

Spatiotemporally-based PACE algorithms for improved optically shallow water retrievals

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PACE³ meeting

2 February 2025

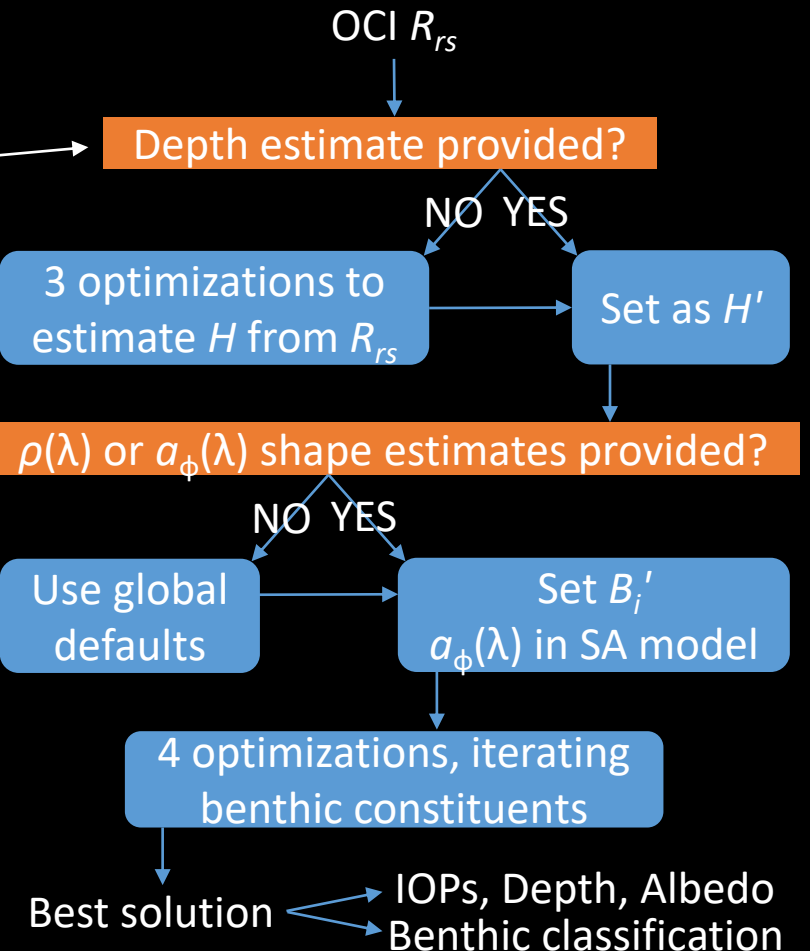
Optically shallow waters



PACE-OSW (SAT-2)

- 1) Initial depth estimate is critical ($\sigma < 4\text{m}$)
- 2) Benthic albedo initial estimate unknown
- 3) Fixed phytoplankton absorption shape
- 4) Limited validation

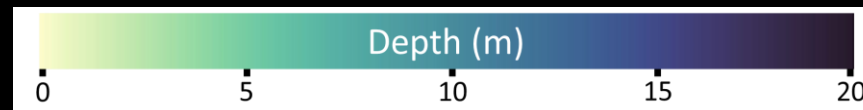
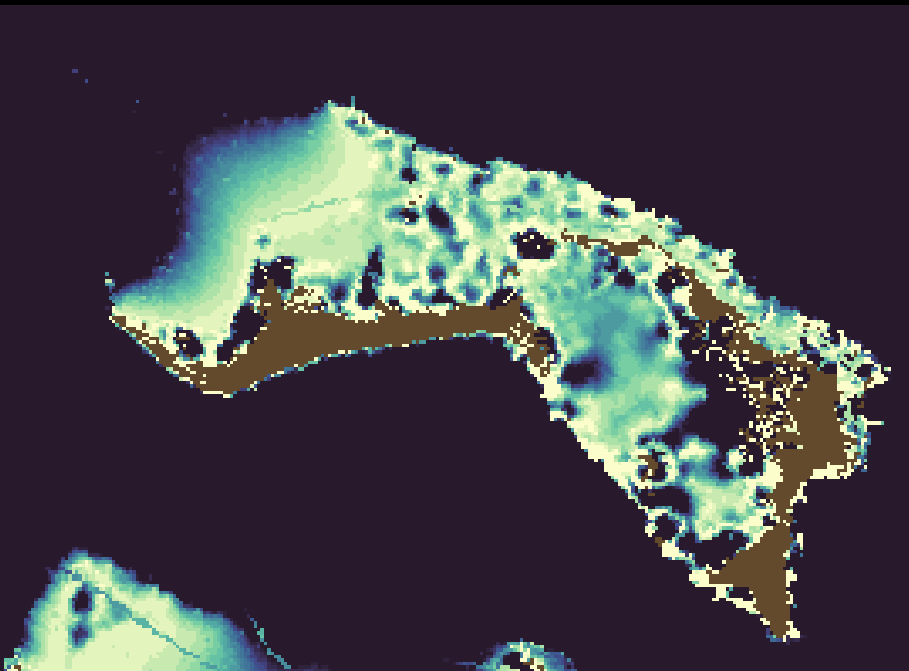
Leverage accumulating OCI dataset to improve PACE-OSW



