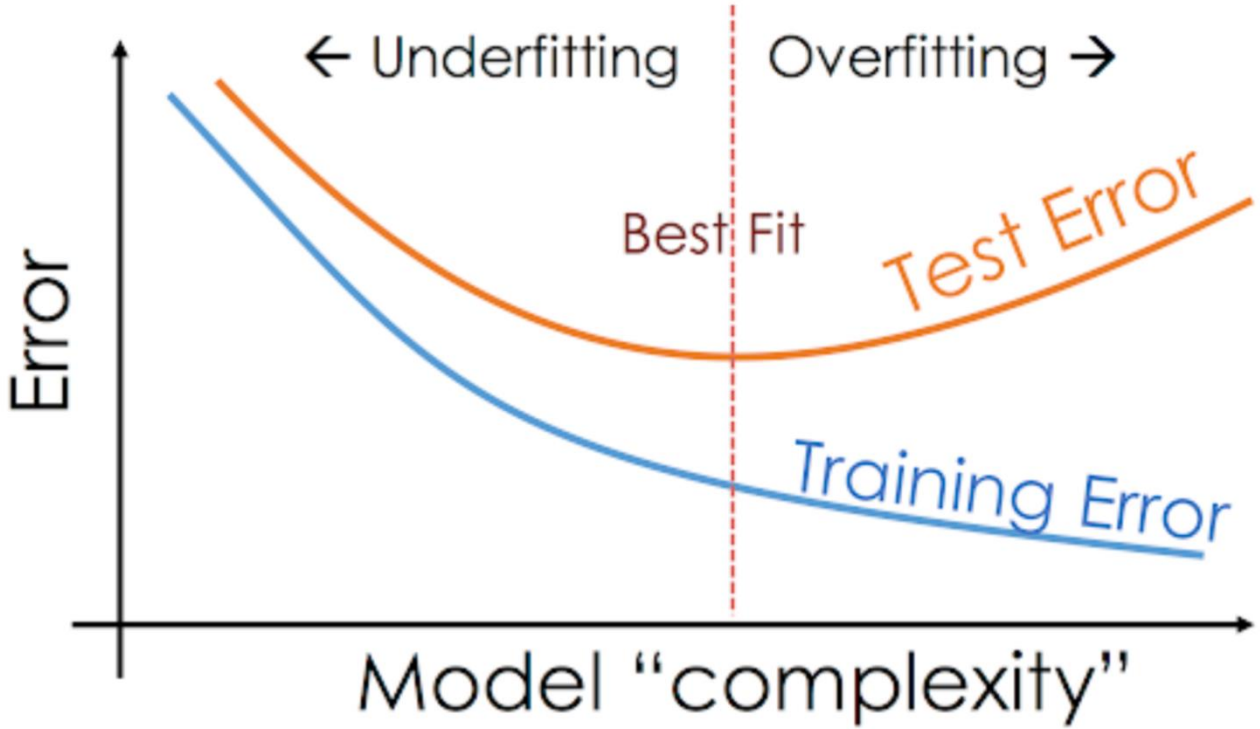


Credit: Wenxuan Liu

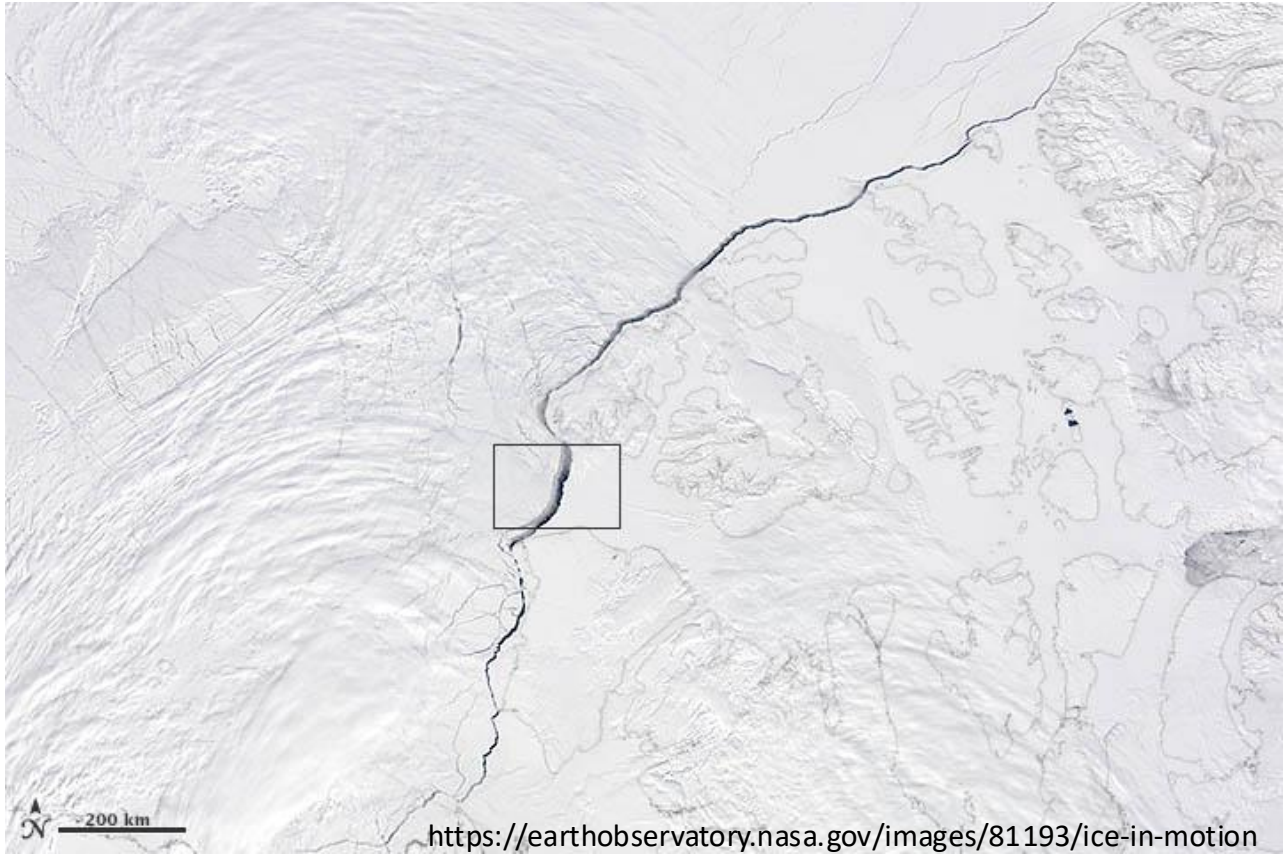
Overfitting vs Underfitting



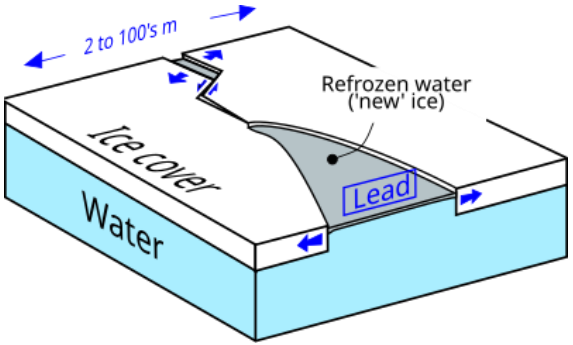
