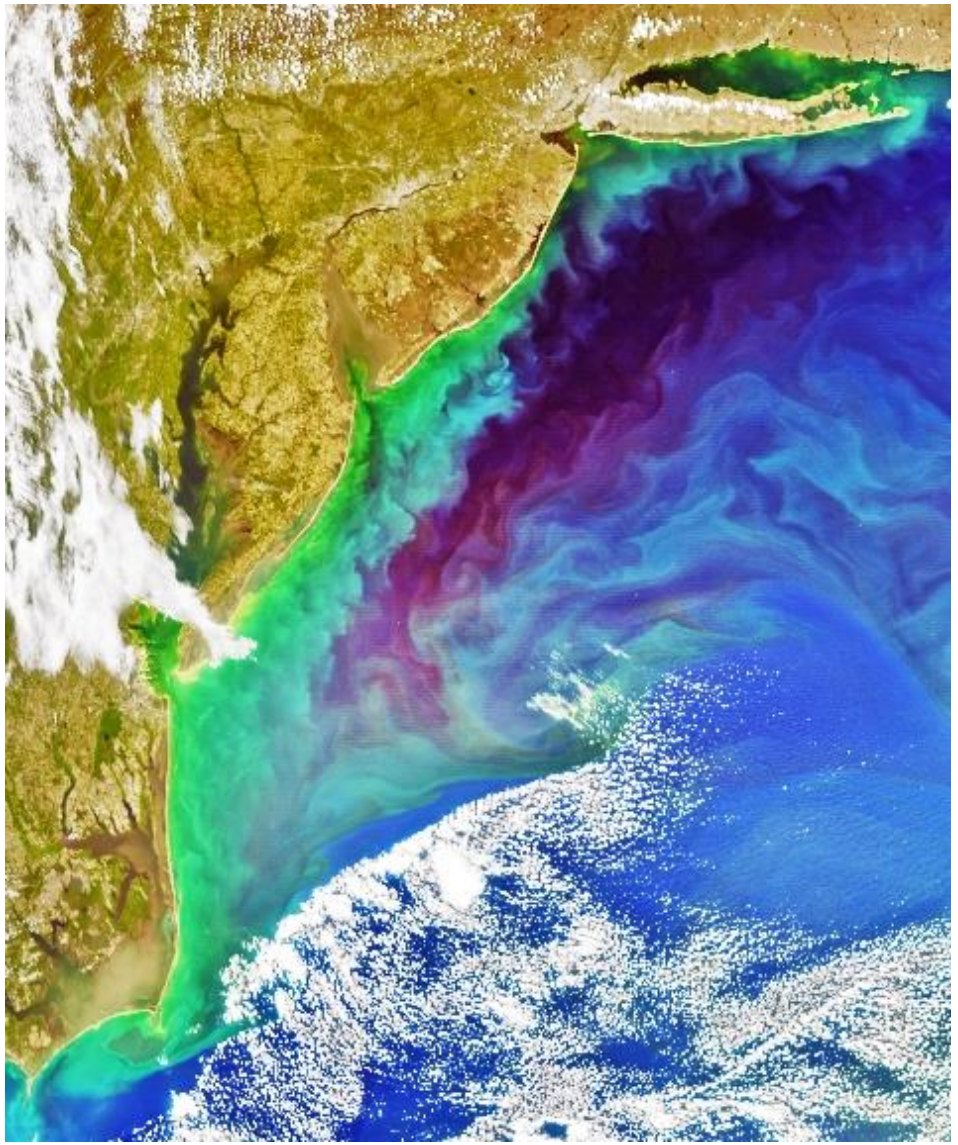
PACE Community of Practice Quarterly Telecon

January 30th, 2025

Welcome!

- **Asking questions today**
  - Mics are muted
  - Type questions in the chat
  - Will answer at end of each talk (time permitting)

- **Agenda**
  - *Annual Applications Workshop Summary & V3 Data Reprocessing Updates*, Morgaine McKibben (NASA GSFC/SSAI)
  - *Release of Preliminary PACE OCI Nitrogen Dioxide Data through Aura Validation Data Center (AVDC),* Zachary Fasnacht (Research Scientist, SSAI)



