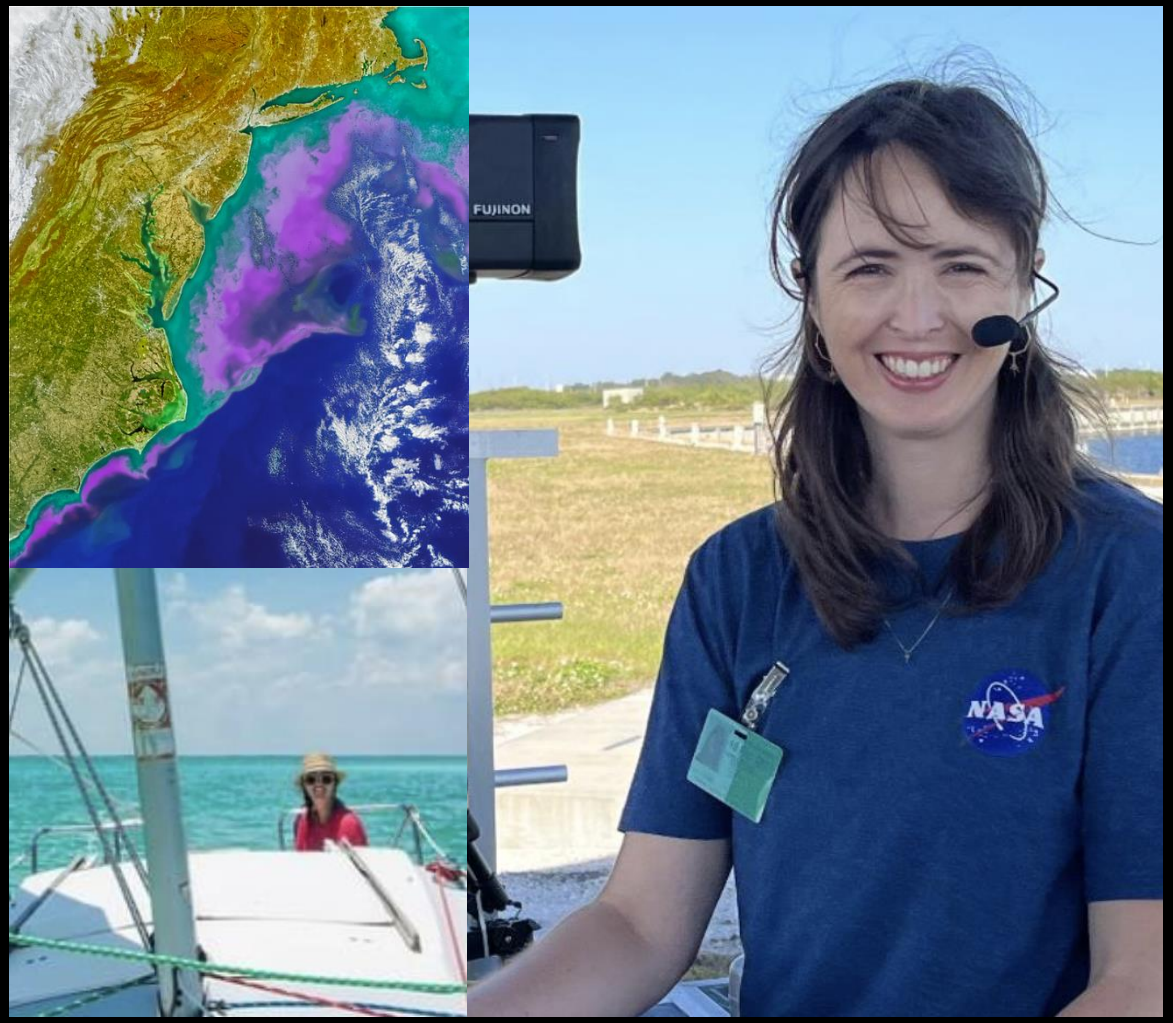
Carina Poulin

Scientific Designer

SSAI - The Ocean Ecology Laboratory at NASA GSFC
carina.poulin@nasa.gov

Developing tutorials, educational content, creating science visualizations, image processing and designing swag!



Background:

Université de Sherbrooke, Québec, Canada

-B.Sc. – Ecology, internships for Parks Canada

-M.Env. – Impact of light pollution on cyanobacteria

-Ph.D. Remote Sensing – Optical properties of phytoplankton cultures

Postdoc University of Southern Mississippi – Stennis Space Center – Plankton optics

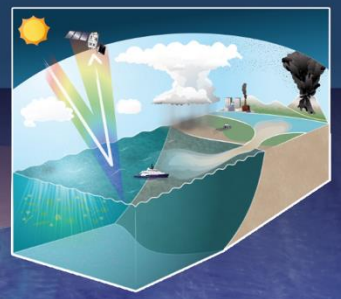
Postdoc Florida Atlantic University – Bioluminescence

616 EARTH SCIENCES LABORATORY GUIDE

THE OCEAN ECOLOGY LABORATORY

National Aeronautics and Space Administration

The Ocean Ecology Laboratory (OEL) advances Earth System Science by producing and distributing ocean and atmospheric satellite climate data records, developing new remote sensing, field, laboratory, and modeling methods, and by conducting innovative research in ocean Biogeochemistry and atmospheric composition and processes.

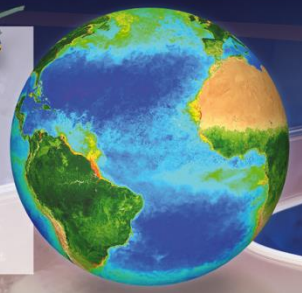


PAST MISSIONS

SeaWiFS · Aquarius · CZCS · GOCI · HICO · MERIS · OCTS

Ocean remote sensing revolutionized our understanding of our planet's oceans; SeaWiFS provided the first global view of the biosphere (right), which showed how chlorophyll concentrations over the world varied over time, and how that influenced the global carbon cycle.

The data records from these past missions, which OEL continues to maintain, are the foundation on which the current and future land, atmosphere, and ocean observation operations are built.



SATELLITE AND FIELD DATA SUPPORT

OB.DAAC · OBPG · Field Support Group · EXPORTS · PACE-PAX
SeaBASS · SeaDAS · CyAN · HPLC pigments

Our data support teams engage in activities that ensure the quality of NASA's ocean and aquatic field datasets used in the development of Ocean Color satellite algorithms and in the validation of satellite products and models.

NASA's Ocean Ecology Lab, with its global network of partners, has organized and participated in numerous sea and air expeditions. Field measurements provide essential support to ocean remote sensing missions.

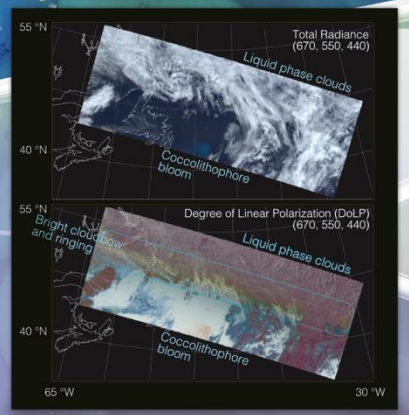
The OEL develops and maintains the systems and tools for processing, archiving, distributing, and visualizing a wealth of the satellite and field data products in use by the research community.

CURRENT SATELLITE MISSIONS

VIIRS-NOAA20 I SNPP · MODIS-Aqua I Terra · NOAA21 · OLCI-S3A I S3B · HawkEye

Building on the knowledge acquired by the OEL's earlier missions and together with our field and data support teams, our current satellite fleet is producing state-of-the-art observations from the Earth's lands, oceans, lakes, coasts, estuaries, and atmosphere that allow us to gain a better understanding of its global processes and dynamics.

Decision-makers use data produced by the OEL from these missions, in combination with earth system models, to make choices that will impact the future of the planet.



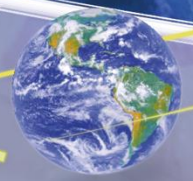
PACE - PLANKTON, AEROSOL, CLOUD AND OCEAN ECOSYSTEM

OCEAN COLOR - POLARIMETRY

Our most recent satellite mission, PACE, with its hyperspectral Ocean Color Instrument (OCI), will provide an unprecedented view of the diversity and distribution of the types of plankton in our oceans, with its measurements ranging from ultraviolet to shortwave infrared. This will allow us to study the processes that govern plankton dynamics, help identify harmful algal blooms, and assist resource managers, policymakers, and industry professionals.

PACE will also be equipped with two multi-angle polarimeters, SPEXone and HARP2, which will give us information on oceanic and atmospheric particle size and composition. For example, studying cloudbows in Degree of Linear Polarization images from PACE will tell us about the particle size distribution of the droplets in the clouds, as shown on an image of the Atlantic Ocean, off the coast of Newfoundland, from the HARP Cubesat mission of the Earth Space Institute at UMBC (left).

Together, PACE's three instruments will give us an unparalleled global outlook on the interactions between the Earth's oceans and atmosphere.



FUTURE MISSIONS

AOS · GLIMR · AND BEYOND

The OEL will continue to expand the boundaries of our knowledge further, with satellites in geostationary orbit, and more satellites that will observe the planet's atmosphere. GLIMR will take multiple measurements of the same area on the same day, giving us a unique window into the short-term changes that happen in the ocean. Another satellite mission, the Atmosphere Observing System, will be taking key, groundbreaking measurements of the vertical structure of the atmosphere.

