

# INSIDE THE ISSUE

[Mission Updates...PAGE 2](#)

[Ocean Color Web...PAGE 3](#)

[PACE at Conferences...PAGE 3](#)

[PACE + NASA DEVELOP...PAGE 4](#)

[New PACE Resources...PAGE 5](#)

[EA Spotlight...PAGE 5](#)

[People of PACE...PAGE 6](#)

[PACE Publications/Events...PAGE 7](#)



## PACE Community Newsletter / August 2023/ Issue 5

# WELCOME

**"Yay Space!"**

There is no topic more on the PACE team's mind than **getting ready**, especially with the upcoming launch just 148 days away. To ease my unnecessary pre-launch anxiety, I wrote you a song.

*Anticipation's in the air, a cosmic dance we'll share... Less than 5 months till PACE takes flight, on*

*SpaceX's Falcon 9, the sight so bright. From scientists' minds to data systems' might... Preparing all users, bridging day and night. Kennedy's launchpad, a stage so grand, where dreams touch the*

*sky and land... Join us on this thrilling ride, as PACE to space, with grace, will glide!!*



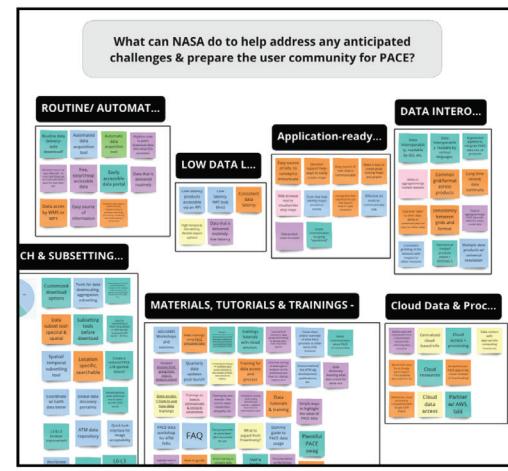
- **Erin Urquhart**  
PACE Applications Coordinator

## Launch Readiness: Insights & Preparations

As we gear up for PACE launch, allow us to provide you with a picture of the journey ahead. The PACE Applications program has been actively engaging with our diverse community, ensuring that our users are primed and ready for PACE.

Community feedback has resonated across venues – from surveys to focus session and workshops – as we solicited insights into user readiness. We've investigated data access, exploring automation for seamless data retrieval; we've dove into community-driven learning, understanding how to best facilitate your growth; and we've ventured into the terrain of data uncertainty, cloud-based processing, and more. Your readiness insights have been collated and reviewed in collaboration with PACE Project Science.

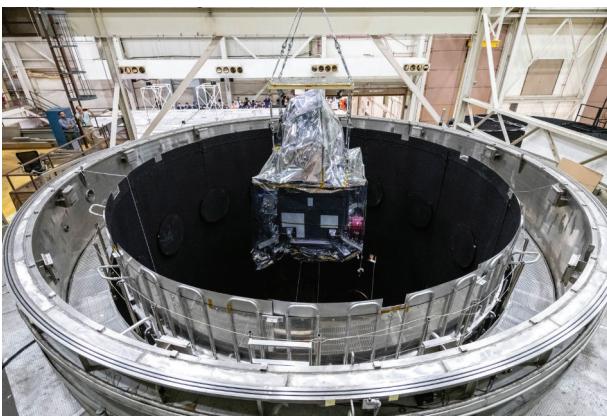
We're already making moves to address your needs. Experience the revamped [Ocean Color Web](#), redesigned with user pathways that enhance site navigation. Meanwhile, our response to the need for training/tutorials takes shape within the [new resources tab](#). Lastly, this year's PACE Applications workshop revolves around the theme of "Preparing for Launch." [Register now](#) and secure your spot!



Screenshot of whiteboard organizing all PACE user feedback into readiness themes.

# PACE Mission Updates

The PACE observatory – the fully integrated spacecraft and instruments - has completed a series of “shake” and “bake” testing over the past 3 months. The PACE Integration & Testing team concluded a series of mechanical tests designed to mimic the launch conditions that the observatory will experience during actual launch. Mechanical testing included vibration, acoustic and shock testing followed by a comprehensive performance test of the instruments and spacecraft components to verify that all were in good working order. Next was thermal vacuum testing (TVAC) inside Goddard’s [Space Environment Simulator](#) (SES), a massive cylinder measuring 40 ft tall by 27 ft wide in which the PACE observatory (minus the solar arrays) was lowered and sealed. Within the SES, PACE was exposed to the environmental conditions of space involving multiple thermal cycles of “hot” and “cold” temperatures in addition to vacuum conditions.