Overfitting vs Underfitting



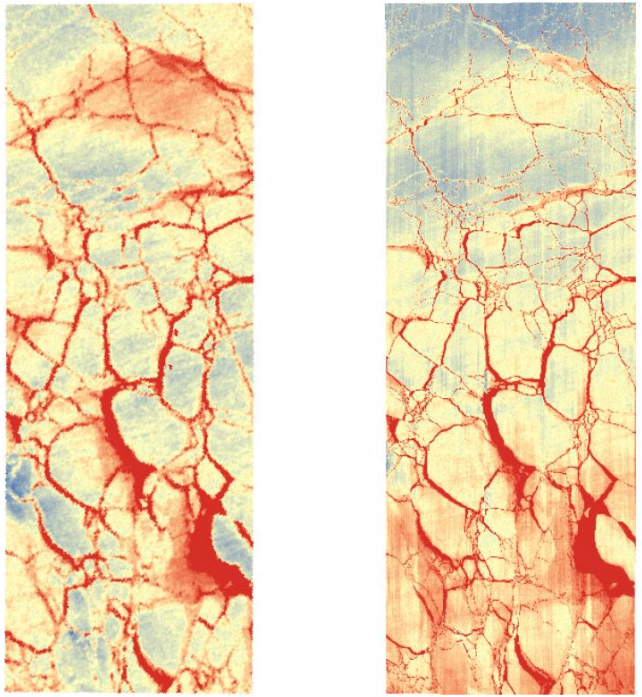
What are leads?



https://earthobservatory.nasa.gov/images/81193/ice-in-motion



Why they matter?