The OEL will persist in building on the learnings of our past and present and developing markedly innovative missions that will further deepen our understanding of our planet's oceanic and atmospheric systems.

GODDARD EARTH SCIENCES

Sciences and Exploration Directorate Code 600
NASA Goddard Space Flight Center

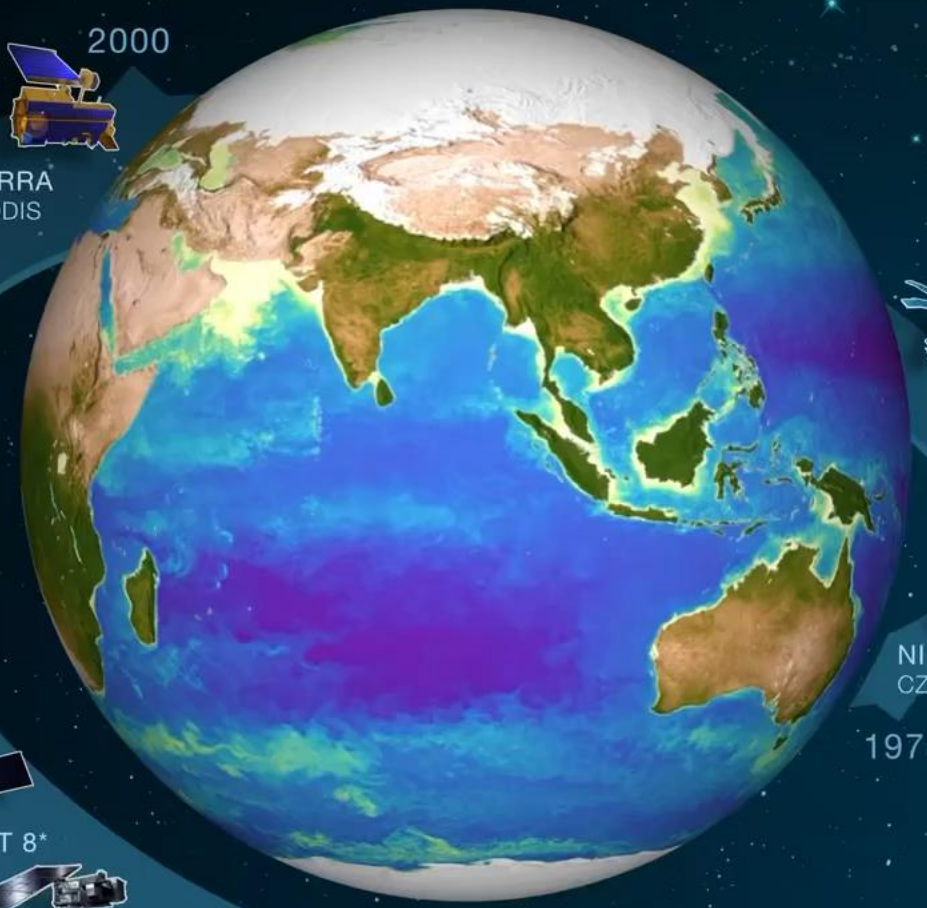
PACE comes after a long legacy of Earth observatories

National Aeronautics and Space Administration

NASA

EARTH FLEET

Ocean Color



This image from NASA's Scientific Visualization Studio shows the Global Biosphere. It represents the chlorophyll concentration on the ocean and earth's surface, as measured primarily by the SUOMI-SNPP/VIIRS sensor. Both on land and in the sea, a high chlorophyll concentration indicates an abundance of life.

Ocean Chlorophyll Concentration

Low — High

Land Vegetation (NDVI)

Low — High

2000

2002

TERRA
MODIS

ENVISAT
MERIS

AQUA
MODIS

ISS
HICO

COMS
GOCI

2010

SUOMI-NPP*
VIIRS

LANDSAT 8*
OLI

SENTINEL-3A
OLCI

2016

NOAA-20*
VIIRS

SENTINEL-3B
OLCI

SEAHAWK
HAWKEYE

LANDSAT 9*
OLI-2

NOAA-21*
VIIRS

PACE
OCI, SPEXONE, HARP2

2018

2024

GLIMR*

ESO: SBG

LANDSAT NEXT*

GEOXO*

MISSIONS

ORBVIEW-2
SEAWIFS

ADEOS
OCTS

1996

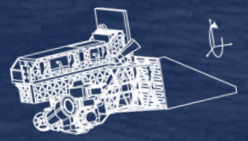
NIMBUS 7
CZCS

1978

KEY

- INTERNATIONAL PARTNER
- ★ U.S. PARTNER
- MISSION COMPLETED
- ISS INSTRUMENT
- CUBESAT

PACE INSTRUMENTS



OCI

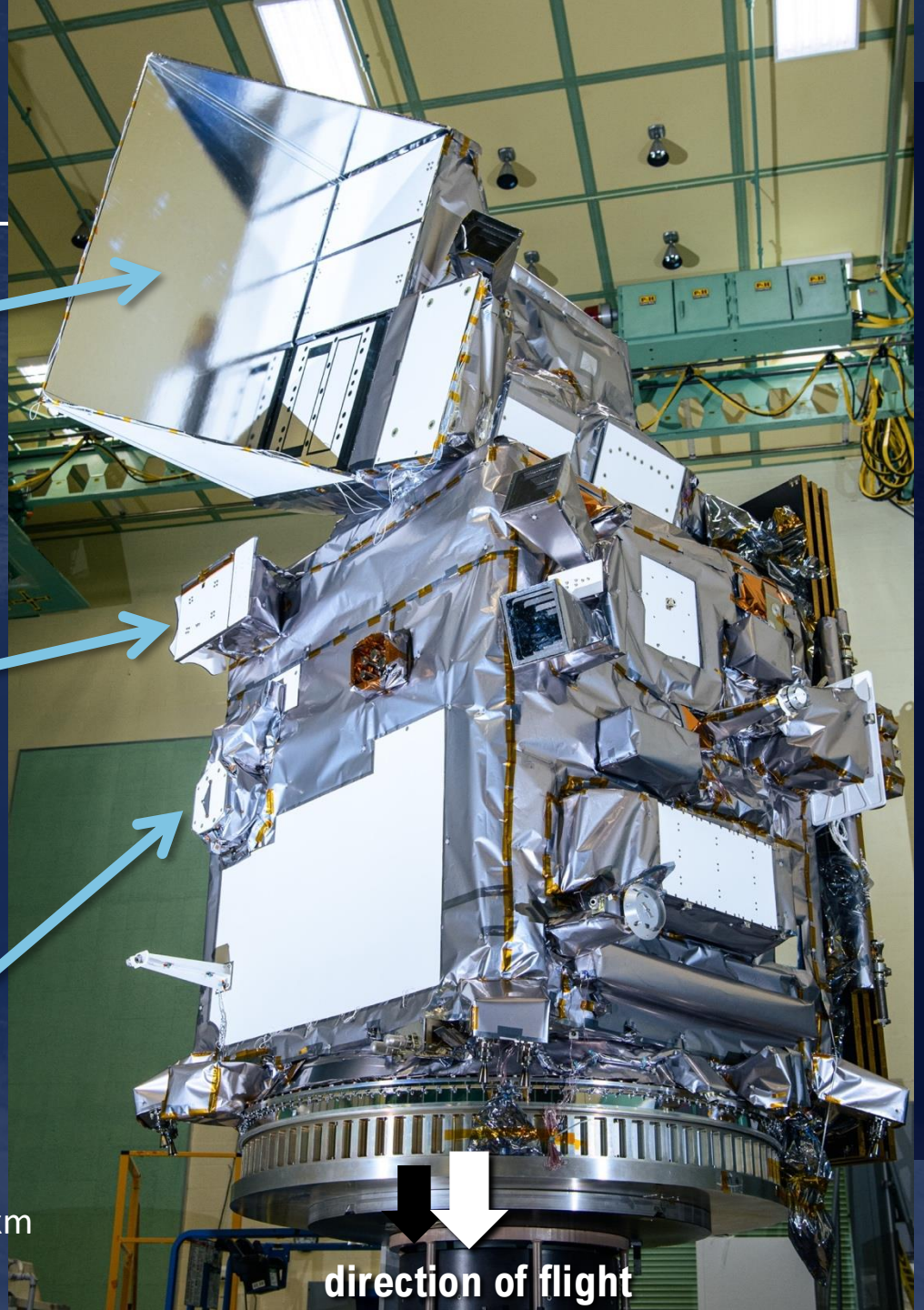
340-890 nm in 2.5 nm steps
7 discrete SWIR: 940-2260 nm
1-2 day coverage; ±20° tilt; 1km

