Hands on exercise for uploading training data set using Seagrass Trainer

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Hands on practice on Day 1

1. Download sample training data sets from the following link

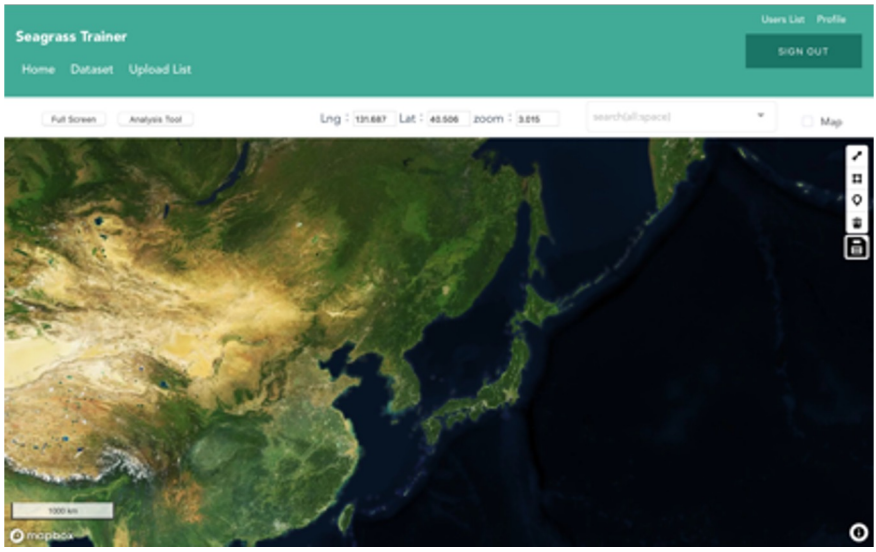https://u.pcloud.link/publink/show?code=kZhaoIXZg9Hswpf1JIuOhLy4d9Txxyf6Fekk

2. Upload downloaded sample data along with Seagrass Trainer User's manual page 19 to 24

https://mapseagrass.org/wordpress/wp-content/uploads/2021/06/Manual_SeagrassTrainer_eng_ver1.pdf
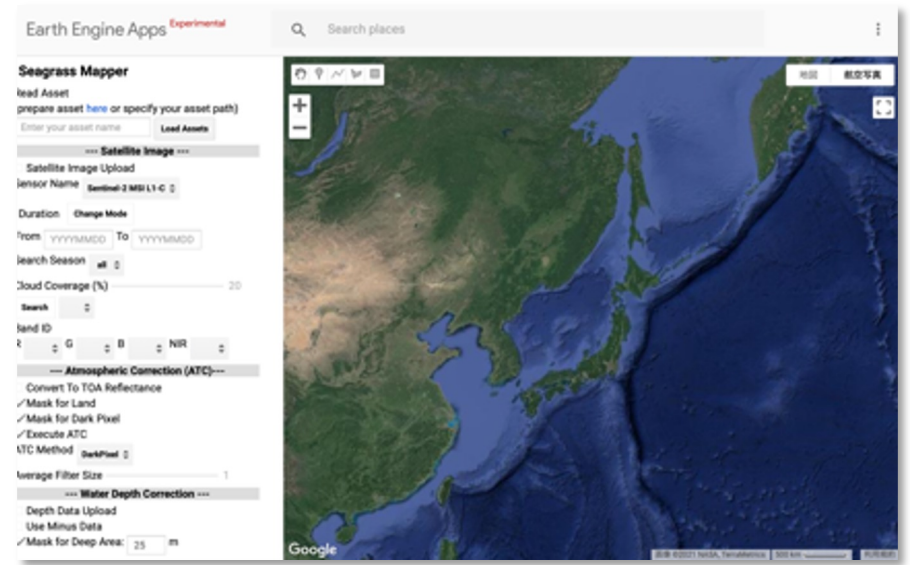
Roles of
Seagrass Trainer and Seagrass Mapper