PACE enhanced RGB, US East Coast, April 26, 2024. Credit: Joseph Knuble

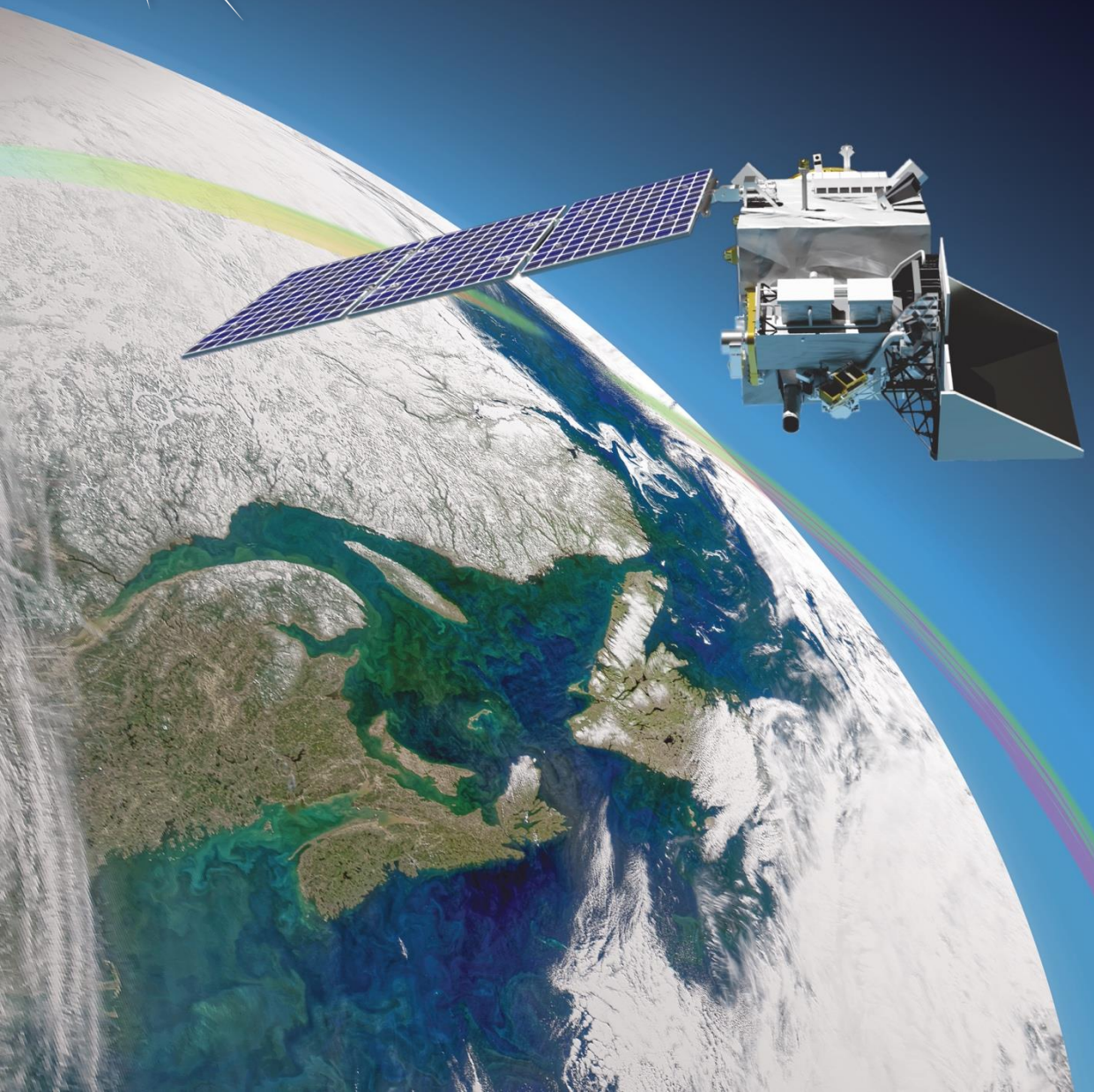
PACE

APPLICATIONS WORKSHOP

December 8, 2024
Washington, DC
In Person Event

PACE Applications Workshop

December 8, 2024 • Washington,



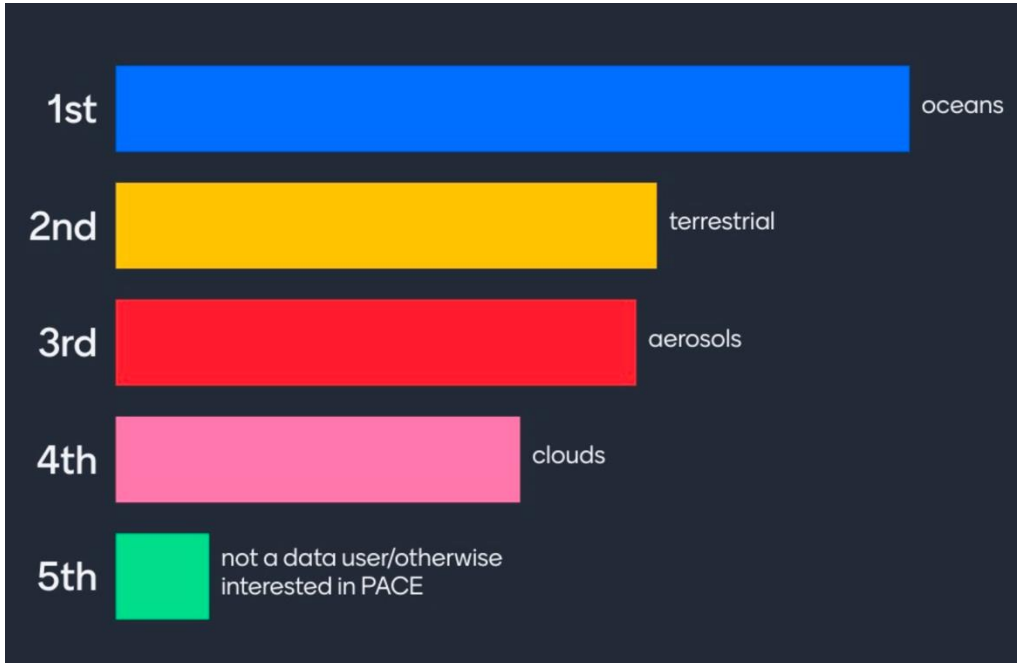
OBJECTIVES

- **Inform:** PACE post-launch status, data and related support tools, and presentations on interdisciplinary science and applications
- **Advance user engagement:** Cross-disciplinary attendance and content to promote accessibility and actionability of PACE data and incorporate new PACE data users
- **Build community:** In person, interactive content for networking and community building across the international audience
- **Collect actionable user feedback:** Provide a conduit for users to communicate needs and questions to PACE Mission & Applications via interactive sessions

PACE Applications Workshop

December 8, 2024 • Washington,

- Over 110 attendees from ~20 states and ~10 countries!
- Students to senior professionals; applied & research science, data/computer science, education, end user support, policy-making, etc.
- Broad audience! United in their desire to network, share their work, provide feedback, ask questions and learn about putting PACE data to work for their particular needs



