Collocating satellite data & unsupervised classification

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Overview

Part 1 – Collocating satellite data

- Many satellite layers
- Metadata rather than data
- Sea ice a moving target

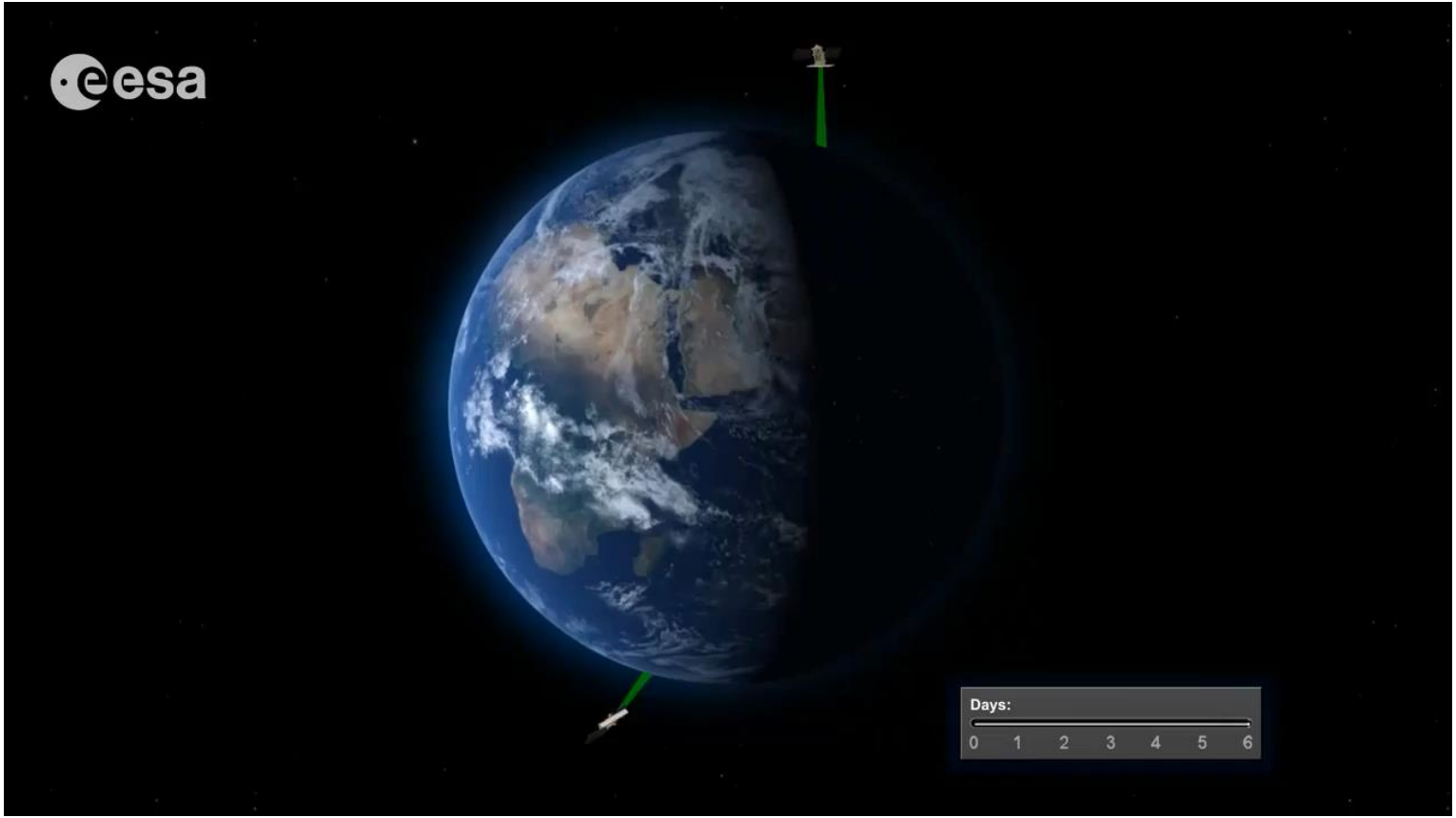
Part 2 – Unsupervised classification

- K-means algorithm idea
- Application to image classification
- Application to echo classification