Seagrass Trainer

Seagrass Mapper

Registering training data
for Seagrass Mapper

Mapping seagrass using
Google Earth Engine

Seagrass Trainer and Seagrass Mapper

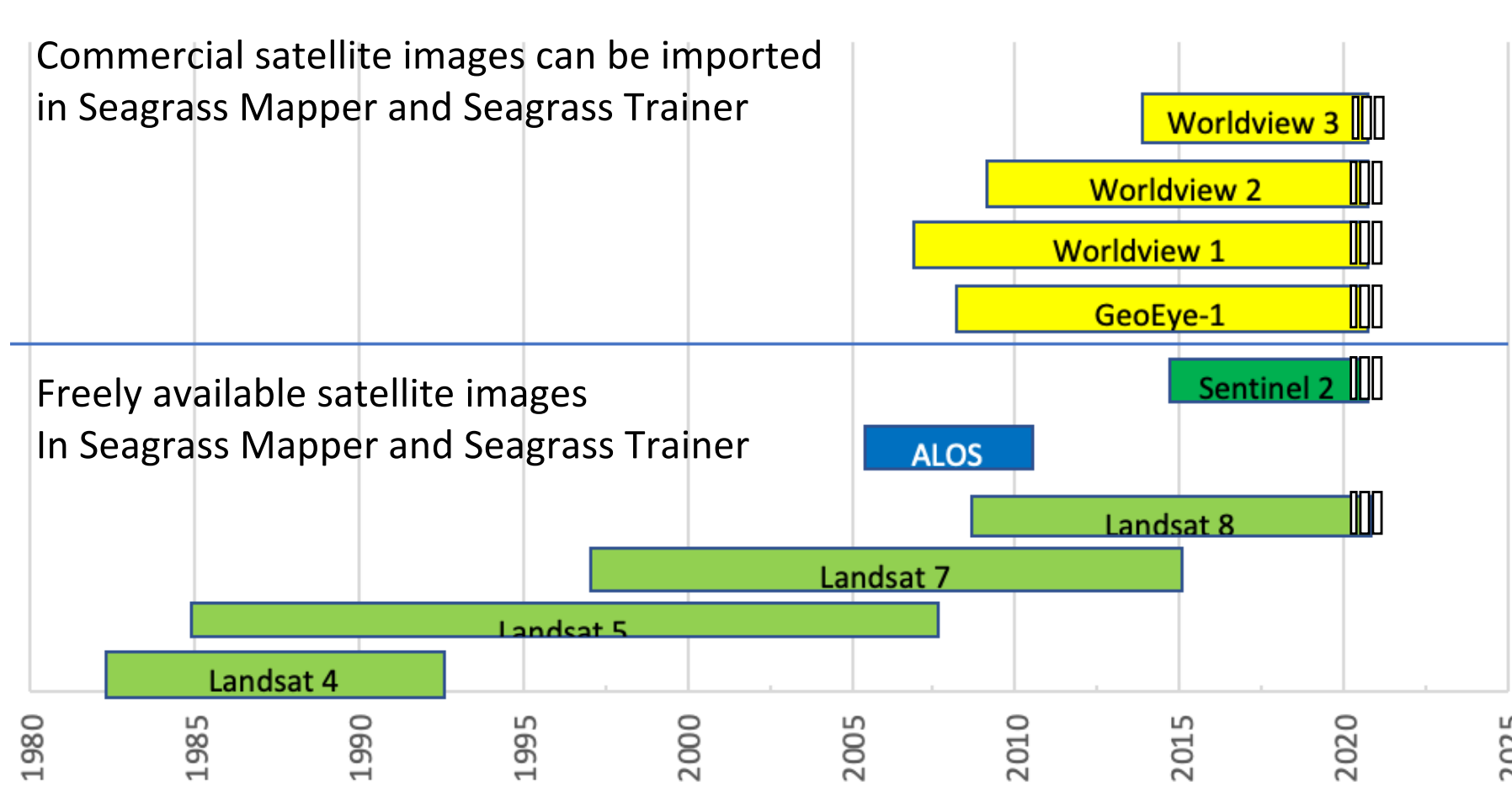|	Seagrass Trainer	Seagrass Mapper
Cloud platform	Amazon Webservice and Google Cloud Platform	Google Cloud Platform
Accessibility	Can be used in any countries	Cannot be used in China
Input files	Vector : csv, shape, kml/kmz Raster : GeoTiff	Vector : csv and shape Raster : GeoTiff
Output files	GeoTiff, csv	
Classification algorithm	Supervised classification: Random Forest, Decision Tree, SVM and Maxtent Non supervised classification: WEKA K-means	
Other features	Non interactive (order based)	Interactive mapping