HARP2

440, 550, 670, 870 nm
10-60 viewing angles
wide swath polarimeter; 3 km

SPEXone

380-770 nm in 2-4 nm steps
5 viewing angles
narrow swath polarimeter; 2.5 km



PACE fills niches not currently addressed at home or abroad

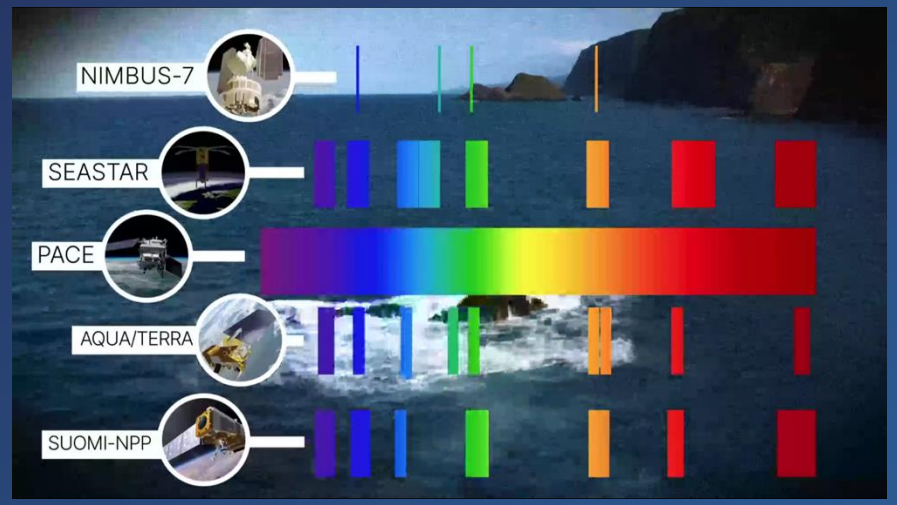
Moving from multi- to hyper-spectral

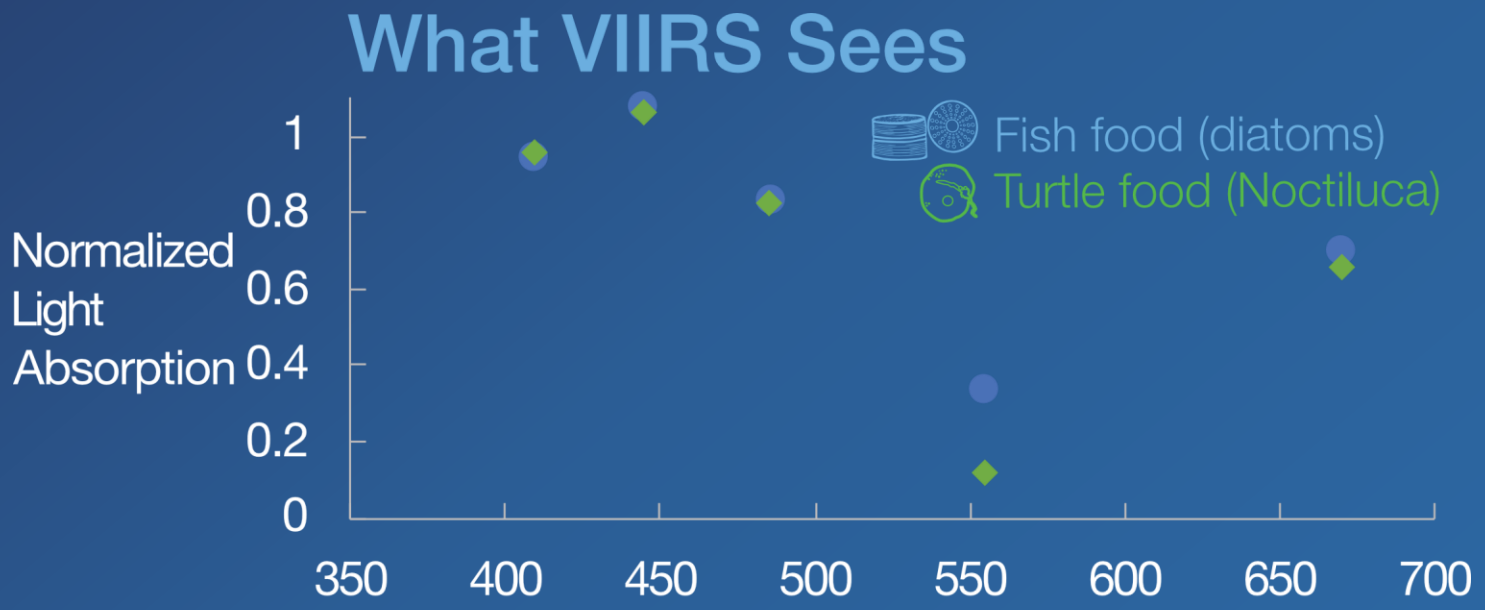
UV & two 2-μm bands realize atmospheric improvements over heritage instruments

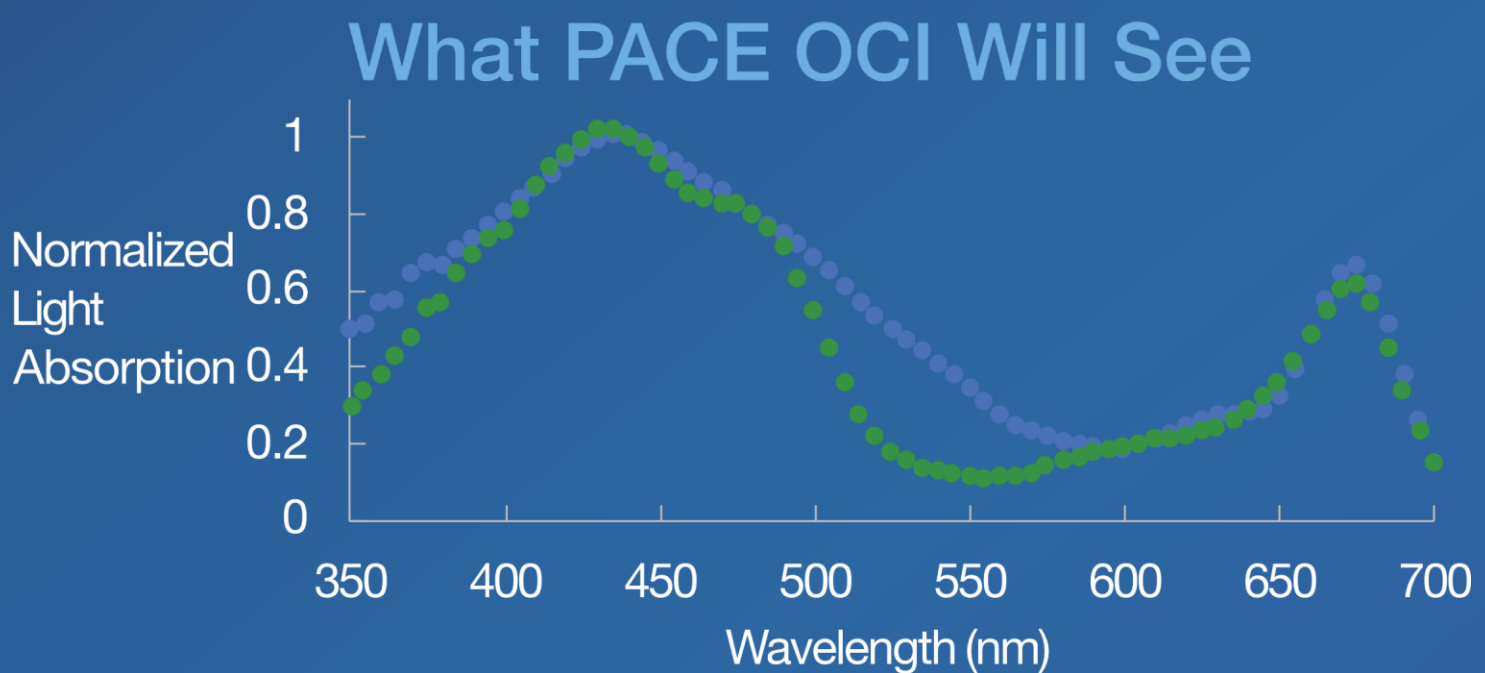
Multi-angle polarimetry adds dimensions of information

Tilt is essential for capturing marine system dynamics

PACE-OCI takes hyperspectral measurements





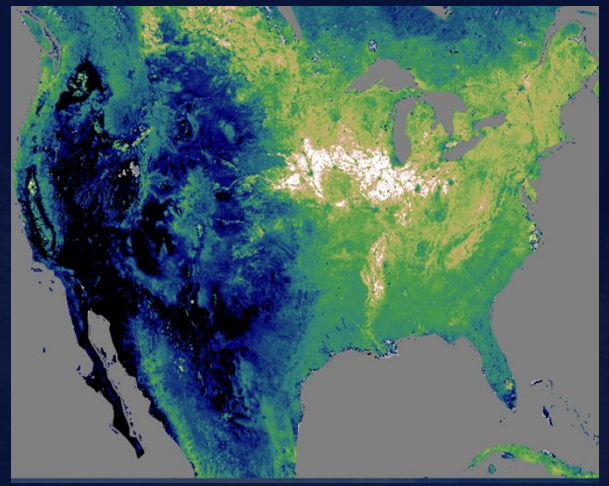


PACE: COMPREHENSIVE EARTH SYSTEM OBSERVATORY

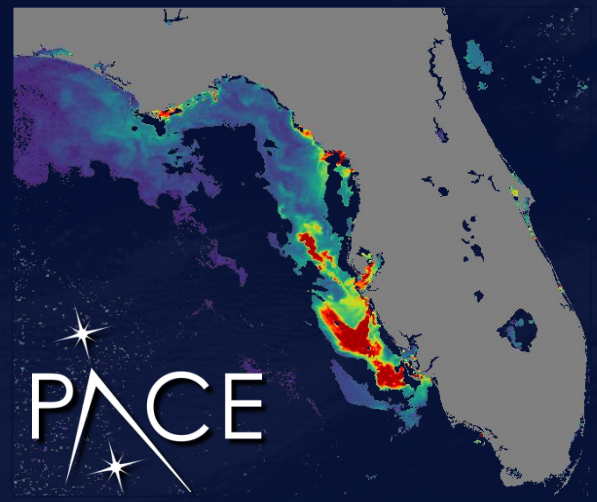
Plankton Aerosol Cloud ocean Ecosystem

- **Only PACE provides global, hyperspectral coverage of the oceans, atmosphere, and land every 1-2 days, plus hyperspectral & hyperangular polarimetry**