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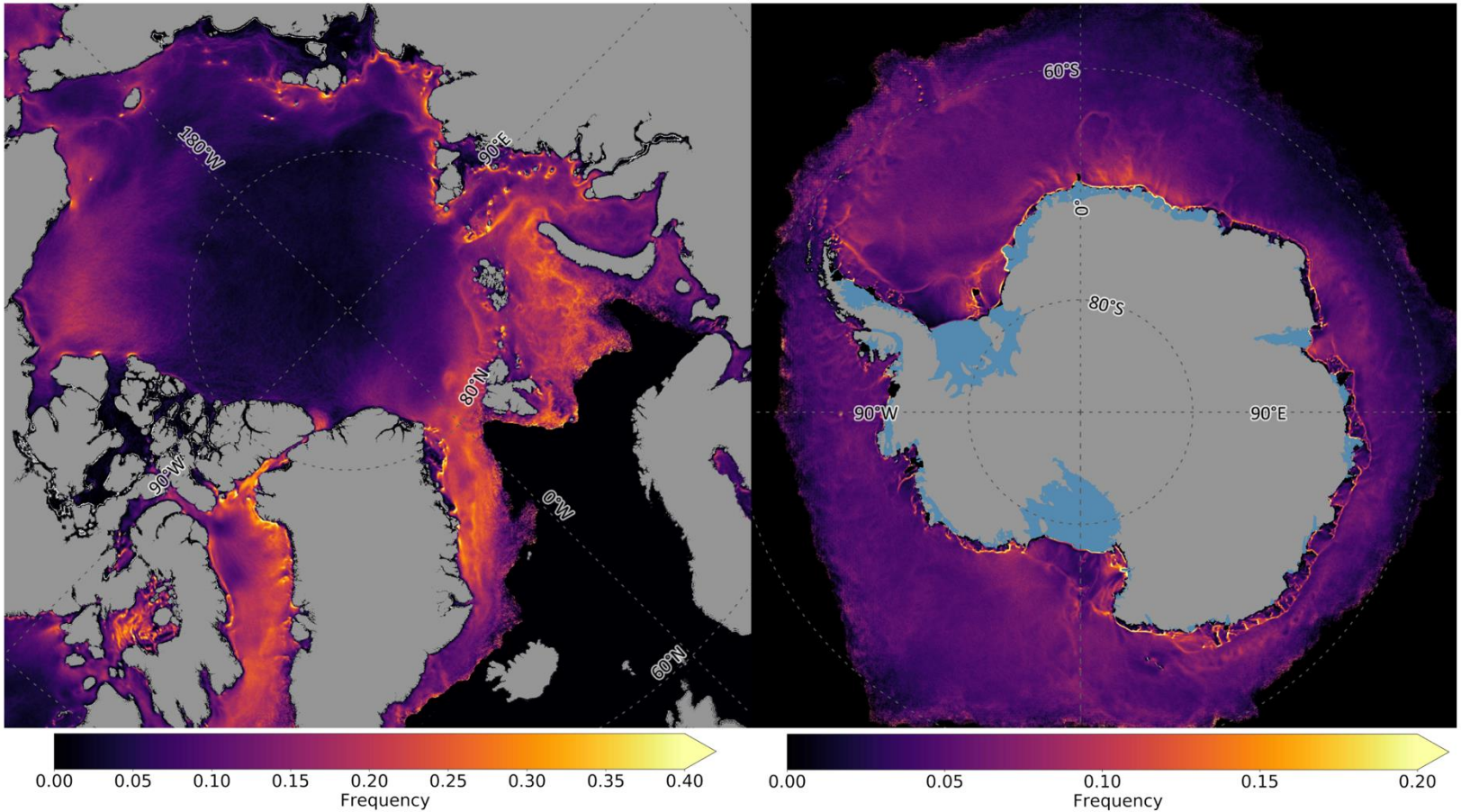
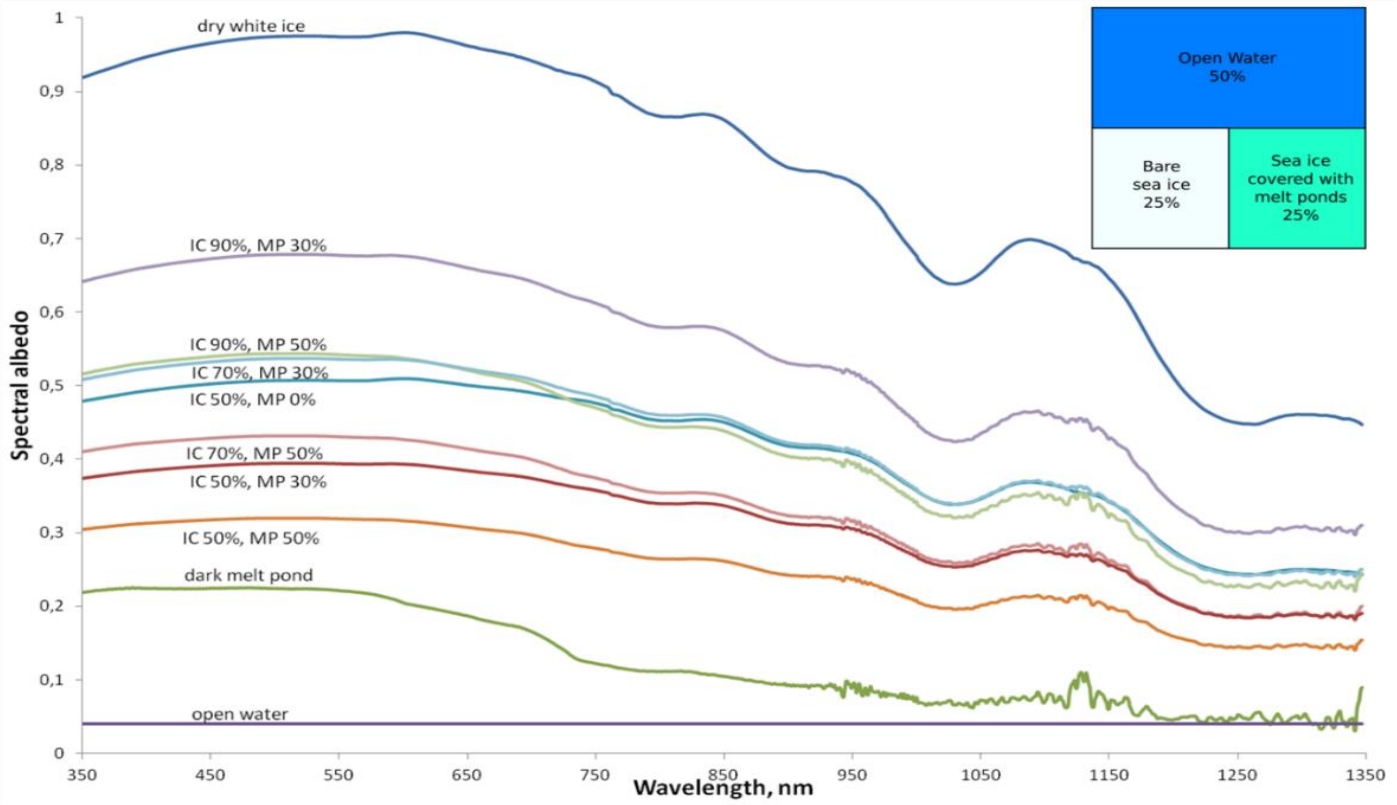