Workshop attendees' responses to PACE domain of interest

Session 1: Overview, Updates, Resources

WORKSHOP ARCHIVE ←

Presentations:

1. *Life after launch: A snapshot of the first 10 months of (and a brief history of) NASA's Plankton, Aerosol, Cloud, ocean Ecosystem (PACE) Mission,* Jeremy Werdell (NASA GSFC)

2. *NASA Earth Action by way of PACE Applications,* Erin Urquhart (NASA HQ)

3. *Data Access Methods – Finding NASA Ocean Biology Distributed Active Archive (OB.DAAC) Data,* Alicia Scott (NASA GSFC/SSAI)

Session 1: Overview, Updates, Resources

Session 2: Lightning Presentations

WORKSHOP ARCHIVE ←

Lightning Presentations (2 min, 1 slide)

~ 25 attendees presented on their work, why they are interested in PACE, what their application is and who their end users are, and how PACE will advance their application and benefit their end users

Session 1: Overview, Updates, Resources

Session 2: Lightning Presentations

Session 3: PACE Applications

WORKSHOP ARCHIVE ←

Session 3 Presentations:

1. PACE Applications Program + Updates, Morgaine McKibben (NASA GSFC/SSAI)

2. **Aquatic:** Bingqing Liu (Univ. of Louisiana)

3. **Terrestrial:** Fred Huemmrich (Univ of Maryland, Balt County/NASA GSFC

Atmospheric: Joanna Joiner (NASA/GSFC)