Sentinel-2 global coveage

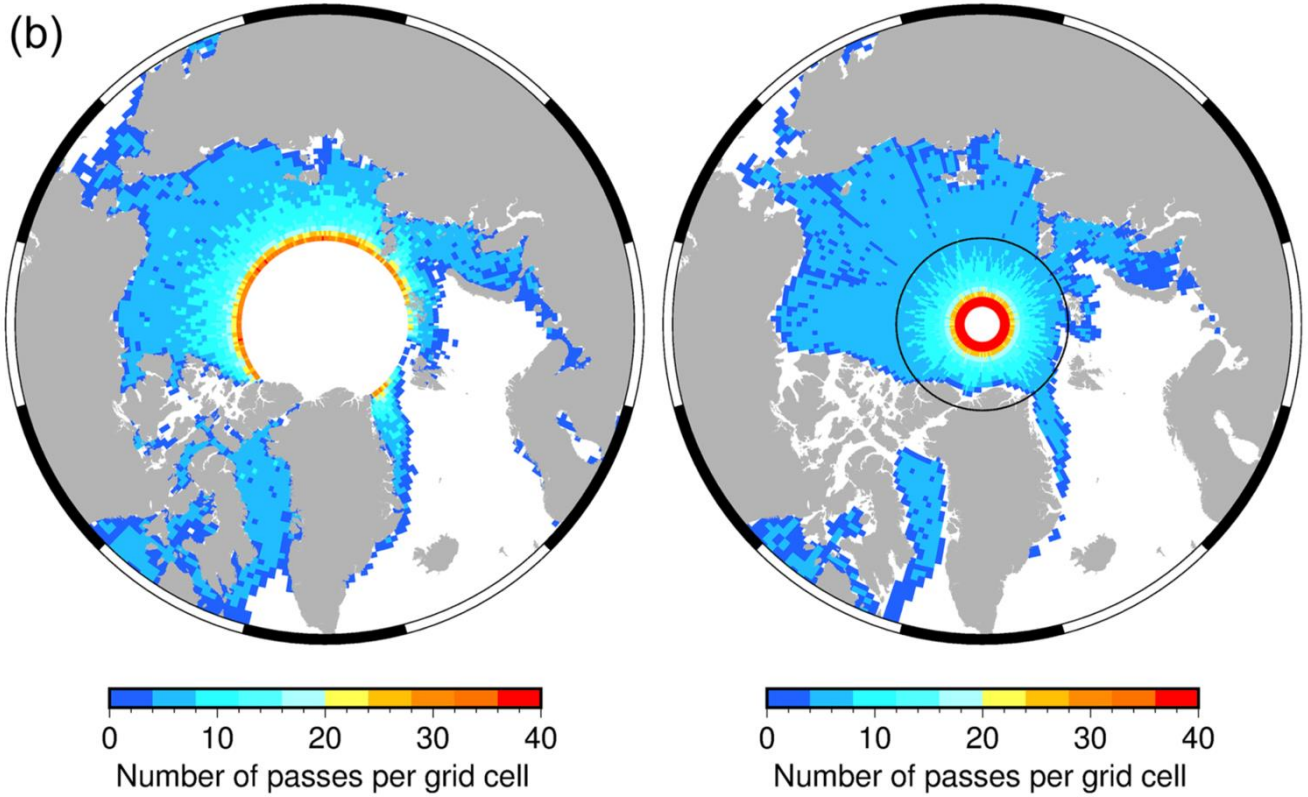
https://dlmultimedia.esa.int/download/public/videos/2016/08/004/1608_004_AR_EN.mp4