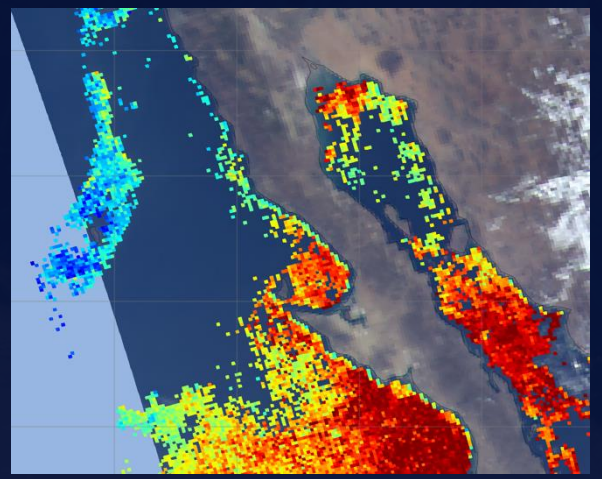
Plant growth



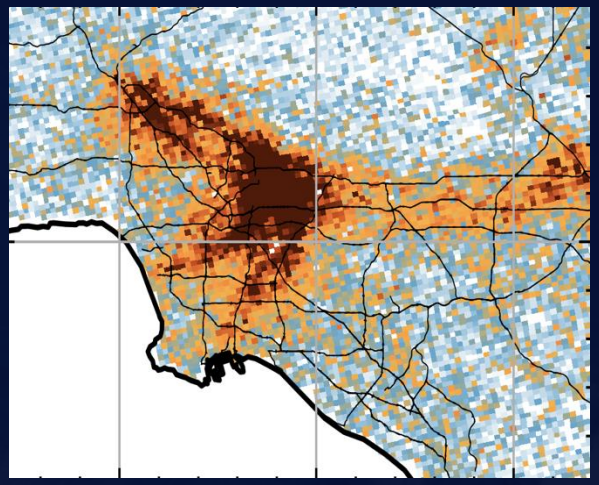
Harmful algal blooms



Identifying wildfire smoke (blues) and dust (reds)



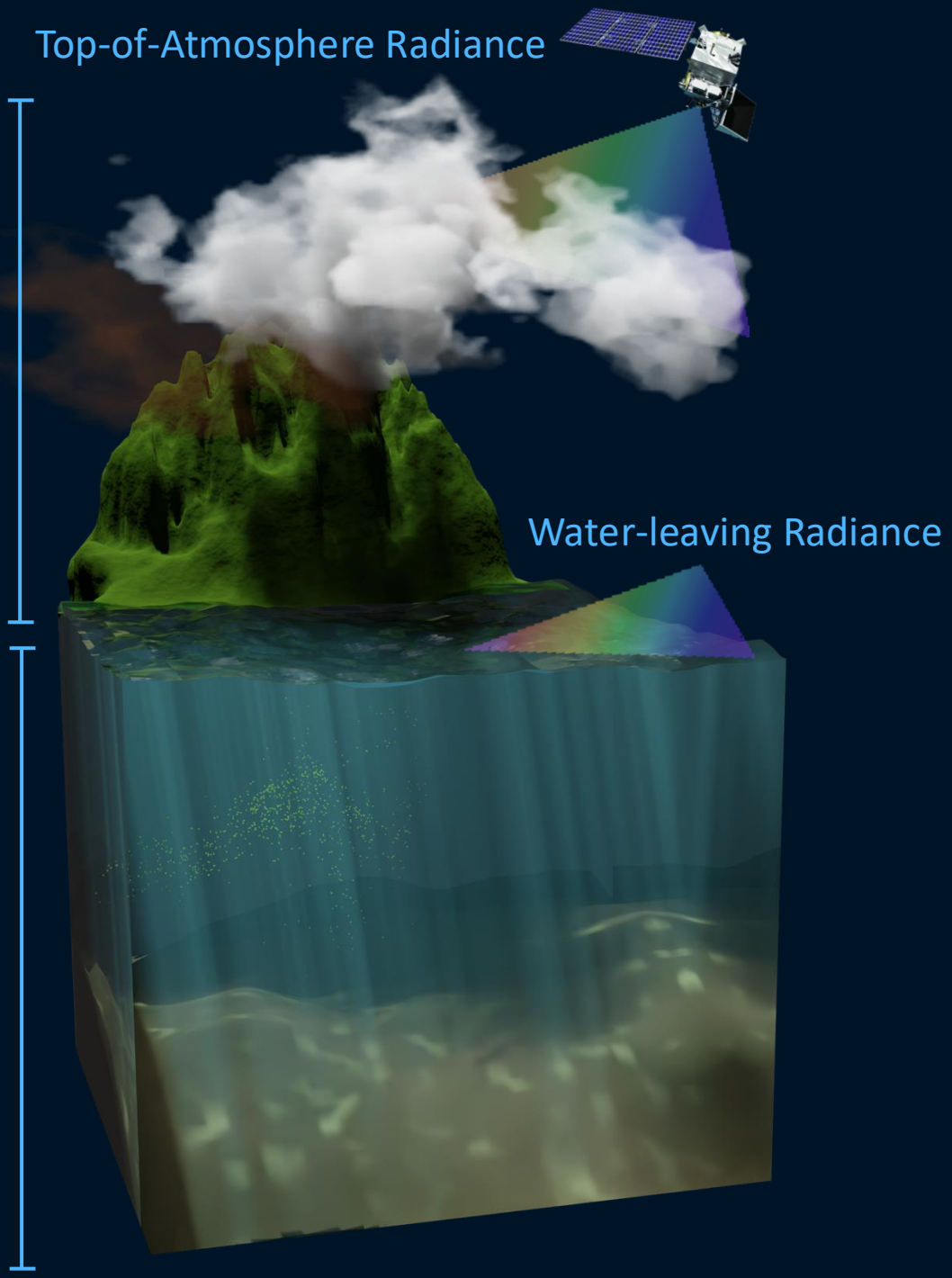
High resolution nitrogen dioxide over highways



