Building a machine learning model to map submerged aquatic vegetation in Chesapeake Bay using Landsat 8 satellite imagery

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Objectives:

- Colocate in-situ submerged aquatic vegetation (SAV) and 2019 Landsat 8 satellite imagery in Chesapeake Bay
- Train machine learning model to map SAV area and density
- Test on 2018 satellite imagery

Methods:

- *Google Earth Engine:* satellite data extraction
- *Python*: data preprocessing, analysis, machine learning
- *QGIS*: result visualization

Deliverables:

- Matched in-situ data with Landsat 8 satellite data
- Pytorch model tested on new satellite imagery

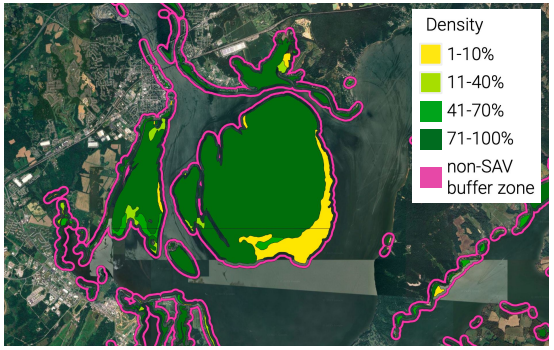

Fig. 1: Reference-indicated SAV used for training

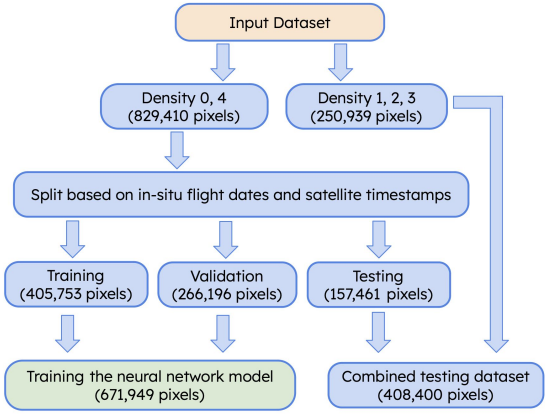

Fig. 3: Flow chart describing split of input data

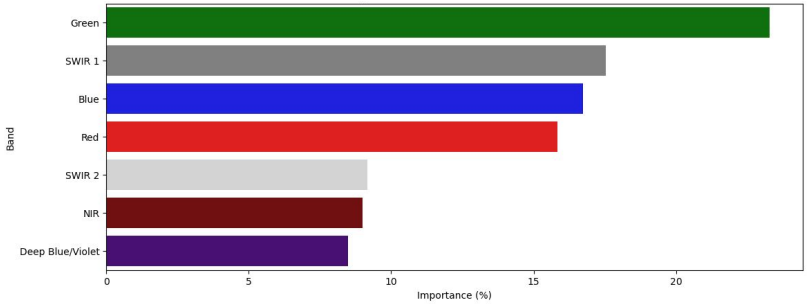

Fig. 2: Random Forest feature importance for each spectral band

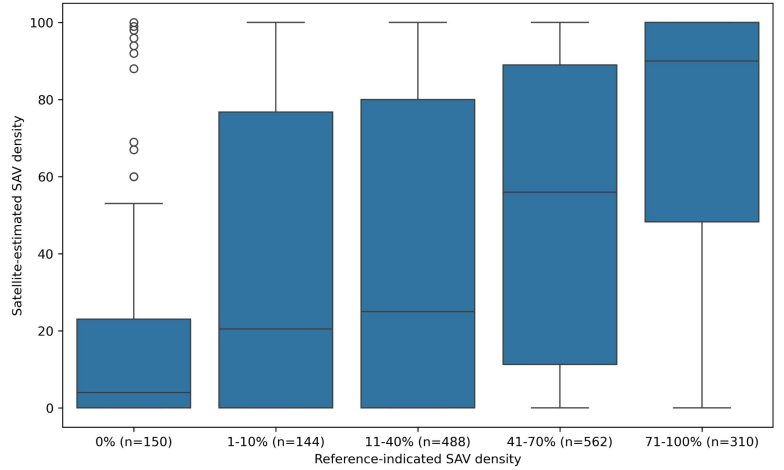

Fig. 4: Satellite- and reference-indicated SAV for five density classes