Sentinel-1 global coveage

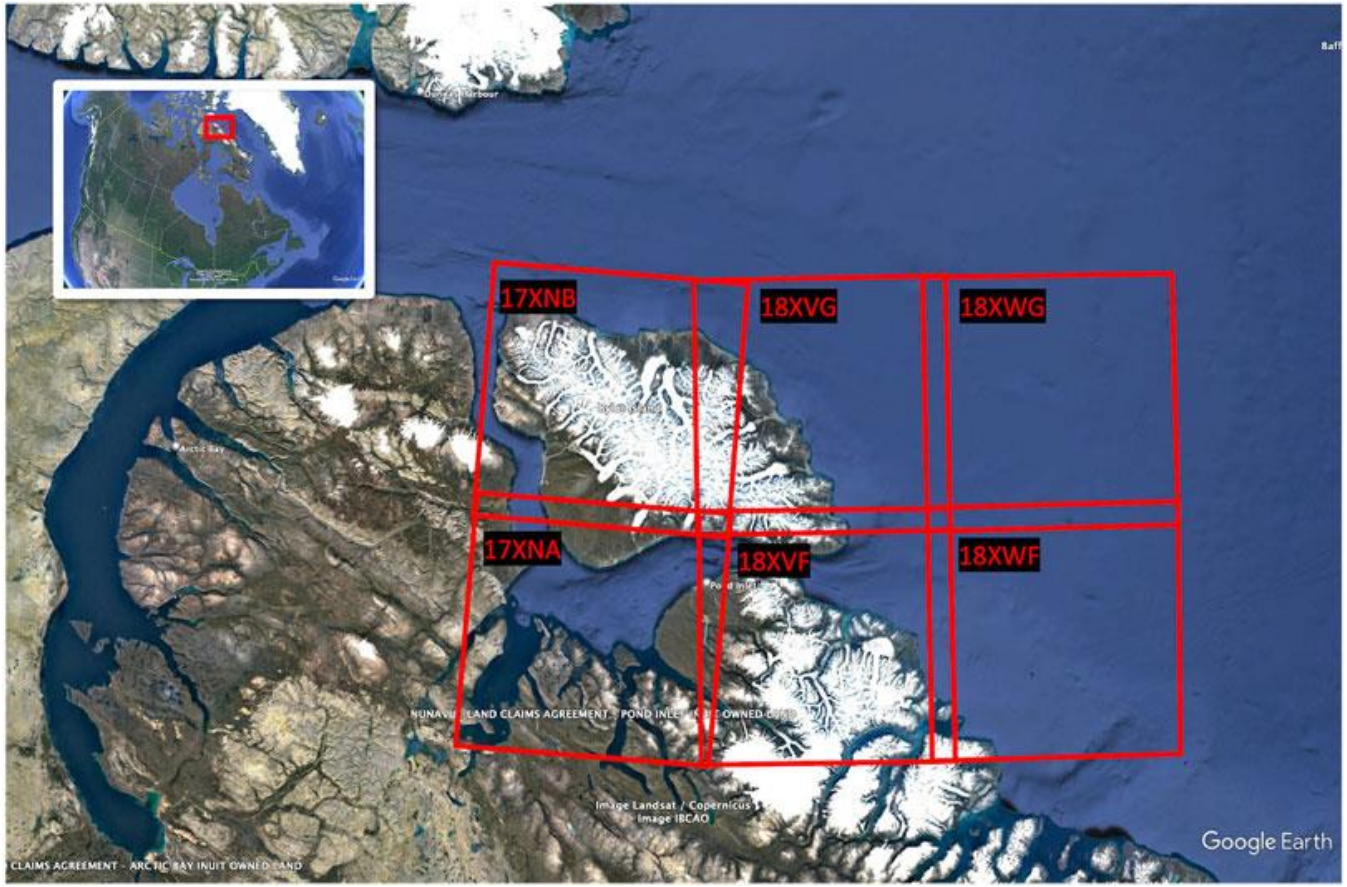


https://www.esa.int/esatv/Videos/2014/03/Sentinel-1_constellation