GODDARD EARTH SCIENCES

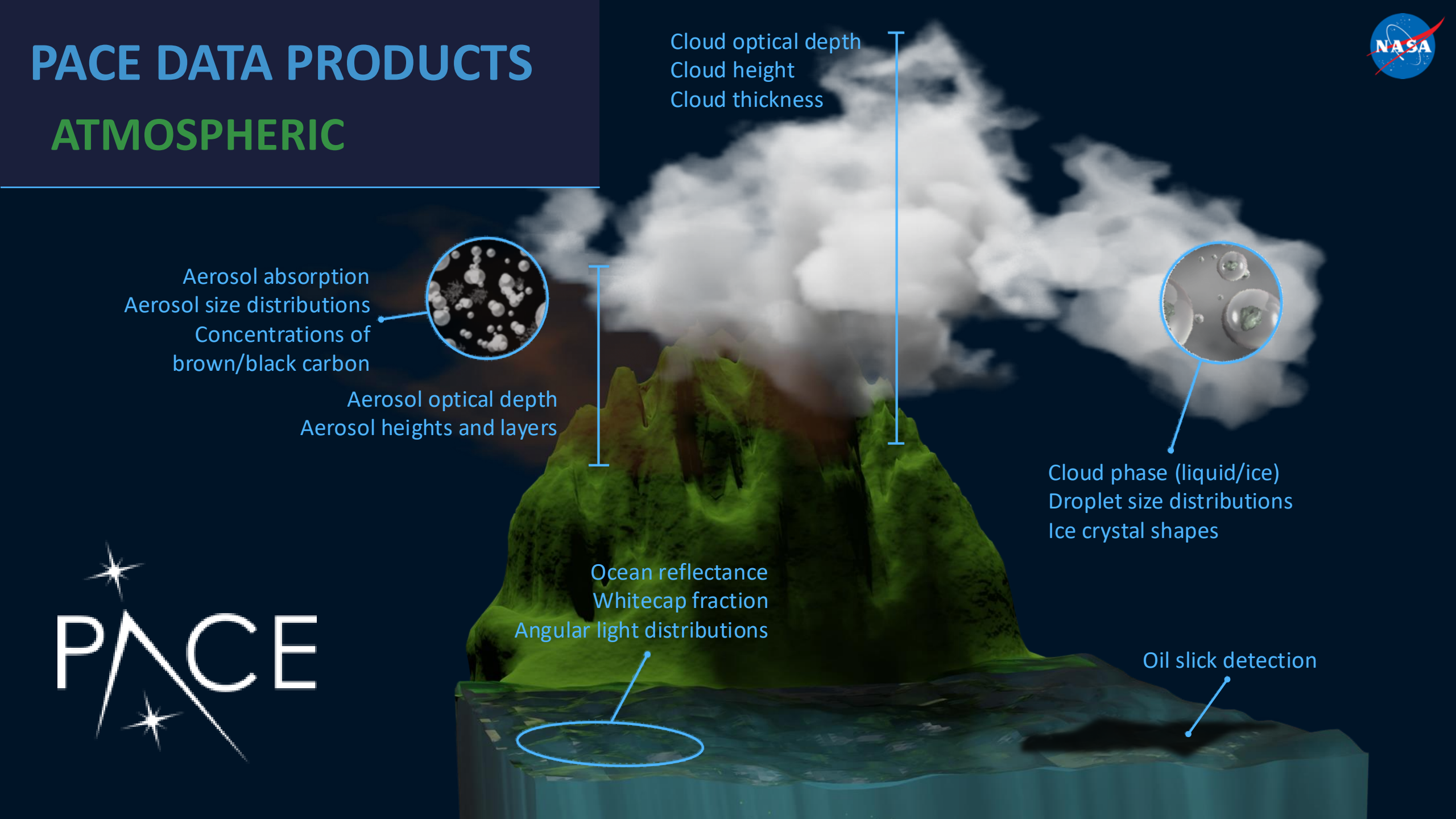
PACE DATA PRODUCTS

ATMOSPHERIC
OCEAN COLOR



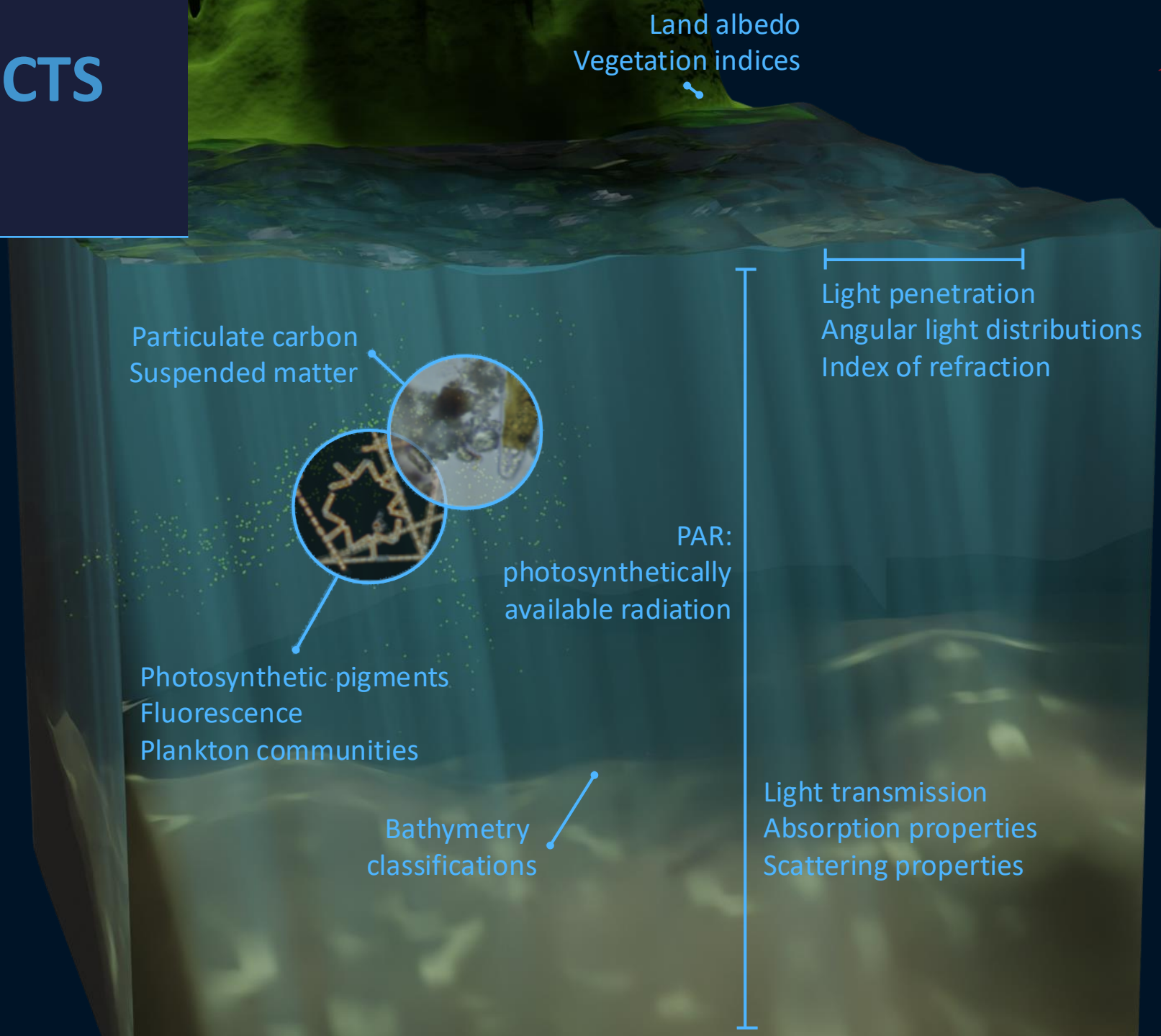
PACE DATA PRODUCTS

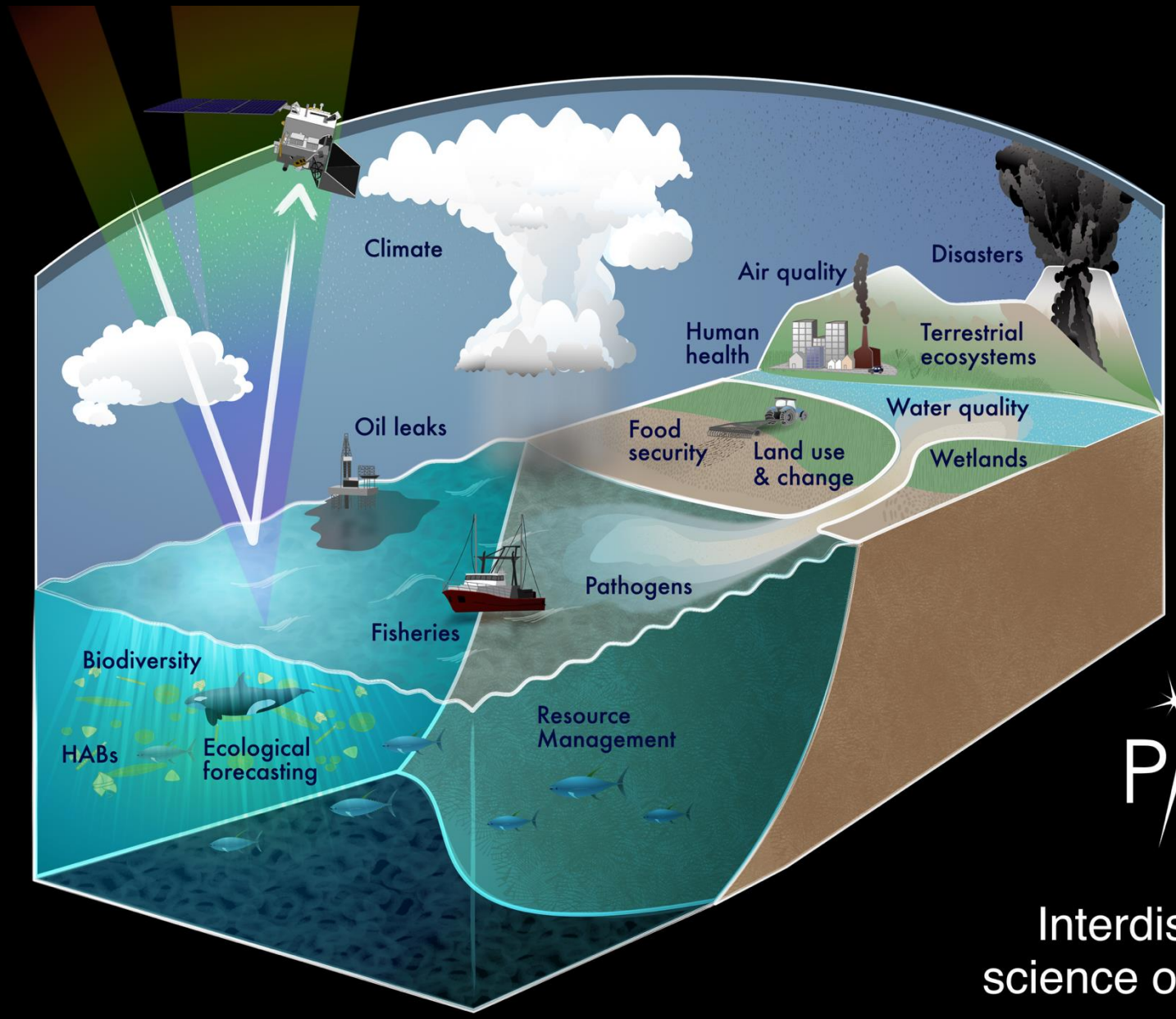
ATMOSPHERIC



PACE DATA PRODUCTS