Session 1: Overview, Updates, Resources

Session 2: Lightning Presentations

Session 3: PACE Applications

Session 4: Breakout Groups
Question & Answer Panel

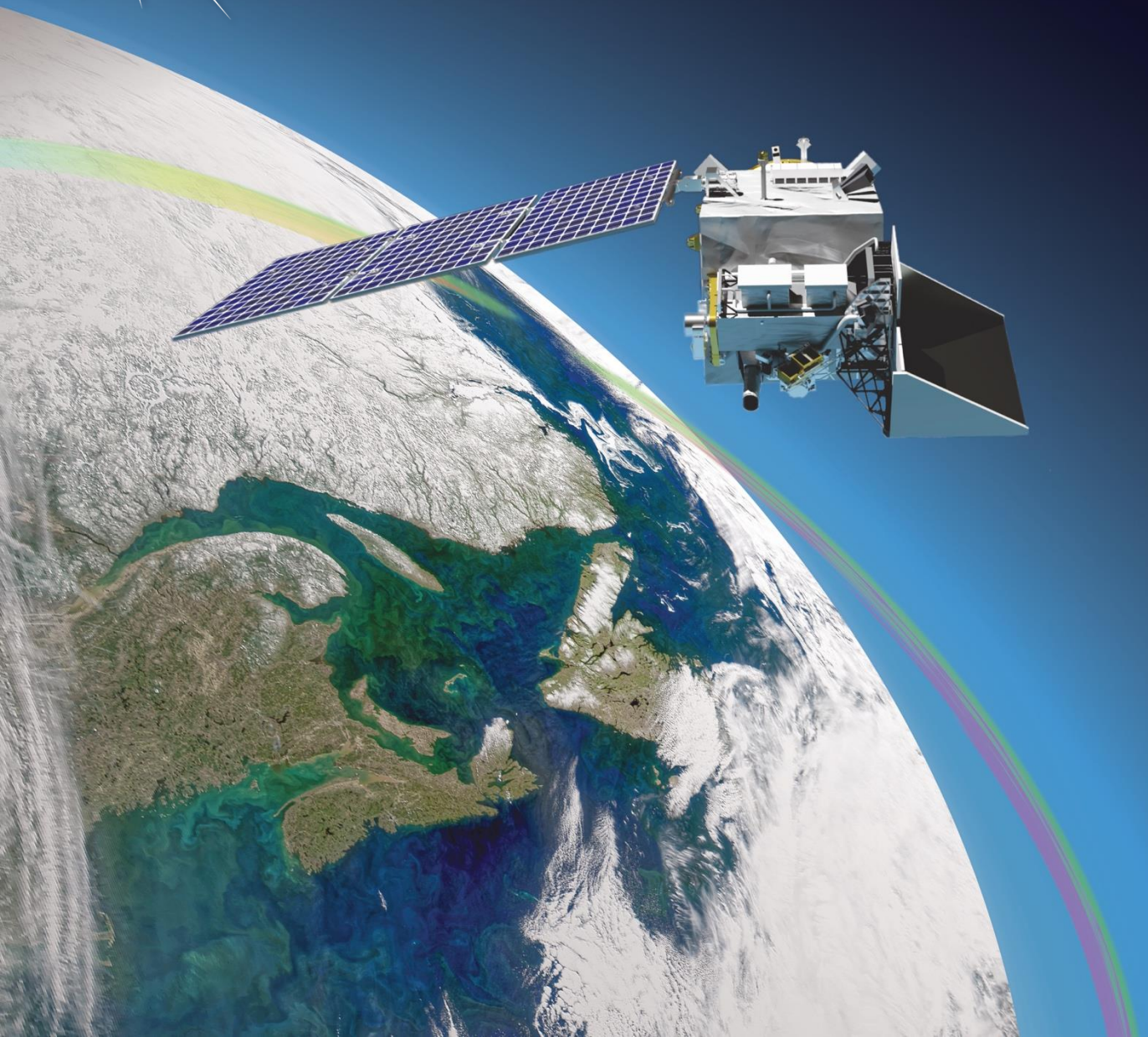
Session 4:

- **Thematic breakout groups** on user needs (atmospheric, aquatic, terrestrial). Each group provided a report on user feedback
- **Question & Answer Panel** with PACE Team

WORKSHOP ARCHIVE
←

PACE Applications Workshop

December 8, 2024 • Washington,



Resources:

