Support for the evolution of IOP retrievals in the PACE era
Lachlan McKinna\textsuperscript{a,b,}\textsuperscript{*}, Ivona Cetinic\textsuperscript{b,c}, and Jeremy Werdell\textsuperscript{b}

IOPs and Ocean Carbon From Space
Satellite-derived inherent optical properties (IOPs; spectral absorption and scattering coefficients) are used as inputs to models that estimate marine parameters such as: primary productivity, particulate organic carbon, and phytoplankton community composition.

The continual improvement of IOP algorithms (\textit{diagram to the right}) is thus critical to the study of ocean carbon.

The PACE Mission
NASA's Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) mission will carry the first dedicated global hyperspectral ocean color radiometer, the Ocean Color Instrument (OCI), as well as two multi-angle polarimeters (SPEXOne and HAPR2). PACE is scheduled to launch in early 2024.

For the PACE era, NASA will extend beyond legacy IOP algorithms and consider innovative methods that take advantage of PACE’s advanced capabilities.

Table 1: Required OCI IOP Data Products

<table>
<thead>
<tr>
<th>Data Product</th>
<th>Resolution/Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phytoplankton absorption (400 – 600 nm) [m$^{-1}$]</td>
<td></td>
</tr>
<tr>
<td>Non-algal particle plus dissolved organic matter absorption (400-600 nm) [m$^{-1}$]</td>
<td></td>
</tr>
<tr>
<td>Particulate backscattering coefficient (400 – 600 nm) [units: m$^{-1}$]</td>
<td></td>
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</tbody>
</table>

Uncertainties for each IOP data product are also to be produced.

Acknowledgments
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References:

Additional Reading:
Data Maturity Levels | Science Mission Directorate
PACE_Validation_Plan_DRAFT_version_13July
NASA PACE - Science and Applications Team

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