OCEAN COLOR





PACE

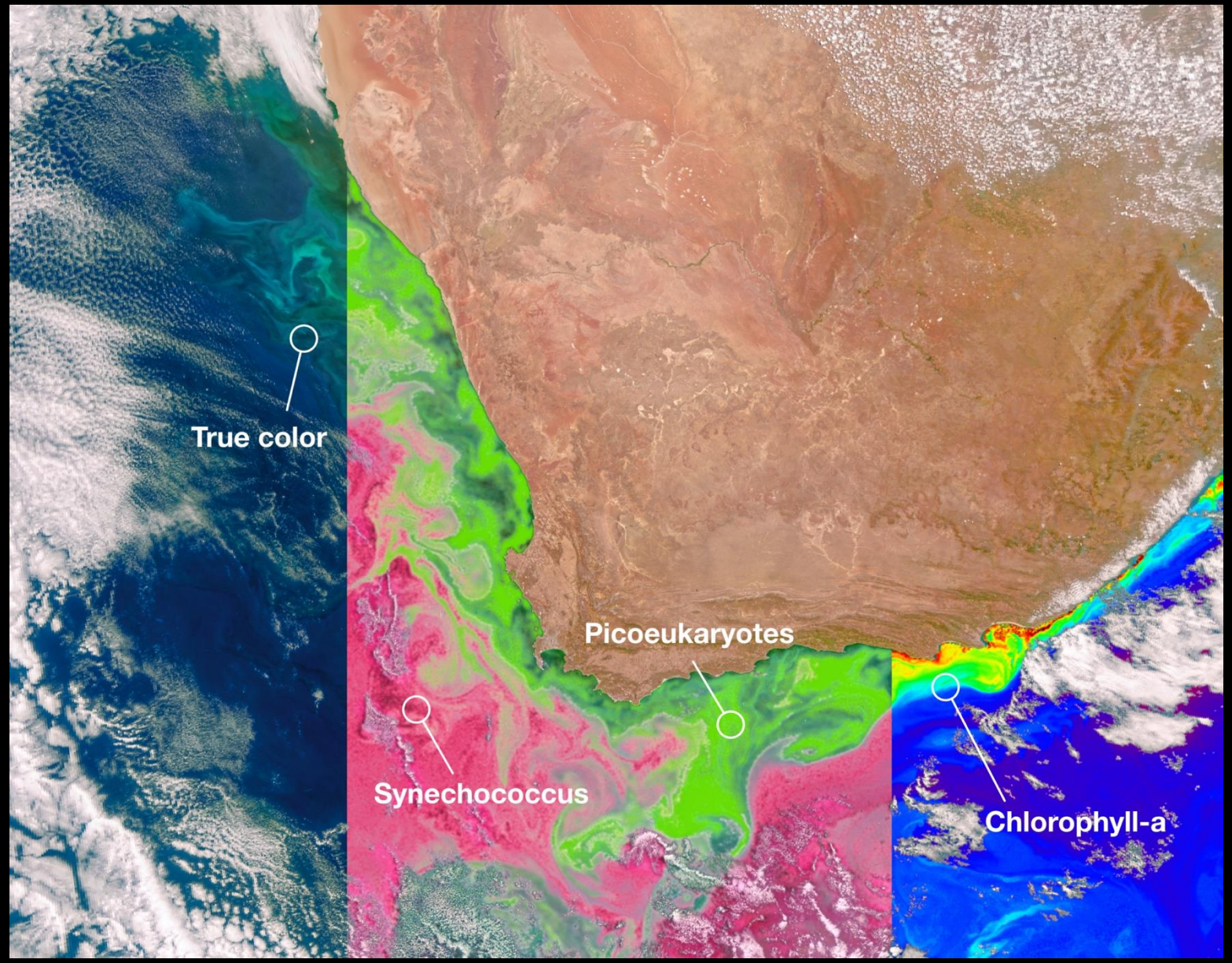
Interdisciplinary science objectives

PACE Launch Feb. 8th 2024 1:33 AM EST

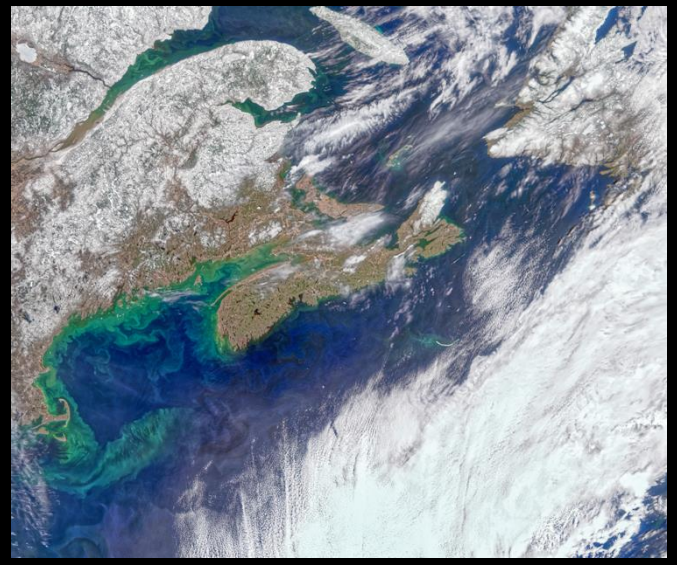
Space Launch Complex 40 at Cape Canaveral Space Force Station Space in Florida