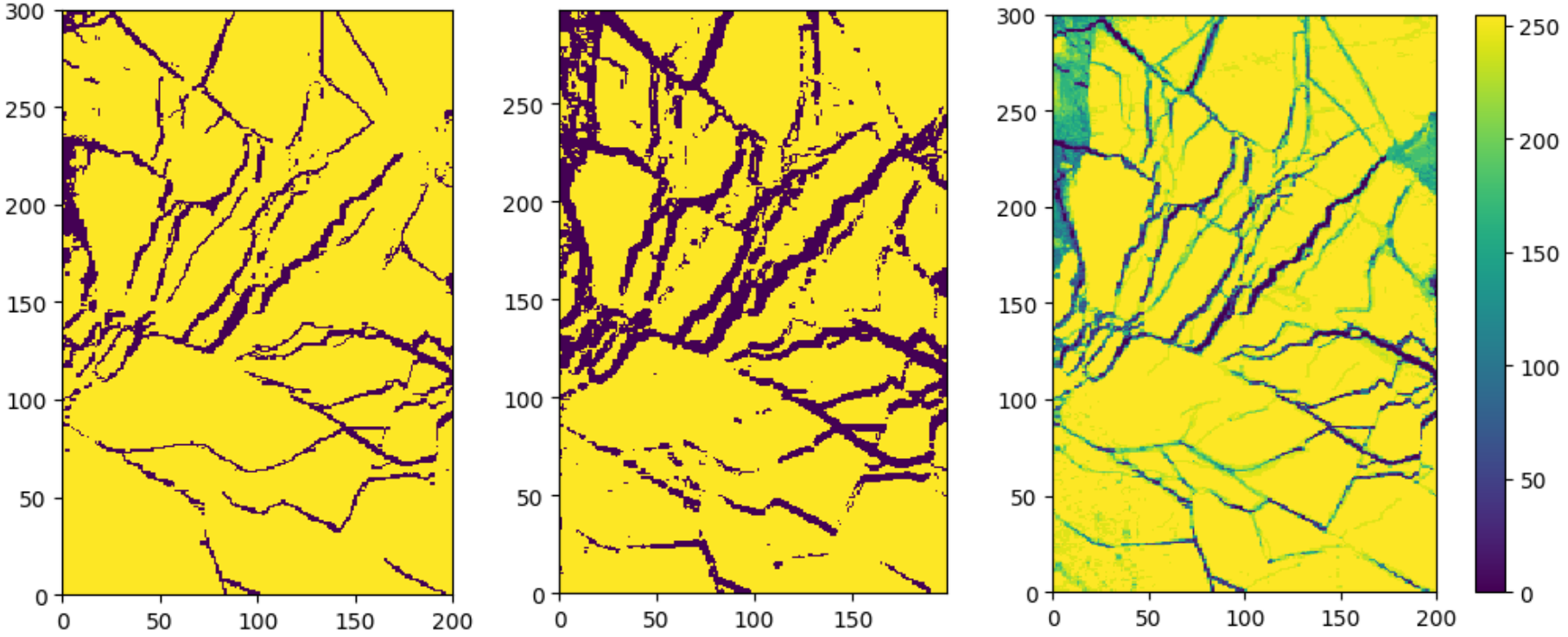