Density maps for CryoSat-2 and AltiKa



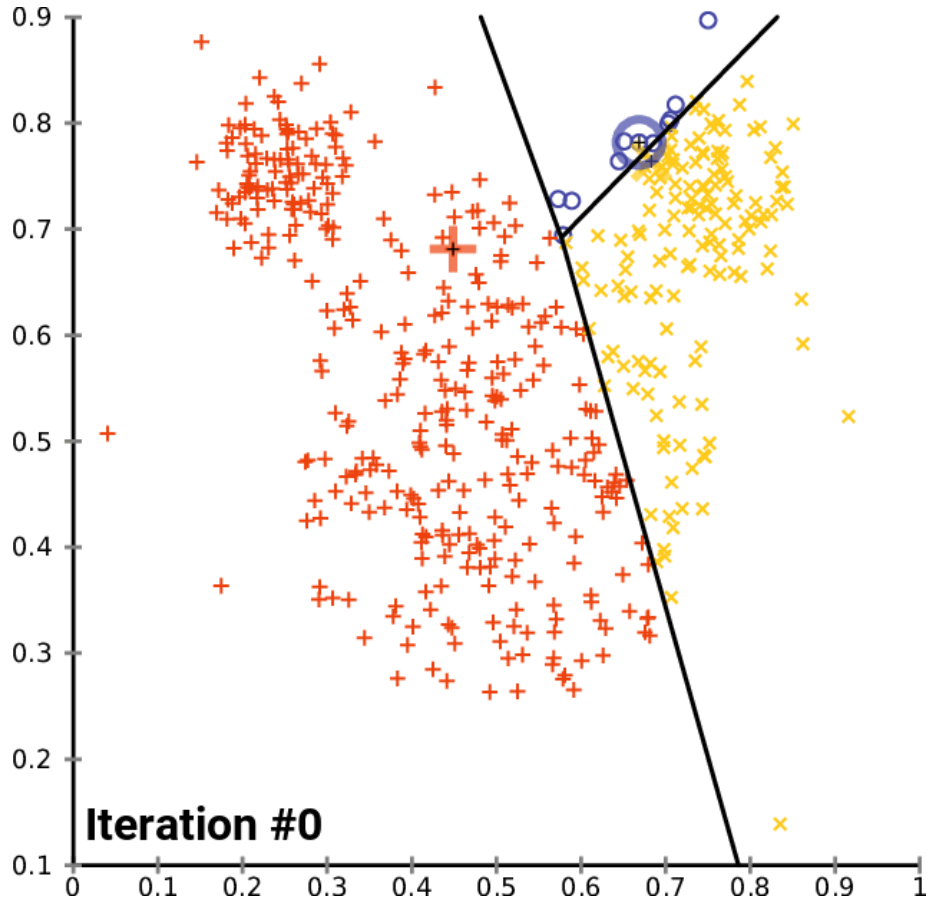
Lawrence et al, 2018