Necessary data for mapping seagrass with Seagrass Mapper and Seagrass Trainer (1/2)

Data kind	Information	Data type	File format	Necessary or not	Can be prepared with Seagrass Trainer
Satellite Image	satellite images	raster	tif	required	Yes
Satellite Metadata	metadata of satellite images	metadata file which comes with satellite image	xml, imd	required when uploading satellite images	Yes
AOI	data for area of interest (AOI)	vector (polygon)	shp, kml, kmz, csv, geojson	required	Yes
Training for ATC	training data for atmospheric correction (ATC)	vector (polygon)	shp, kml, kmz, csv, geojson	required for ATC, land masking, and/or dark pixel masking	Yes

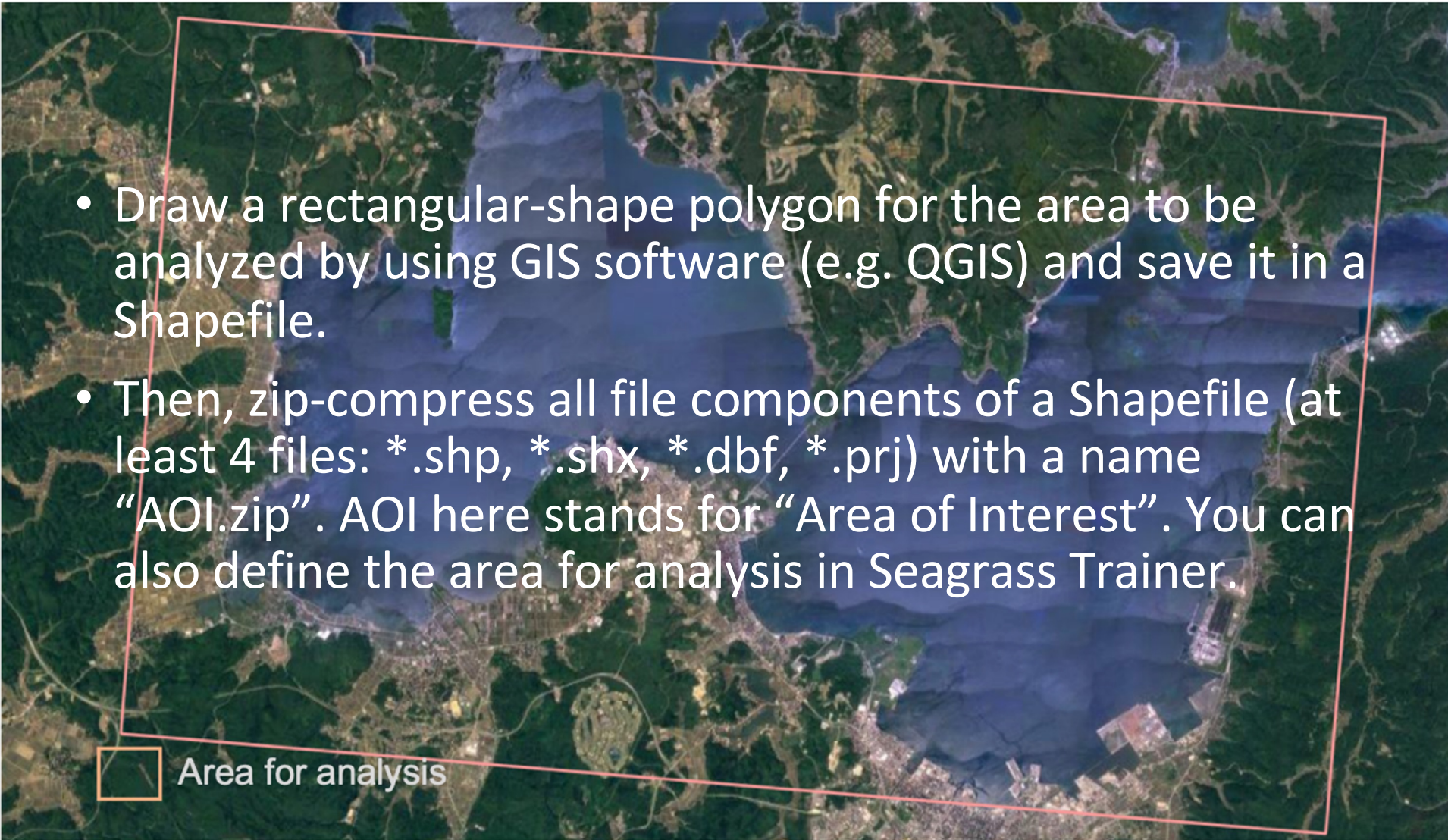# Necessary data for mapping seagrass with Seagrass Mapper and Seagrass (2/2)