https://www.mdpi.com/2072-4292/12/12/1957#

How to observe leads / melt ponds etc



How to observe leads from space?



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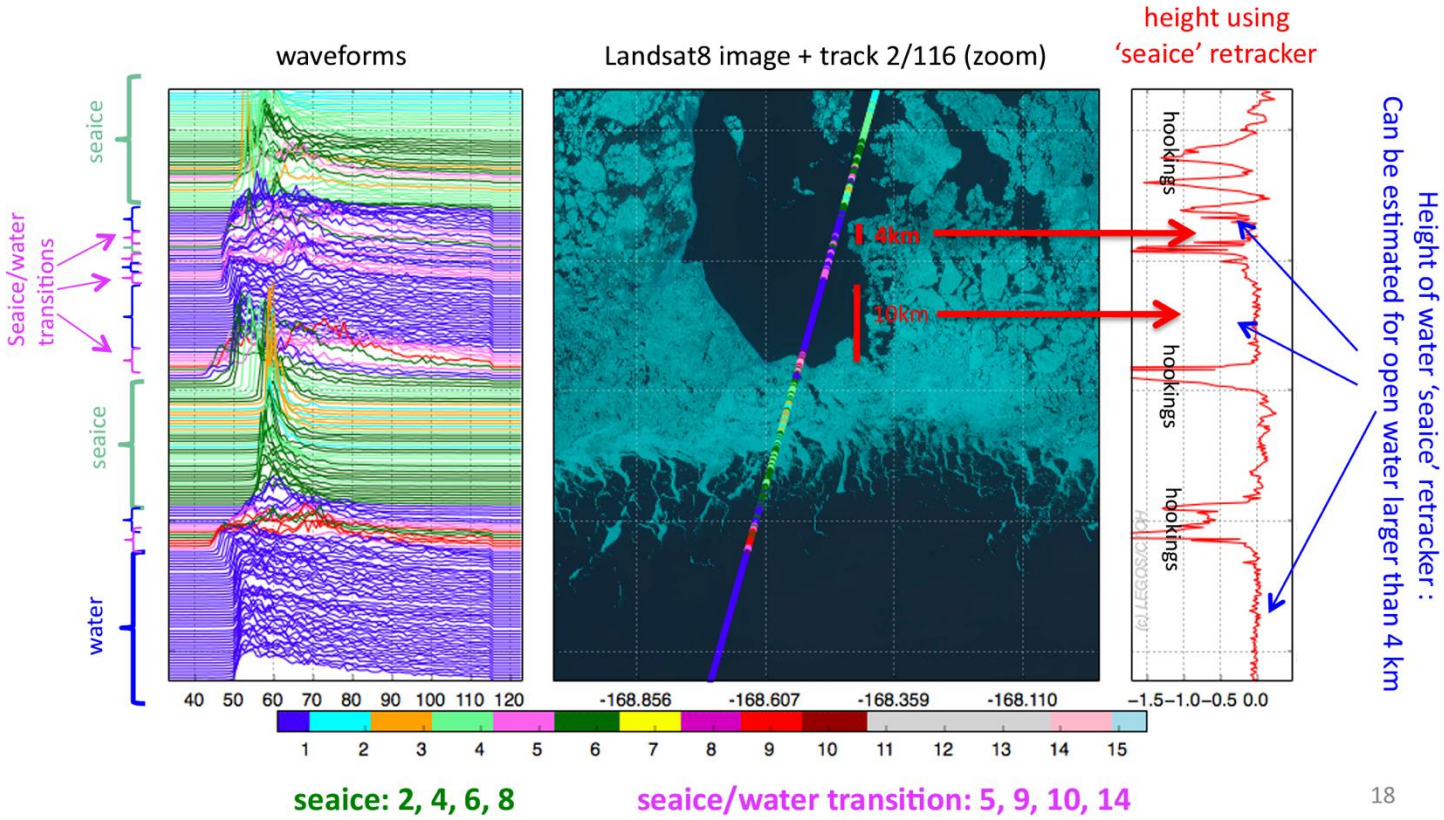