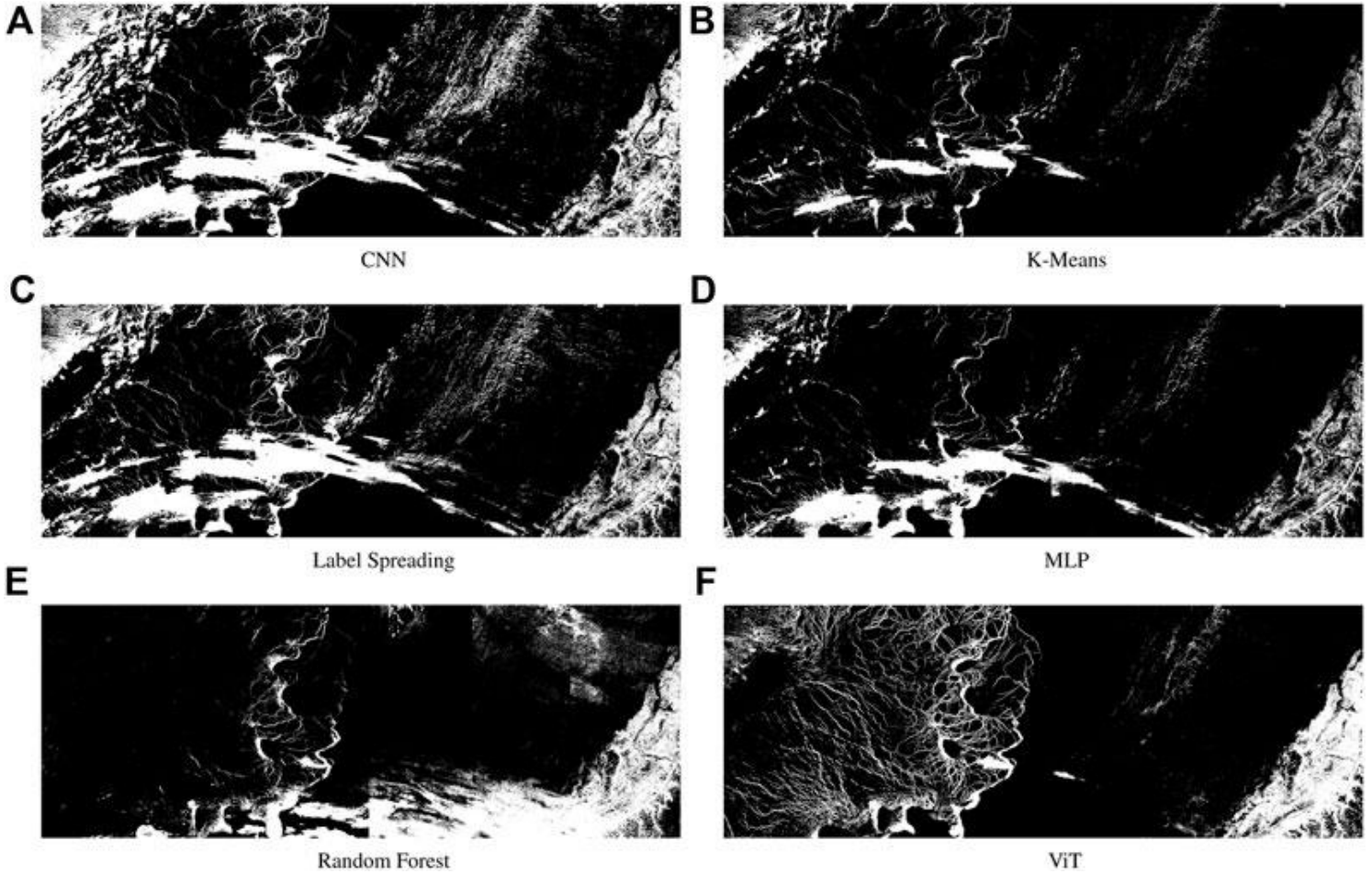
https://www.frontiersin.org/files/Articles/1417417/frsen-05-1417417-HTML/image_m/frsen-05-1417417-g001.jpg