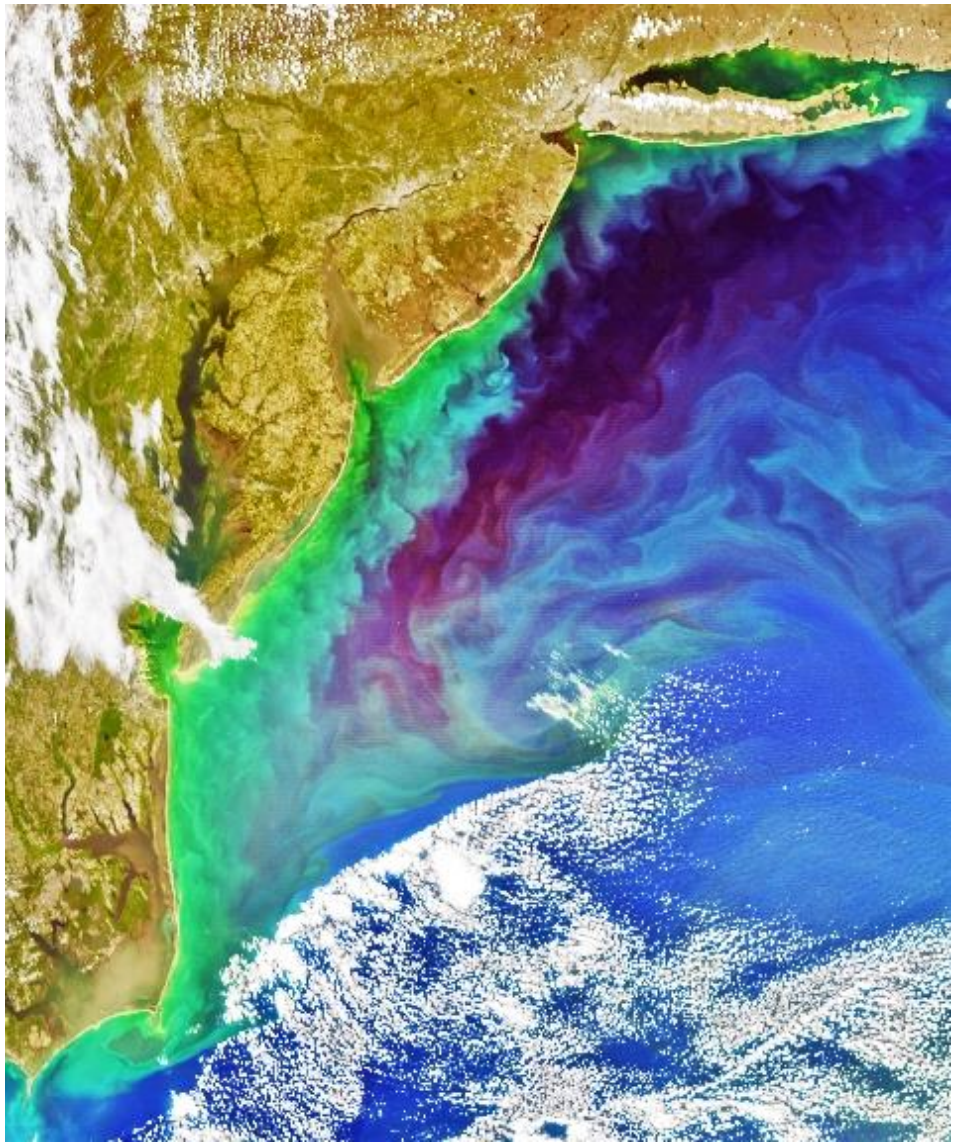
- Workshop Report ahead
- **Workshop Archive:** Recordings of sessions (audio + slides) and presentation files available online:

https://pace.oceansciences.org/event_archive/2024-PACE-Applications-Workshop.htm

- **Data User Feedback:** challenges, needs, what works/could be improved? pace-applications@oceancolor.nasa.gov

What's ahead: PACE Applications in 2025

- **Looking ahead:**
  - Quarterly Community Telecons
  - Annual Workshop later this year
  - Thematic focus sessions
- **Stay updated → Email list →**
- **Reach out**
  - Do you have results on how PACE is advancing your applications work that you'd like to share?
  - Do you have feedback on events?
  - **Email pace-applications@oceancolor.gsfc.nasa.gov**