Data kind	Content	Data type	File format	Necessary or not	Can be prepared with Seagrass Trainer
Training for WCC	training data for water column correction (WCC)	vector (polygon)	shp, kml, kmz, csv, geojson	required for WCC.	Yes
Training for Classification	training data for supervised classification	vector (polygon or point)	shp, kml, kmz, csv, geojson (separate file for each class)	required for classification	Yes
Depth / Bathymetry	water depth / bathymetry	raster	tif	required for WCC (BRI method), water depth correction, and/or masking by water depth	
Tidal level	Tidal level	text	csv	required for tidal level correction with user's own data[*3]	

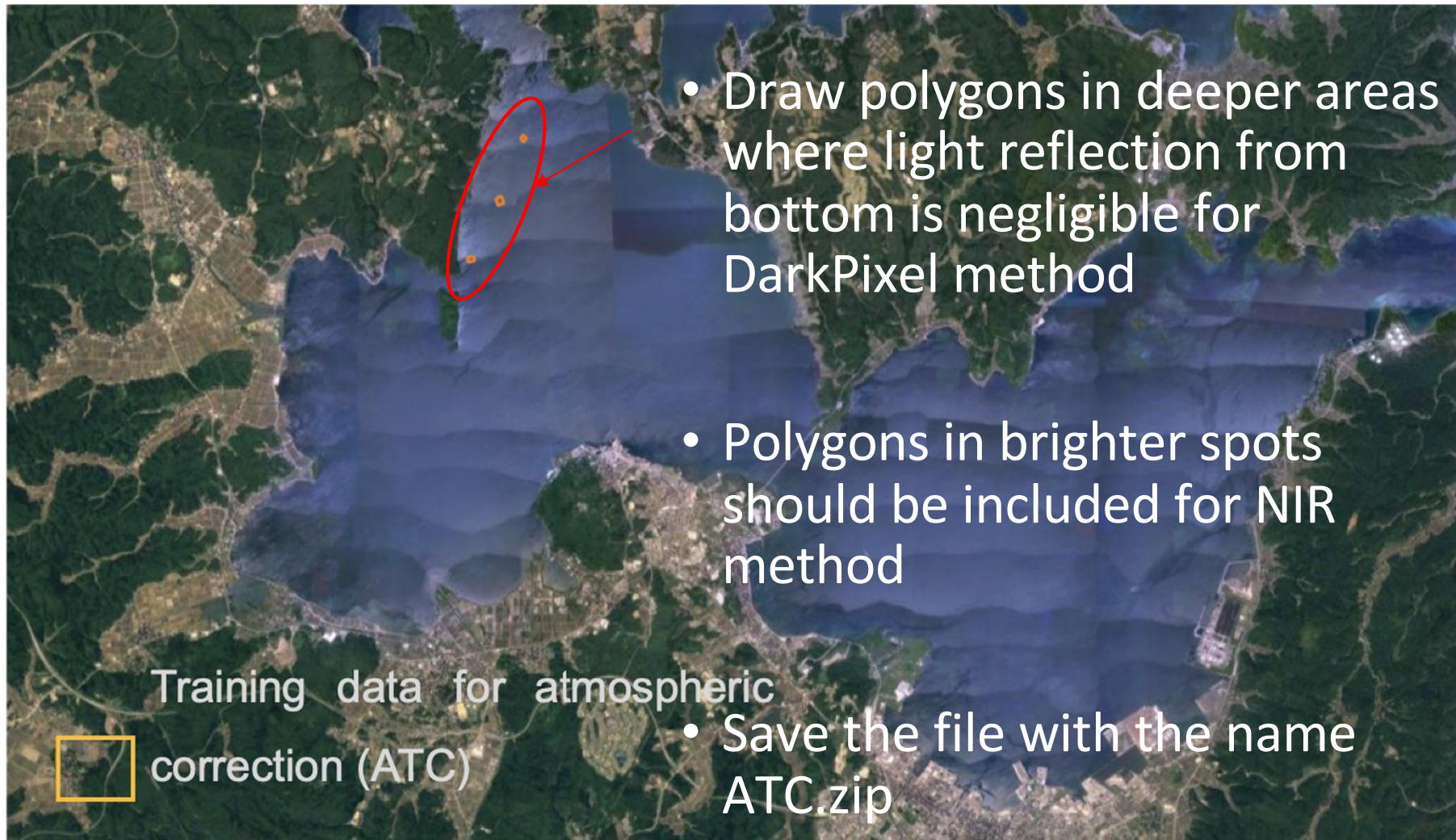# Satellite images can be used for mapping seagrass using Seagrass Trainer and Seagrass Mapper

