

NASA Community Processor for In Situ Radiometry Released

The Hyperspectral In situ Support for PACE mission (HyperInSPACE) software package was released in March for public distribution. The package is designed to facilitate processing of ocean color radiometry from automated sensors mounted on ships or towers for the purpose of satellite data validation and ocean color algorithm development.

Radiometry from autonomous platforms is especially beneficial in retrieving ocean color and related products over large temporal and spatial scales. This provides high data density for algorithm development as well as more opportunities for good quality, cloud-free matchups with satellite overpasses. However, continuous observations are more prone to negative impacts from less-than-ideal conditions including wind and waves, cloud cover, challenging solar-sensor geometries, platform shadow/reflection, etc. HyperInSPACE was developed by NASA's Ocean Ecology Laboratory to provide a means of applying rigorous quality controls to autonomous radiometry as well as highly customizable methods for key processing elements such as sun/skyglint removal in accordance with the latest IOCCG protocols and state-of-the-art methods in the literature. It includes options for fully hyperspectral glint correction with polarization terms, calculates uncertainties in primary and secondary products, produces a detailed report with data visualizations, retains all processing parameters for later reference, and can convolve hyperspectral output to various satellite sensor wavebands.

The software was designed as an open-source package in Python to provide a fully transparent and adaptable interface for users. This will simplify community collaboration for incorporating new instrument platforms, new quality control filters, new glint and residual reflectance correction methodologies, new ocean color products, etc. The software includes a simple GUI with interactive data visualizations to help in choosing the best processing configuration for each data file. Level-2 processed radiometry can be output in various formats including files ready for submission to NASA's SeaWiFS Bio-optical Archive and Storage System (SeaBASS).

The complete repository and detailed guide are available for download on the NASA GitHub site: <https://github.com/nasa/HyperInSPACE/>