*The PACE Observatory being lifted above the SES chamber before environmental testing.* Credit: Dennis Henry | NASA

One TVAC test, called thermal balance, verified the performance of the thermal design and survival of the observatory. Once TVAC testing concludes, the observatory will undergo a comprehensive performance test, a flight software upload and testing, solar array re-installation, and an orbit in the life test.

Among several other accomplishments, the ground systems team successfully tested the PACE ground stations in Svalbard (Norway), Punta Arenas (Chile) and Wallops (Virginia) through transmission of simulated PACE data, telemetry and commands to and from the PACE Mission Operations Center at GSFC. The Science Data Segment continued testing end-to-end science data acquisition and processing demonstrations. The PACE Team is working closely with SpaceX and NASA Launch Services Program team at Kennedy Space Center in Florida to coordinate preparations for the PACE launch scheduled for 9 January 2024. PACE’s ride to Florida, both the transporter and shipping container, completed road testing and certification. Come November, PACE will exit through the Goddard gates and head south for its date with a Falcon 9!

## PACE CoP

**Interested in joining a growing group of researchers & applied scientists who are excited about everything PACE!?**

The PACE Community of Practice fosters new partnerships and collaboration, generates new knowledge and innovations, and promotes interdisciplinary research using PACE data.

**SIGN UP NOW**

## PACE Early Adopter Program

**Do you have an existing application or system that could leverage PACE data for societal benefit?**

The Early Adopter Program promotes applied science designed to scale and integrate PACE data into activities that directly benefit society and inform decision-making.

**LEARN MORE**

# Newsworthy



# Lights, Camera, New NASA Ocean Color Web!

Welcome to the all-new [NASA Ocean Color website](#)! Think of it as a stylish midlife crisis makeover, transforming it from outdated to outstanding. The site now features an “oceanic” color scheme and streamlined navigation for a cleaner feel and easier exploration. Engaging interactive tools offer a thrilling experience for both experts and novices. The new user pathways cater to all, guiding you through our vast offerings.



Learn more about our new Resources on [page 5](#).

## Keep Up with PACE at Conferences this Year

To celebrate and make sure that we're spreading the word far and wide, we'll be at a few conferences this Fall and Winter – come find us!



2023 IOCS conference (plus [SeaDAS training!](#))

## **2023 AGU PACE session:**

- **[GC080](#)** - NASA's Upcoming PACE Mission: Research and Earth Science Applications

## 2024 Ocean Sciences PACE sessions:

- **OT013** - Leveraging the NASA PACE Observatory for Environmental Management and Societal Benefit
  - **OT022** - Ushering in an era of daily, global hyperspectral radiometry and multi-angle polarimetry with the NASA PACE mission
  - **ED004** - Communicating Ocean Observations from Space: Ready for Launch?

# GOT GEAR?



**PACE STORE**

***Store will be open  
Aug. 21 - Sept. 5, 2023***



## Unveiling the Future: NASA DEVELOP Water Resources Tech & Innovation Project

Explore the newest PACE Applications partnership that bridges the gap between Earth science information and society. [NASA DEVELOP](#) fosters capacity building by engaging young professionals and students in addressing real-world environmental challenges using Earth observations.

Leveraging [simulated PACE data](#) plus multispectral proxy data sets from Aqua MODIS, the team designed a Python Graphical User Interface (GUI) tool for seamless data integration and analysis. The tool simplifies data processing and visualization of Level 3 imagery, while additional scripts enhance its potential for water resources research and management. Tool release will be shared in the future.



The PACE DEVELOP team at GSFC. Learn more below. Credit: Carli Merrick | SSAI

### Isabel Lubitz

Isabel Lubitz recently graduated from Middlebury College with her degree in Geography and Chinese. She is grateful to be able to return to her hometown, Washington DC, and contribute to the PACE Mission. In the future, she hopes to apply her GIS and remote sensing training to issues of environmental justice.



### Julia Kourelakos

Julia Kourelakos, originally from Sarasota, is studying computer science at Duke University. Her research focuses on the applications of artificial intelligence in climate change adaptation and mitigation. After Duke, she hopes to pursue further graduate study in computer science.