Commercial satellite images can be imported
in Seagrass Mapper and Seagrass Trainer

Worldview 3

Worldview 2

Worldview 1

GeoEye-1

Freely available satellite images
In Seagrass Mapper and Seagrass Trainer

Sentinel 2

ALOS

Landsat 8

Landsat 7

Landsat 5

Landsat 4

1980 1985 1990 1995 2000 2005 2010 2015 2020 2025

How to prepare AOI data

- Draw a rectangular-shape polygon for the area to be analyzed by using GIS software (e.g. QGIS) and save it in a Shapefile.

- Then, zip-compress all file components of a Shapefile (at least 4 files: *.shp, *.shx, *.dbf, *.prj) with a name "AOI.zip". AOI here stands for "Area of Interest". You can also define the area for analysis in Seagrass Trainer.
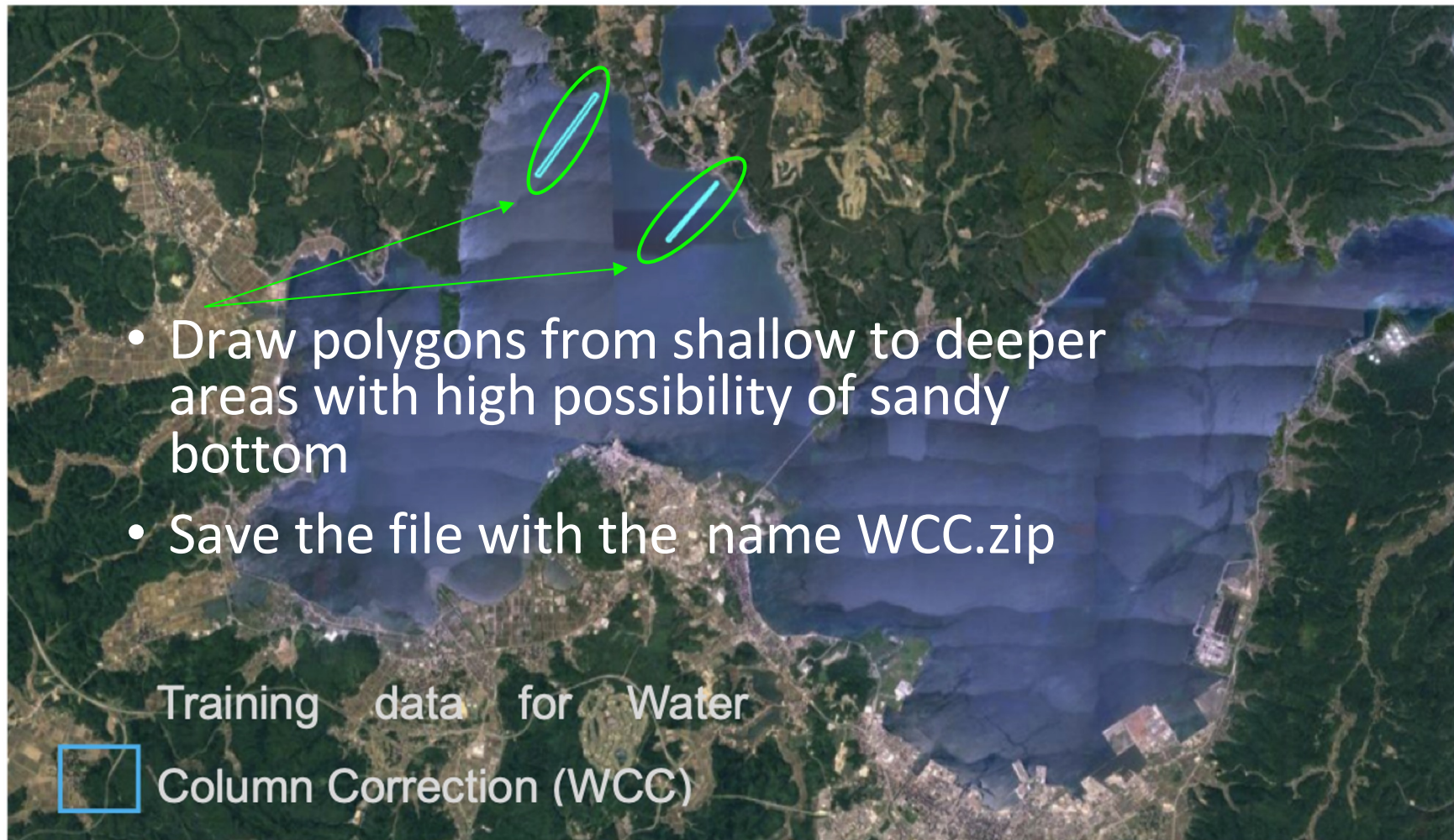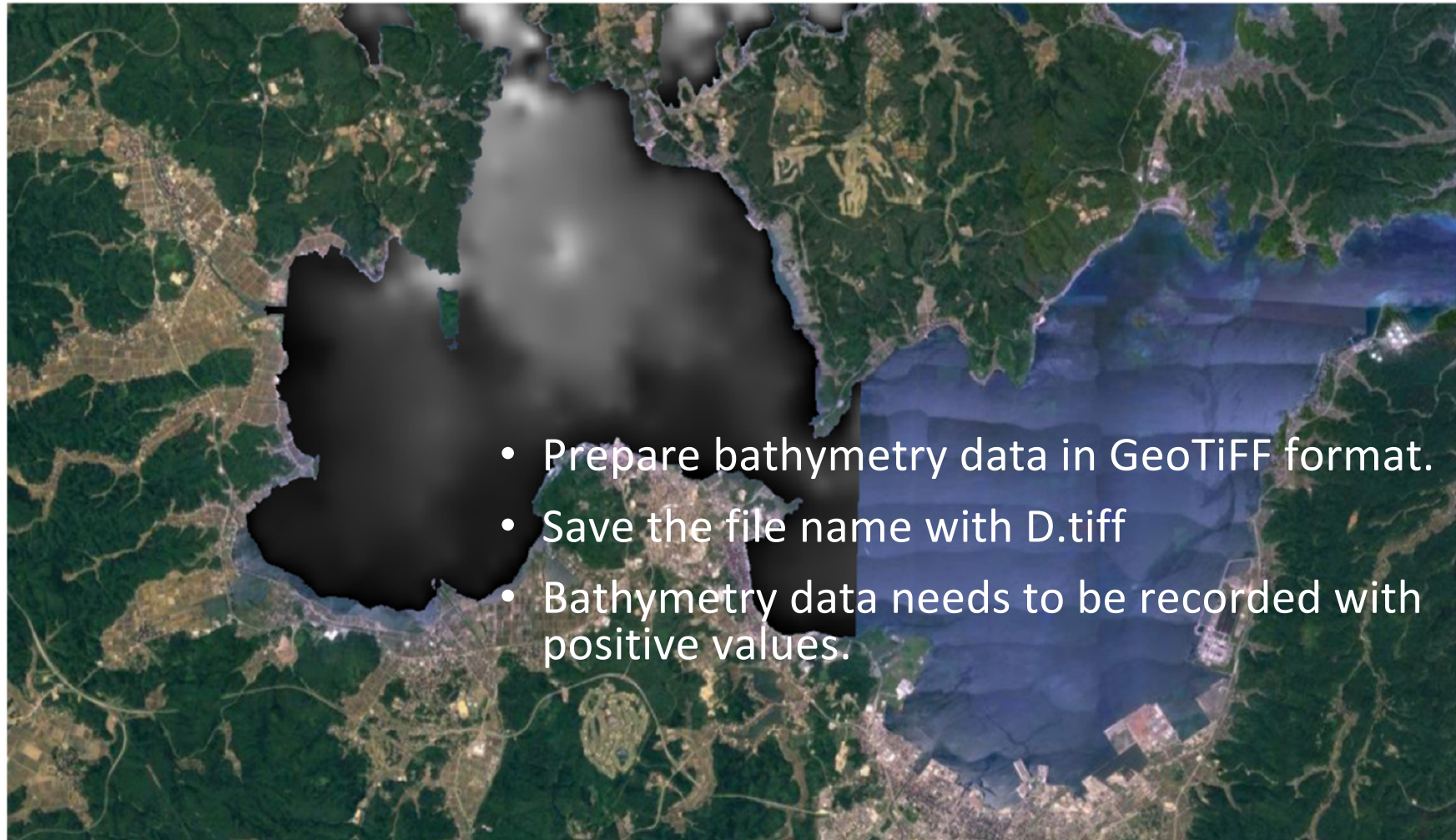
Area for analysis