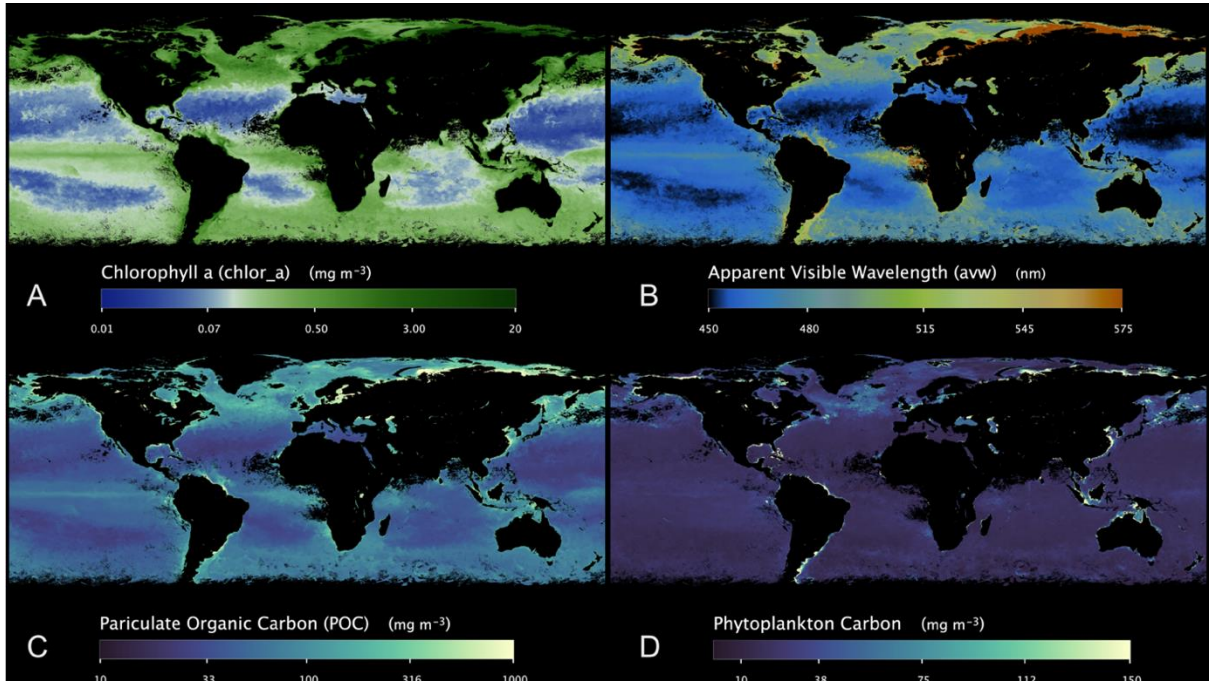


PACE enhanced RGB, US East Coast, April 26, 2024. Credit: Joseph Knuble

PACE Processing Version 3

Initial data release (V1) 4 Apr 2024

- OCI, SPEXone & HARP2 Radiometry (L1B, L1C)
- OCI ocean color products (L2, L3)



First reprocessing (V2) Jul 2024

- First use of on-orbit calibrations for all sensors
- Expanded OCI product suite: land surface reflectance, terrestrial vegetation indices, cloud properties (L2, L3)

Second reprocessing (V3) Jan-Feb 2025 (in progress)

- SPEXone products through L1B & L1C completed.
- OCI products (L1B though L3) expected in forward stream next week, with reprocessing to follow by discipline (clouds, land, ocean color, aerosols) over the coming weeks.
- HARP2 reprocessing through L1C likely late February (awaiting final calibration & software updates)

PACE Processing Version 3

OCI Instrument:

- Updated absolute calibration based on solar diffuser measurements (increases radiance in UV-blue)
- Refinements in temporal calibration, dark measurements, solar irradiance integrations reduce spectral and spatial artifacts

OCI Ocean Color Products:

- Refinement of atmospheric absorbing gas corrections (reduces spectral artifacts), NO2 corrections enabled (reduces negative Rrs in coastal & inland waters), BRDF corrections (minor impact in UV)
- Expanded product suite: phytoplankton fluorescence, phytoplankton community composition (MOANA algorithm)
- All ocean color products to Provisional status, will be available via NASA Earthdata

PACE Processing Version 3

OCI Land Products:

- Refined atmospheric absorbing gas corrections & vicarious calibration (reduces spectral artifacts)
- Expanded spectral sampling of surface reflectance (SFREFL) product, now 122 bands
- New vegetation index suite: LANDVI
- LANDVI and SFREFL products elevated to Provisional status, will be available via Earthdata

OCI Cloud Products:

- Expanded suite of products at Level-3, including separation of all optical properties into ice and water path.
- All Level-3 cloud products now consolidated into single Level-3 mapped product per resolution, 4km, 0.1-deg and 1-deg.
- All cloud products elevated to Provisional status, will be available via Earthdata

PACE Processing Version 3

OCI Aerosol Products:

- New suite of products from the Unified Aerosol Algorithm (PI Remer) planned for V3
- Initial release of L2 expected in early March, pending PI review

SPEXone:

- Refined instrument calibration reduces artifacts and bias between instruments
- First NASA release of L2/3 aerosol products expected soon (RemoTAP algorithm)
- Available now from PI institution: https://public.spider.surfsara.nl/project/spexone/RemoTAP-SPEXone/