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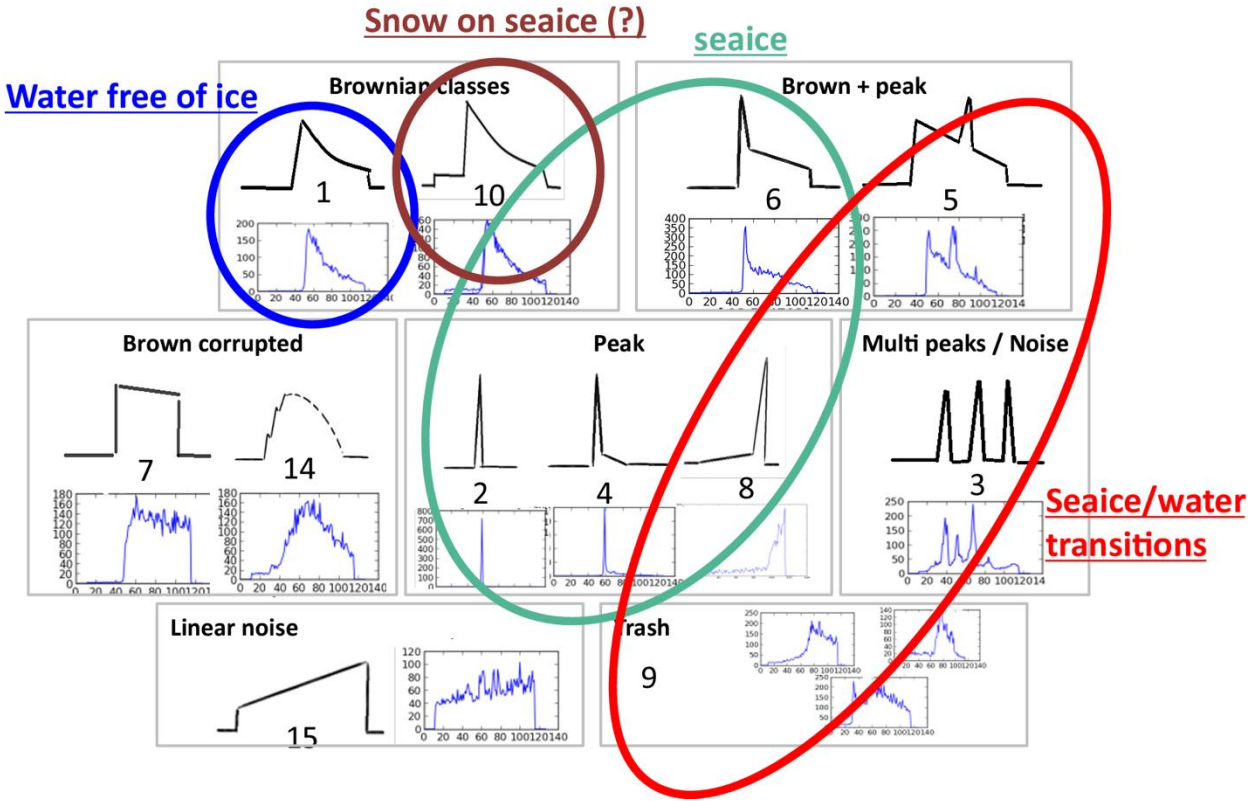
https://www.aviso.altimetry.fr/fileadmin/documents/ScienceTeams/Saral2014/24-04-2014/Session-13/SFleury_leads_detection.pdf

How to observe leads from space?



https://www.aviso.altimetry.fr/fileadmin/documents/ScienceTeams/Saral2014/24-04-2014/Session-13/SFleury_leads_detection.pdf

Attendance

Mentimeter -> student number