How to prepare training data for atmospheric correction

- Draw polygons in deeper areas where light reflection from bottom is negligible for DarkPixel method

- Polygons in brighter spots should be included for NIR method

- Save the file with the name ATC.zip

Training data for atmospheric correction (ATC)

How to prepare training data for water column correction

- Draw polygons from shallow to deeper areas with high possibility of sandy bottom

- Save the file with the name WCC.zip

Training data for Water

Column Correction (WCC)

Preparing bathymetry data

- Prepare bathymetry data in GeoTiFF format.
- Save the file name with D.tiff
- Bathymetry data needs to be recorded with positive values.

Defining areas for estimating size of seagrass habitats

- Draw a polygon for the area to calculate each substrate class by using GIS software (e.g. QGIS) and save it in a Shapefile.

- Save the file with the name Area.zip

  (Currently not available in Seagrass Trainer)

Preparing data for supervised classification

- Prepare data for each seafloor substrate class with different file names Train_CLS# (# = numbers)

- For instance,

    Train_CSL1 = Dense Seagrass

    Train_CSL2 = Seaweed

    Train_CLS3 = Sand
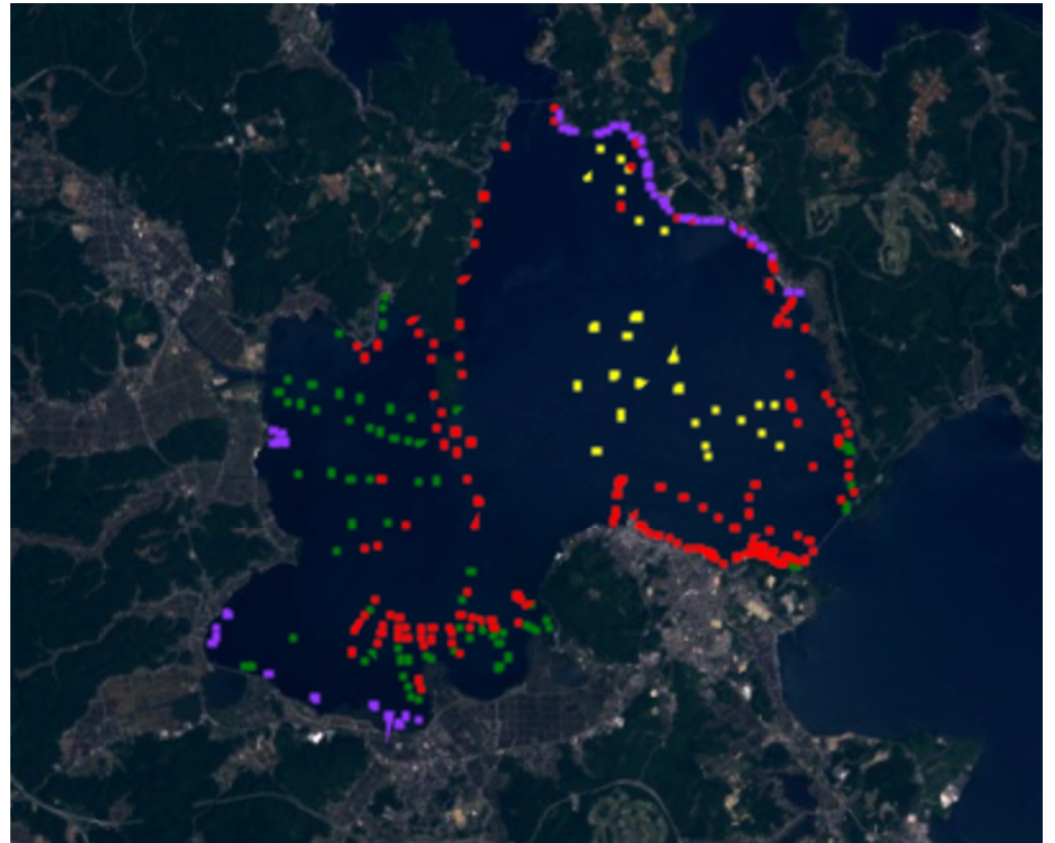
How Seagrass Mapper reads training data

