Automating and improving SDB with the development of an interactive GUI which utilizes on-going NOAA research

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Background

After many years of research, NOAA has created a desktop SatBathy tool beta v.1.0.1 which is designed to provide quick results utilizing recent research from Dr. Isabel Caballero and Dr. Richard Stumpf for the coastal waters of the U.S.

Objective

The objective of NOAA's SatBathy project is to expand upon prior NOAA research where an initial SDB algorithm was adapted from MATLAB to Python and combined with scripts to automate image collection and atmospheric correction.

Method

While NOAA's SatBathy tool is still in its research phase, SatBathy is a hybrid web/desktop tool and consists of open source technologies. It utilizes 10-meter resolution satellite imagery from the Copernicus Sentinel-2 mission, Python scripts for image collection and filtering, and the ACOLITE atmospheric correction processor.

Its interactive graphical user interface (GUI) gives users the ability to create AOIs on-the-fly, query and preview imagery from different time periods, adjust for cloud coverage, review image metadata, and generate SDB products.

Results

Results produced by SatBathy include "pseudo" and final bathymetry, a first order approximation of uncertainty, and turbidity proxy products -- chlorophyll and red-edge composites.

Discussion

A recent addition to the beta version has been the implementation of a method to clip SDB data to the optical extinction depth. Users may either visualize the products within the SatBathy tool or export the GeoTIFF results into any GIS software of their choice.