HARP2

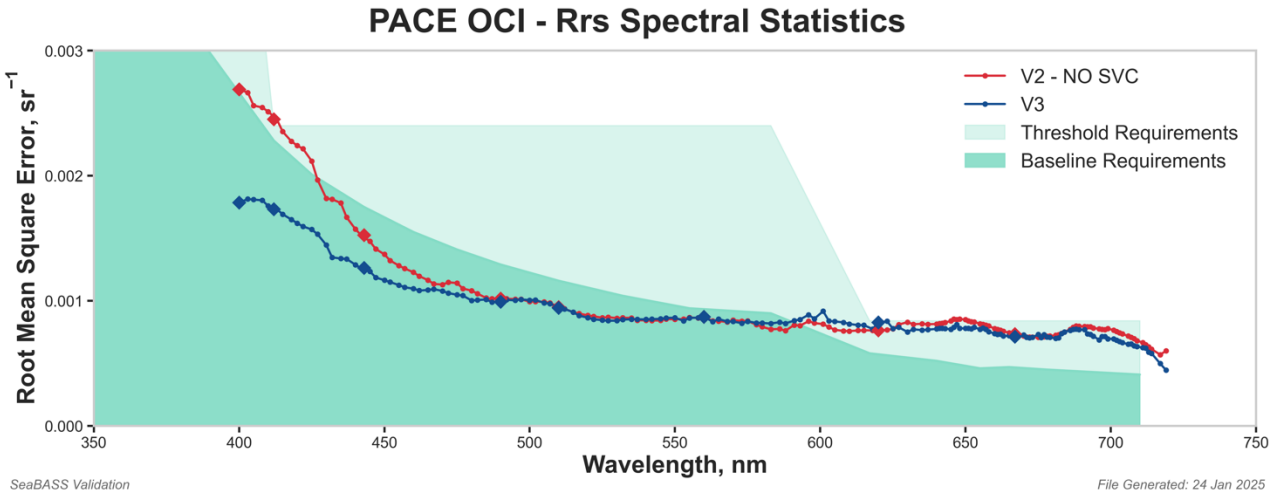
- Refined instrument calibration reduces artifacts and bias between instruments
- First release of Level-2/3 aerosol products (FastMAPOL algorithm) and cloud products (GISS Polarimetric Cloud algorithm, GPC) expected ~ late February

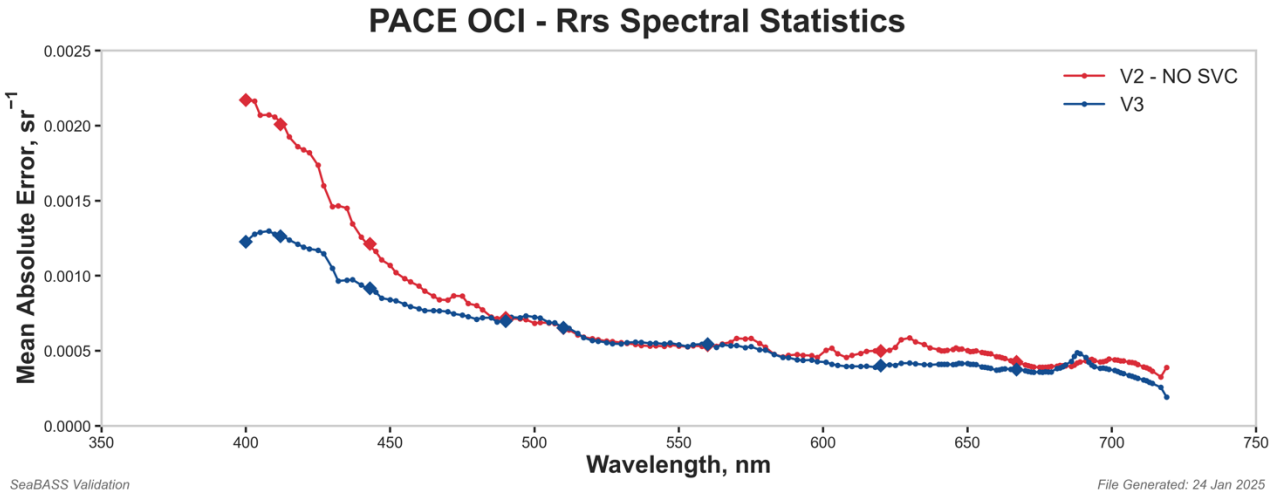
OCI Ocean Color Performance (V2 vs V3 Reprocessing)

Match-up statistics of OCI Rrs versus Aeronet-OC

Proposed V3 reprocessing configuration reduces RMSE and mean bias in blue and red spectral range

Demonstrates that OCI is **meeting threshold uncertainty requirements at all wavelengths, and baseline requirements in blue-green**





