Tutorial 3. Predicting Chlorophyll-a from Sentinel-3 Reflectance

Tutorial 3.1. Preprocessing CBP Chlorophyll-a Data

3.1.1 Introduction

3.1.2 Load & Preview Raw Data

3.1.3 Filter and Process Data

3.1.4 Export Cleaned Surface Data

Tutorial 3.2. Preprocessing Sentinel-3 OLCI Level-2 Products

3.2.1 Introduction

3.2.2 Setup & Load CBP Dates

3.2.3 Setup EUMDAC Token

3.2.4 Define ROI and Output Folder

3.2.5 Downloading ±2 days Products

Tutorial 3.3. Extracting Sentinel-3 Reflectance Patches Matched with CBP Stations

3.3.1 Introduction

3.3.2 Setup and Load CBP In-situ Data

3.3.3 Extract Reflectance Patches

3.3.4 Visual Verification of Extracted Patches¶

Tutorial 3.4. Predicting Chlorophyll-a from Reflectance Patches

3.4.1 Introduction

3.4.2 Load Patch Index and Filter Valid Samples

3.4.3 Extract Reflectance Features and Derived Ratios

3.4.4 Train Random Forest and MLP Models

Exercise

Q1. Change the Cloud Masking Threshold

Q2. RF: Modify Random Forest Hyperparameters

Q3. MLP: Modify MLP Architecture

Q4. Performance on the Match up patches within ± 2 days