### Matthew Romm

Matthew Romm is from Atlanta and is a graduate of Georgia Tech with a degree in international affairs. He recently completed his master's in environmental science at University of North Carolina (UNC) and is starting a PhD at NC State University. In addition to science, he enjoys hiking and learning about history.



### Grace Thorpe

Grace Thorpe, studies Geography & Environmental Studies at the Univ. of Richmond. She uses spatial technologies, including GIS, remote sensing and spatial programming, to address environmental problems. She hopes to use satellite [PACE] imagery to identify areas for sustainable infrastructure development.

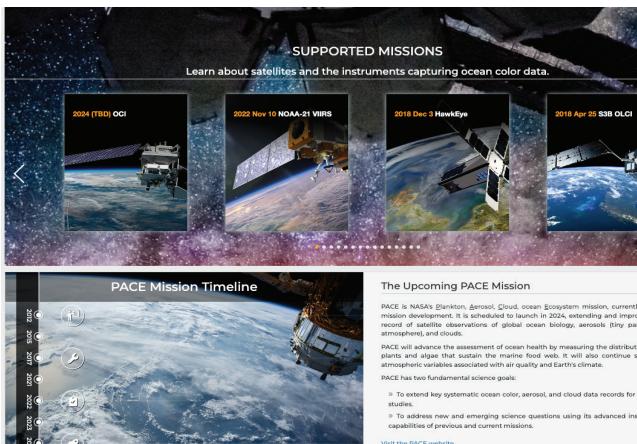


# PACE Spotlights



## Your User-Centric Gateway to Ocean Color!

The rebranded [NASA Ocean Color website](#) is focused on improving your user experience. For both newcomers and seasoned experts, we've carefully tailored our content to meet your specific needs. Fresh, easy-to-understand content welcomes new users, while familiar resources remain readily available to our veteran users. We've made navigation a breeze, prioritizing newly crafted documents and providing detailed tool descriptions.



Screenshot of new Supported Missions scroll bar on the Ocean Color website. Credit: Alicia Scott | NASA/SAIC

Notably, the upcoming NASA PACE satellite mission will bring even more cutting-edge data, elevating your exploration further. As a prelude to PACE, we've launched Ocean Color landing pages, granting quick access to valuable content that was once buried.

Delve into the [resources landing page](#), where essential materials await you. Find help pages for data tools, software, and in situ archive, alongside training material and demos by our team. Explore data analysis tools, code repositories, and detailed documentation, all designed to support your research and applications.

We've determined these resource focus areas based on content and user feedback from the PACE Community of Practice. Empower your ocean color data journey with our new user-centric website. The wonders of ocean insights await - dive in now!

### Ocean Color Web

This displays a number of Earth observing instruments that measure the spectral nature, or color, of water. Specifically, NASA acquires, archives, and publicly distributes such data from a variety of sources, including remote sensing ocean color instruments on satellite and airborne platforms, as well as similar measurements made on shipborne field campaigns, by long-duration autonomous in situ platforms, and derived as Earth system model output.

The Ocean Biology Processing Group (OBPG) at NASA's Goddard Space Flight Center has been operating and supporting the Ocean Color Web since 1996. As a Science Investigator-led Processing System (SIPS), our responsibilities include the collection, processing, calibration, validation of coastal and open ocean color data, and sea surface salinity data to the International Satellite-based Reference Experimenting missions providing ocean color, sea surface temperature and sea surface salinity data to the International Satellite-based Reference Experimenting community. As a Distributed Active Archive Center (DAAC), known as the Ocean Biology DAAC (OBDAAC), we are responsible for the archive and distribution of satellite ocean biology data produced or collected under NASA EOSDIS, including those from historical missions and partner space organizations.



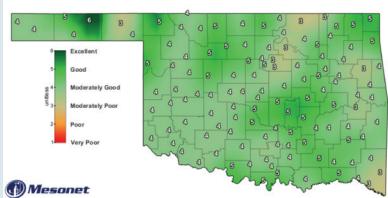
Screenshot of new interactive user pathways to get started with data, find data, and use data. Credit: Alicia Scott | NASA GSFC/SAIC

## EA Spotlight



Smoke from fires in Siberia has blown as far as Alaska, Canada and US. Credit: Julia Petrenko | Greenpeace

Air pollution has been recognized as one of the major concerns for human health and environmental preservation. Early Adopter [Marcela Loria-Salazar](#) is working to address a major challenge in air quality management – monitoring data access and equity – by incorporating PACE data, in-situ data, and other inputs into models that can fill gaps in data coverage.