K-means algorithm

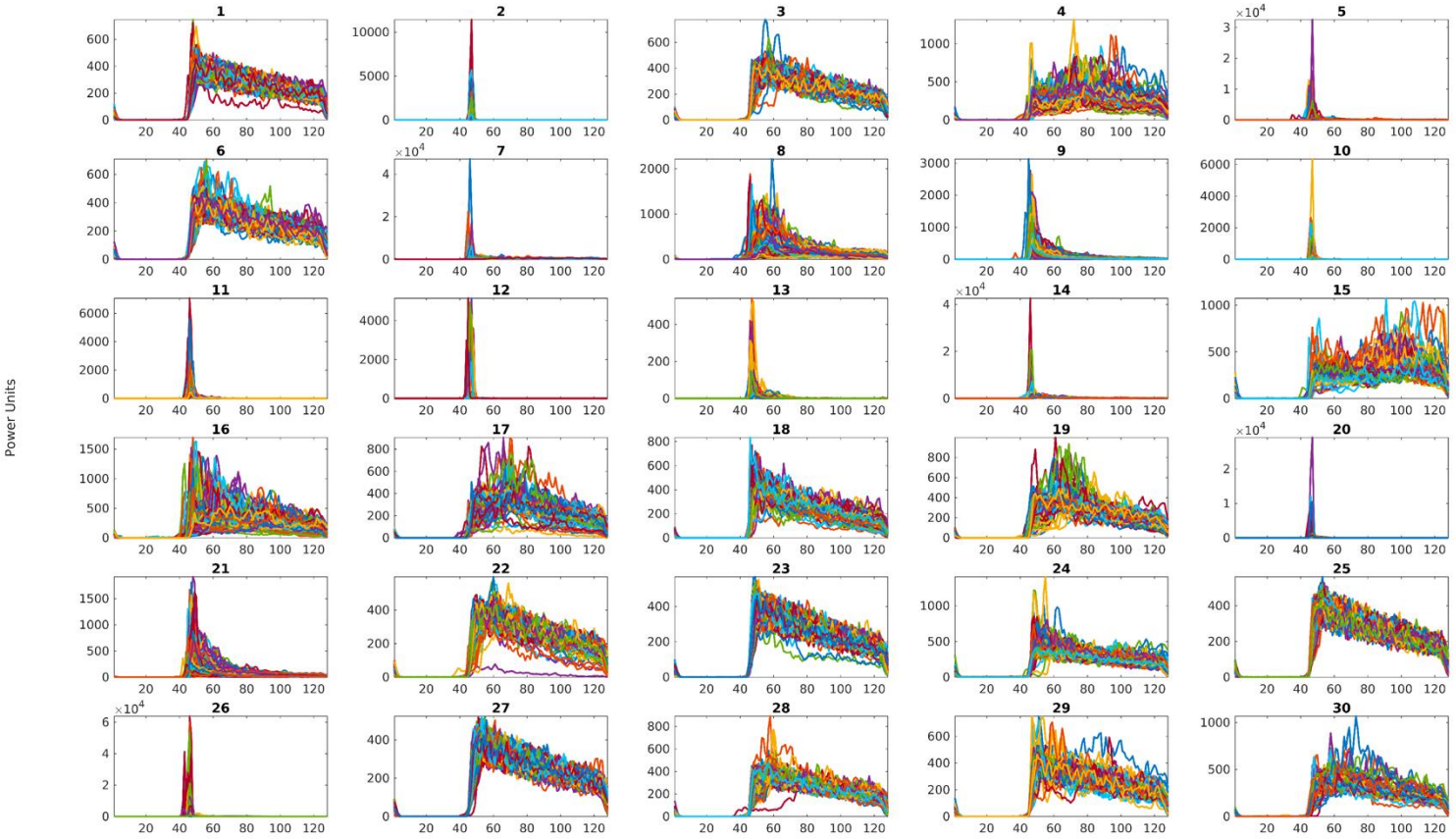
1.Plot Data
2.Select the number K to decide the number of clusters.
3.Select random K points or centroids. (It can be other from the input dataset).
4.Assign each data point to their closest centroid, which will form the predefined K clusters.
5.Repeat the fourth step, which means reassigning each data point to the new closest centroid of each cluster.



https://en.wikipedia.org/wiki/K-means_clustering



Chen et al 2024



Muller et al 2017