GODDARD EARTH SCIENCES

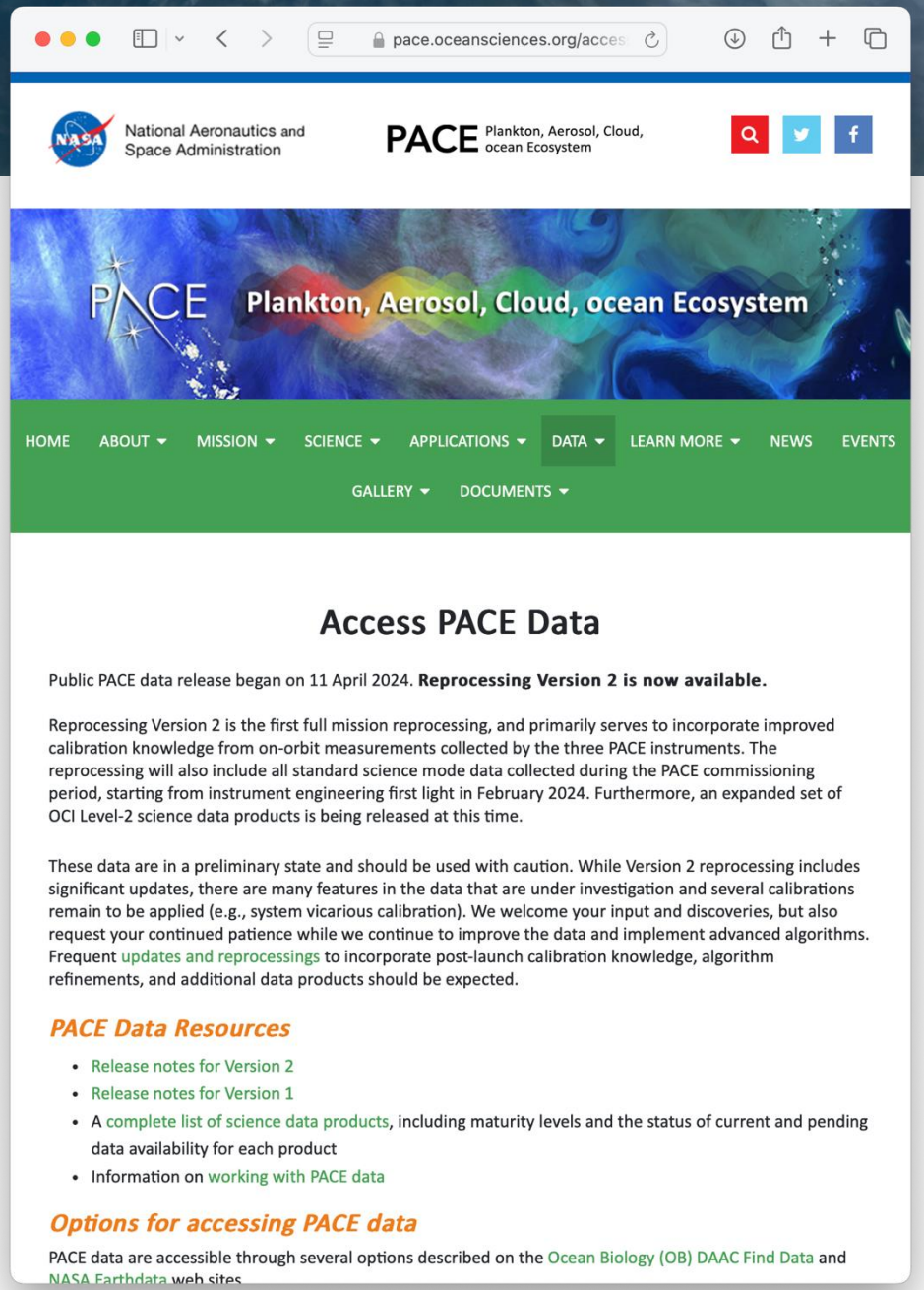
Slides courtesy Brian Franz

Bookmark this: Access PACE Data Webpage

Access PACE Data Webpage:
https://pace.oceansciences.org/access_pace_data.htm

Live page, one stop shop for staying up to date on:

- current reprocessing version number
- release notes
- data access points
- useful resources for working with data
- and more
- click through, check it out



https://pace.gsfc.nasa.gov

Follow us: @NASAOcean

Speaker email:
morgaine.mckibben@nasa.gov

Data Access Page: Go-to resource for the latest on data access points, version number, resources, etc.

Help Hub: Resource for working with data available from the OB.DAAC, including PACE (tutorials, code, etc)

Email list:

Stay up-to-date with all things PACE

Image Description: PACE OCI true color image of the South African Coast, March 9, 2024