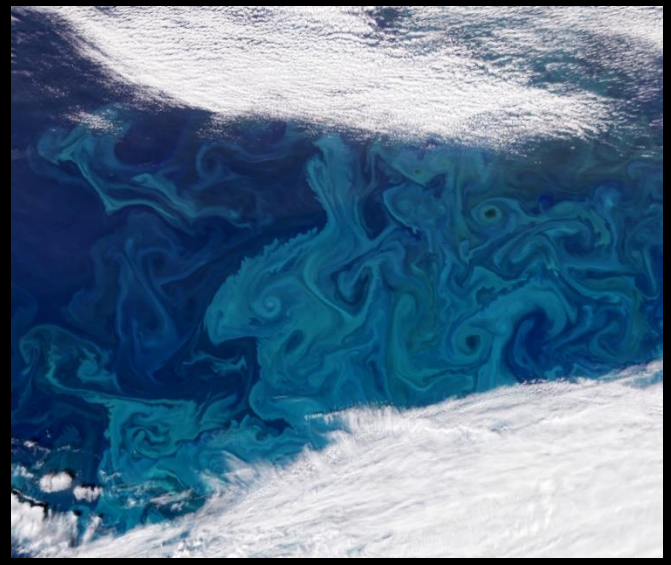
PACE Hawaiian shirts

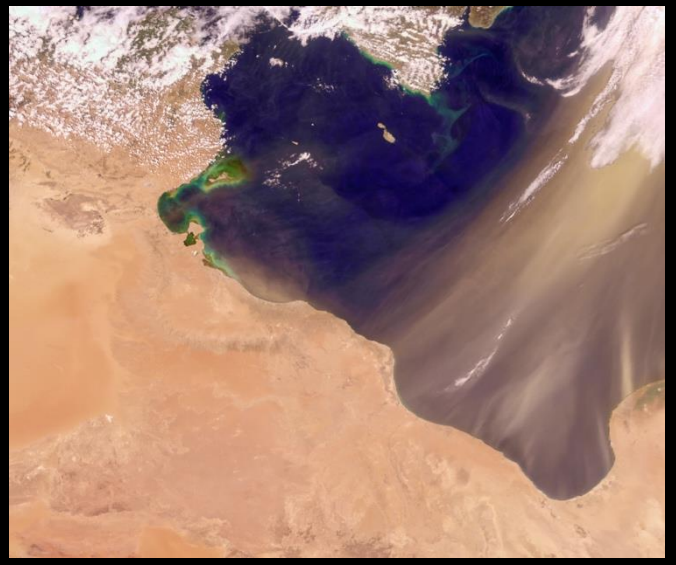
First Light Image

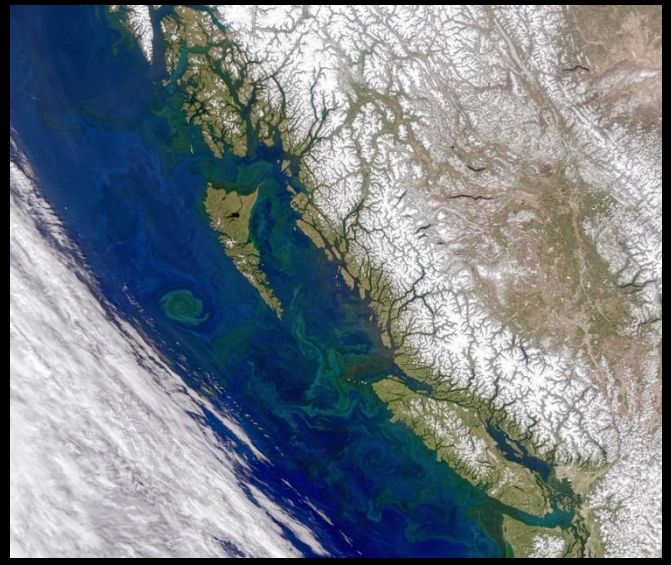


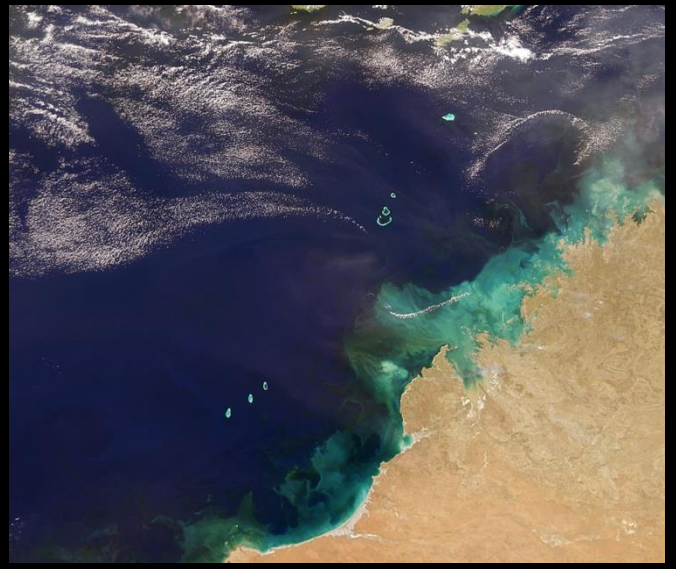
PACE RGB Imagery



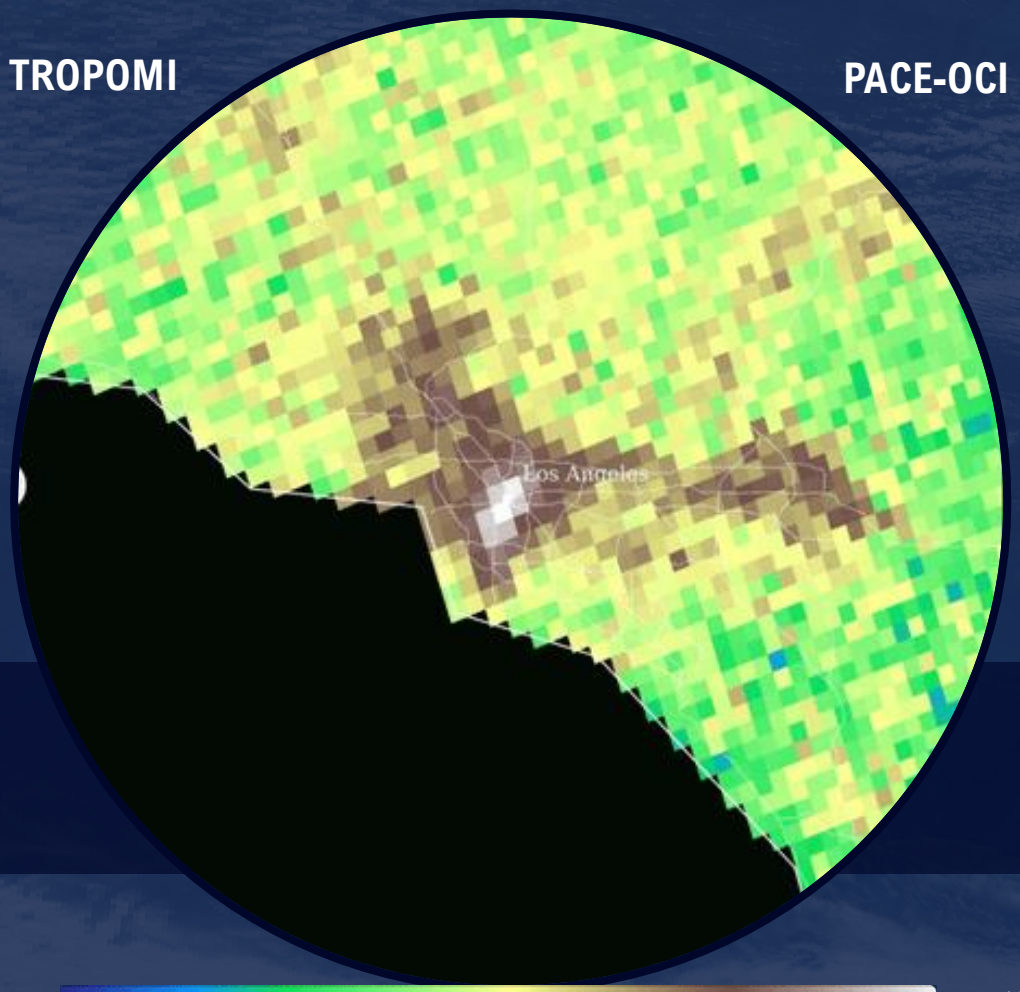








RETRIEVING TRACE GASES IN HIGH RESOLUTION



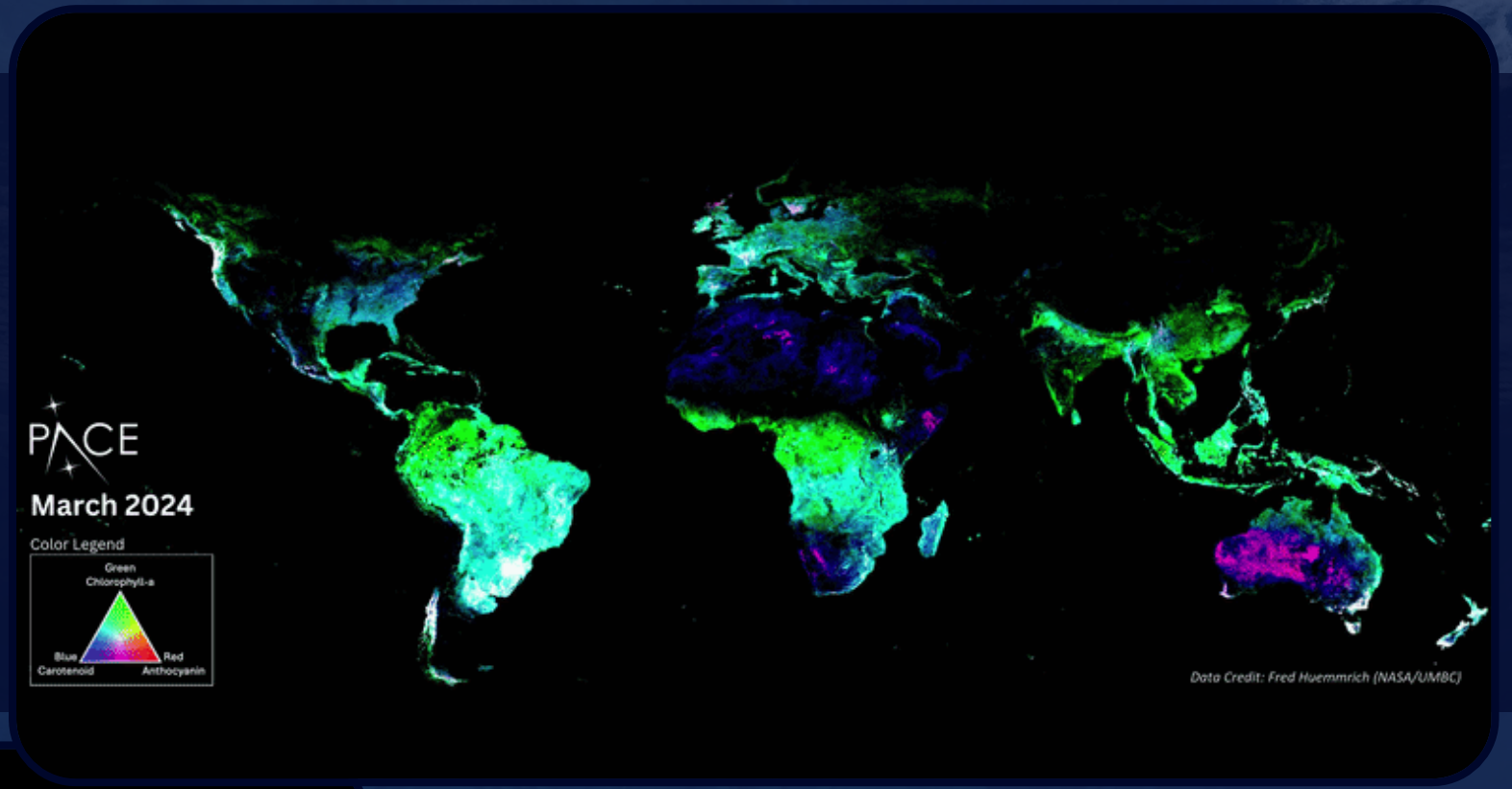
- **Ground-breaking, high spatial resolution NO_2 retrievals from PACE OCI** reveal finer-scale details of NO_2 sources, such as vehicular emissions and power plants, compared to TROPOMI & TEMPO
- Enabled by neural network training with TROPOMI data