Initial depth estimate

GEBCO

PACE-OSW



Product Application



NOAA Satellite and Information Service
National Environmental Satellite, Data, and Information Service (NESDIS)

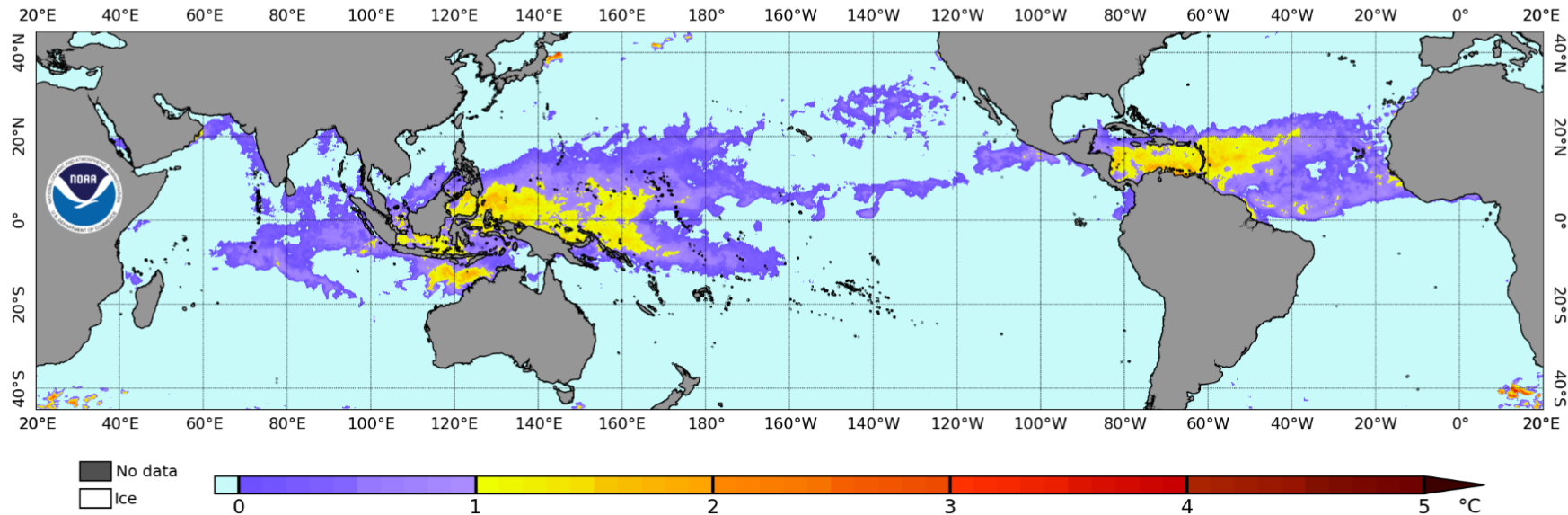


Coral Reef Watch

DOC → NOAA → NESDIS → STAR → CRW

[USCRTF](#) [CRCP](#) [NCRMP](#) [CoRIS](#)

NOAA Coral Reef Watch Daily 5km HotSpots (v3.1) 13 Nov 2024



Current Daily Variables:

Alert Area (7-day max)

DHW

HotSpot

SST

SST Anomaly

SST Trend (7-day)

Project summary

- PACE-OSW derives IOPs, depth, albedo
- Improvements using accumulating OCI data:
 - Global OSW bathymetry
 - Global OSW benthic albedo
 - Global OSW $a_{\phi}(\lambda)$
- Seasonality in benthic albedo and $a_{\phi}(\lambda)$
- Validation with PVST data (and others)
- Data distribution

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