Example Mesonet map showing dispersion conditions over Oklahoma. Credit: Mesonet

Marcela's team is deriving particulate matter estimates for use in regional forecasts and exposure risk alerts. She's working with stakeholders in Oklahoma to ensure uptake of this new information.

[Learn more!](#)

## **Julia Barsi | GLAMR & Calibration Lab Science Manager**

Julia manages the calibration campaigns of the Goddard Laser for Absolute Measurement of Radiance (GLAMR) and Calibration Lab (CL). GLAMR and CL systems were used for prelaunch radiometric calibration and spectral characterization of PACE's three instruments: OCI, HARP-2, and SPEXone. Julia works with the instrument teams to design tests needed for each instrument, verifies that the calibration system can provide the test, and follows the test through to the analysis. GLAMR's tunable laser systems are the coolest things Julia has ever worked with.



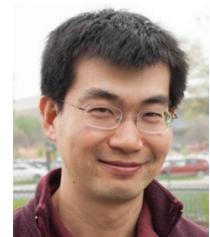
## **Dr. Cecile Rousseaux | PACE Science & Applications Team (SAT) Member**



Cecile is the lead of the NASA Ocean Biogeochemical Model Development at NASA GSFC. She has been on the PACE Science Team since 2014. Her role on the PACE mission is to manage the development of data products derived by combining PACE data and models -- whether by Earth System Models or other approaches -- to provide data products that have additional values in comparison to existing algorithms. In her spare time she loves to spend time outside gardening and playing with her two toddlers.

## **Dr. Meng Gao | PACE Polarimetry Software Lead for PACE SDS**

Meng is a Data Scientist and the Polarimetry Software Lead for the PACE Science Data Segment. He supports the PACE SAT and instrument teams in implementing and testing polarimetry algorithms within the PACE data processing system. Additionally, he is the chief developer of FastMAPOL, a system that leverages deep learning to accelerate aerosol and ocean color retrievals in production with PACE multi-angle polarimeter data. In his free time, he can be found either on a climbing wall or a badminton court.



## **Dr. Dustin Carroll | PACE Early Adopter (EA) Member**



Dr. Carroll is a physical oceanographer and numerical modeler who focuses on understanding interactions between ocean circulation, sea-ice and glaciers, and ocean biogeochemistry. He is the lead developer of the NASA data-assimilative ECCO-Darwin ocean biogeochemistry model. In his free time, Dustin enjoys surfing, playing guitar in bands, and walking his dog on the beach in Carmel, CA.

This newsletter is brought to you by the PACE Applications Team!



**Erin Urquhart** | Project Applications Coordinator



**Natasha Sadoff** | Project Applications Deputy Coordinator

**CONTACT US**

## STAY CONNECTED

Follow @NASAOcean on social media!



# PACE “In the Know”

## NEW PACE PUBLICATIONS

- ★ *Spatial and temporal characterization of cyanobacteria blooms in the Mississippi Sound and their relationship to the Bonnet Carré Spillway openings.* (Soto Ramos et al. 2023). [Read More](#)
- ★ *Optimizing retrieval spaces of bio-optical models for remote sensing of ocean color.* (Hannadige et al. 2023). [Read More](#)
- ★ *Know Before You Go: A Community-Derived Approach to Planning for and Preventing Sexual Harassment at Oceanographic Field Sites.* (Ackerman et al. 2023). [Read More](#)
- ★ *Bayesian approach to a generalized inherent optical property model.* (Erickson et al. 2023). [Read More](#)

## UPCOMING EVENTS

[2023 PACE Applications Workshop](#) | September 6-7, 2023 | Virtual

[International Ocean Color Science \(IOCS\) Meeting](#) | November 14-17, 2023 | St. Petersburg, FL, USA

[2023 American Geophysical Union \(AGU\) Meeting](#) | December 11-15, 2023 | San Francisco, CA, USA

[American Meterological Society \(AMS\) Meeting](#) | January 28-February 1, 2024 | Baltimore, MD, USA

[Ocean Sciences Meeting 2024](#) | February 18-23, 2024 | New Orleans, LA, USA

