

Construction of a training dataset to discriminate aquatic surface cover types from space

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Objectives

Goal: To construct a training dataset to train a deep learning algorithm that can differentiate various aquatic cover types

Surface types of focus:

- Submerged aquatic vegetation
- Unvegetated shallow water and deep water
- Clouds
- Wetlands
- Land

Results

- Selected three study sites to collect data for training dataset: *Ireland, Australia, Chesapeake Bay*
- Will be used to develop deep learning algorithm that will use this work as training data to automatically identify aquatic surface cover types from satellite imagery
- Next steps include acquiring spectral radiance, expanding our time frame and potentially adding more study sites

Methods

1. Acquire and Prepare Field Data:

- Known seagrass locations and shapefiles from existing literature
- Landsat 8 imagery that corresponds to date of field data
- Project to correct coordinate system



2. Convert field data to points and add XY coordinates

3. Calculate Solar and Sensor Viewing Angles

- C code provided by USGS



4. Extract angle values at each pixel using R code



5. Finalize csv using Python

- Correct scaling
- Add variables such as date, field survey type, earth to sun distance, etc.