Asset = a person or thing that is valuable or useful to somebody/something   (Oxford Learner's Dictionaries)

Seagrass Mapper asset is associated with "mapseagrass@gmail.com" Google account

https://mapseagrass.users.earthengine.app/view/seagrassmapper

Registering training data by Seagrass Trainer

- Prepare training data in shp, kml, kmz, csv and geojoson data format

- Accessing Seagrass Trainer

- Uploading training data

Checking asset folder name to read in Seagrass Mapper

- Training data will be registered into folders called "asset"

- After uploading all prepared data, press "Analysis tool" to check asset name

- asset folder name is automatically created as "User ID_YYMMDDHHMMSS" (indicating the year/month/day/hour/minute/second of signing in).
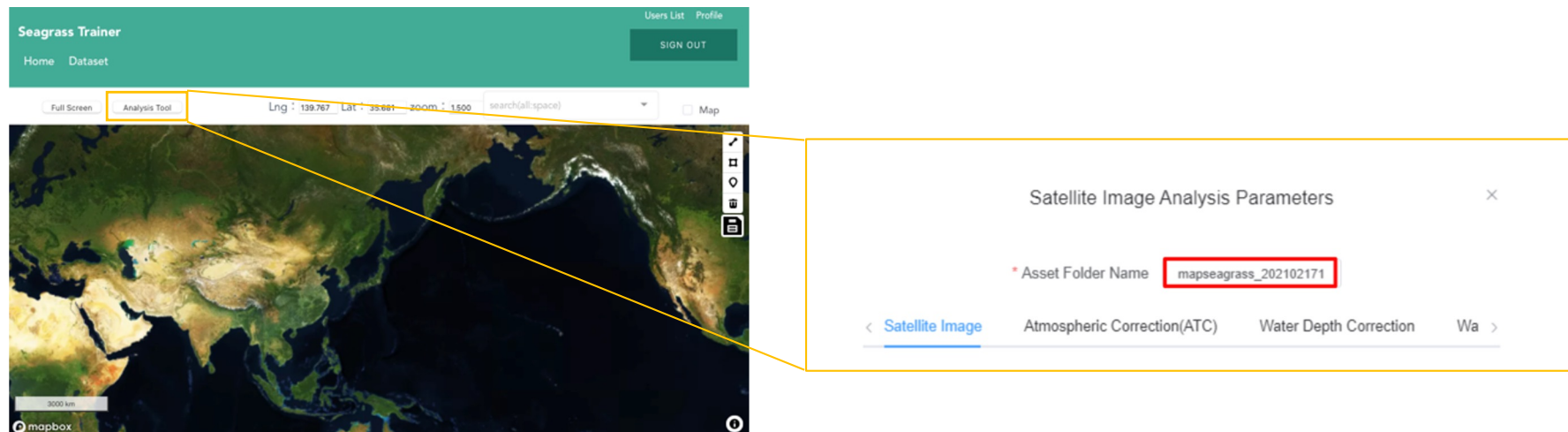
HOW asset information look like inside Seagrass Mapper