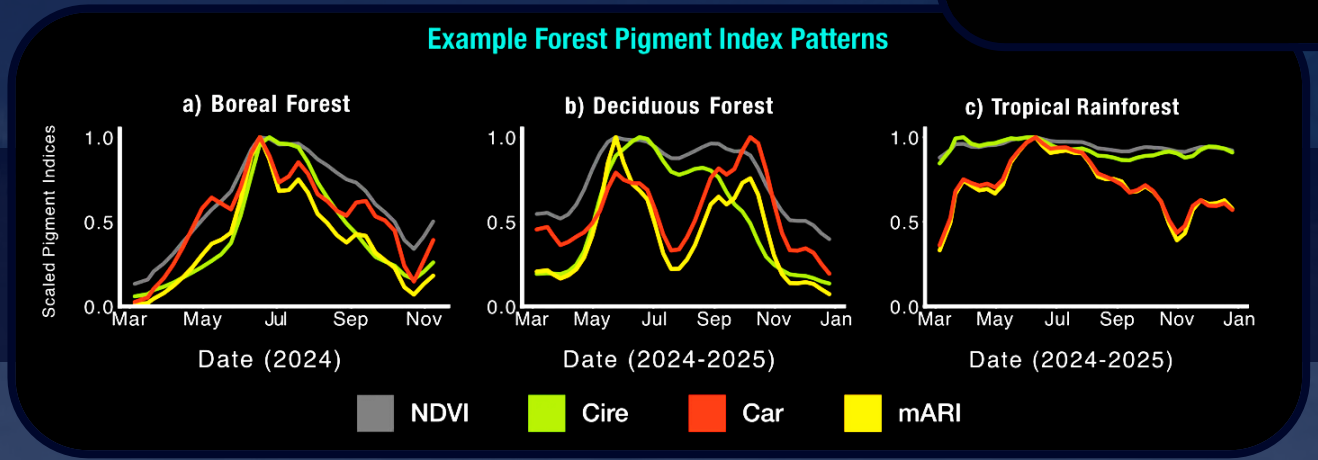
WILL ENHANCE LOCAL AIR QUALITY MONITORING AND IMPROVE REGIONAL CHEMISTRY MODELING

#9: SIMULTANEOUSLY RETRIEVING 10 VEGETATION INDICES

PACE's vegetation indices provide first-ever simultaneous information from space about vegetation type, health status, productivity and leaf area.

Only PACE can provide this information globally, every 1-2 days.



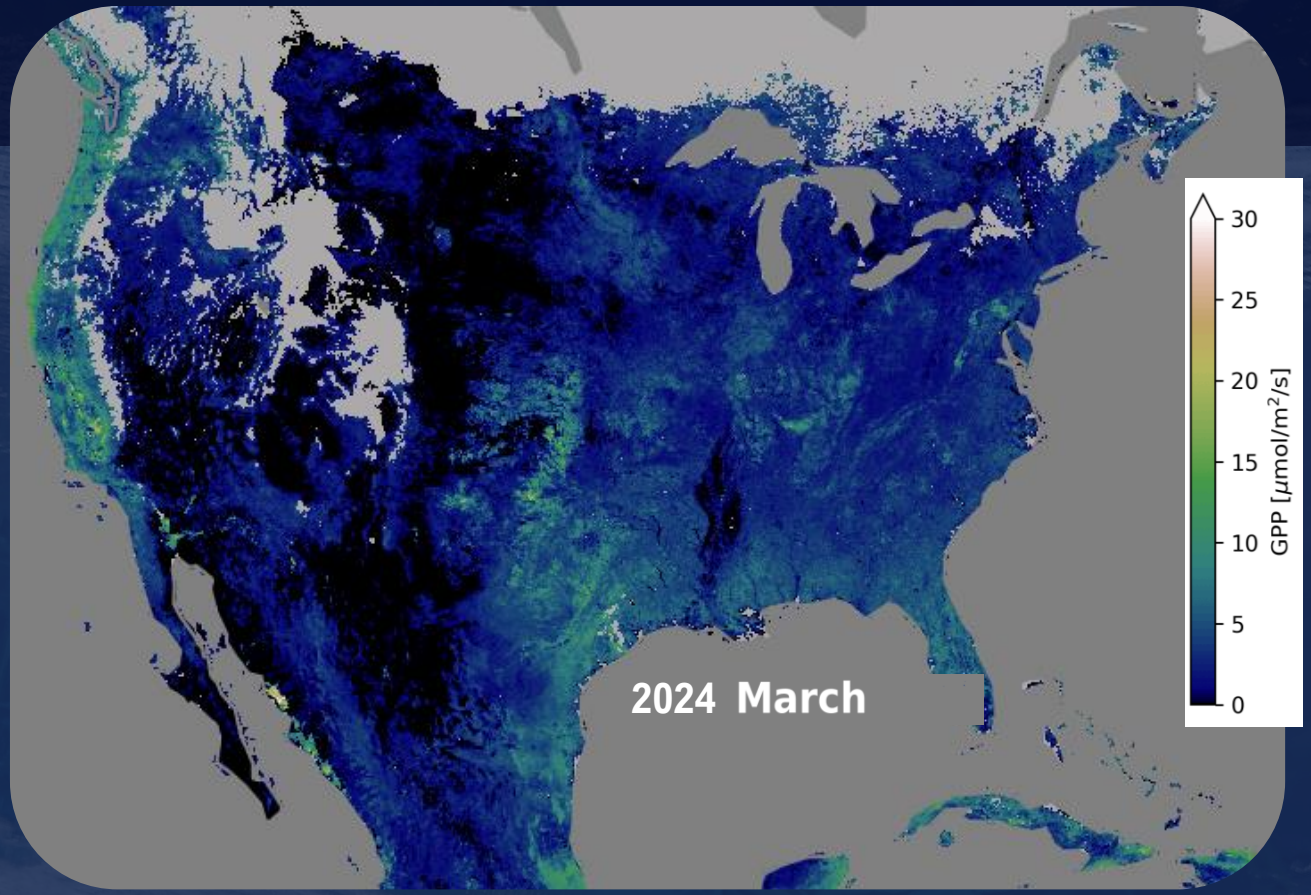


UNPRECEDENTED WAY TO MONITOR GLOBAL FOREST SEASONAL CHANGES

ESTIMATING TERRESTRIAL GROSS PRIMARY PRODUCTION (GPP)

PACE GPP product is uniquely calculated with PACE's spectral reflectance alone

- **SUPPORTS AGRIGULTURE AND FORESTRY APPLICATIONS BY INDEPENDENTLY DESCRIBING GLOBAL SEASONAL AND TRANSIENT VARIABILITY IN TERRESTRIAL PRODUCTIVITY**

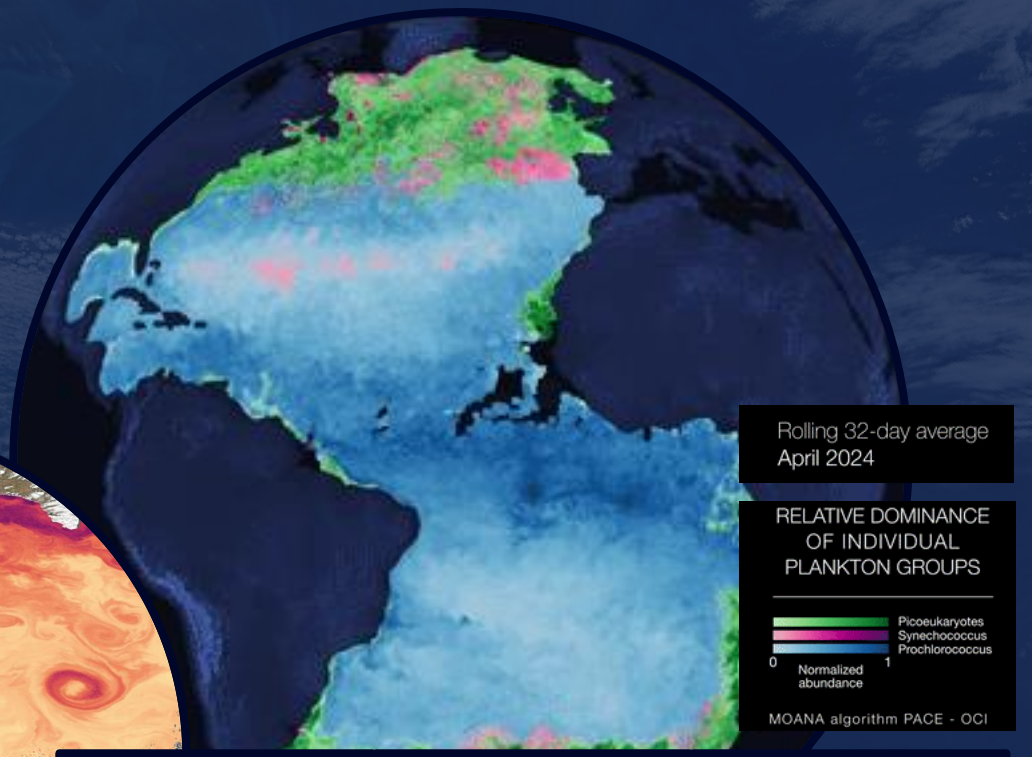


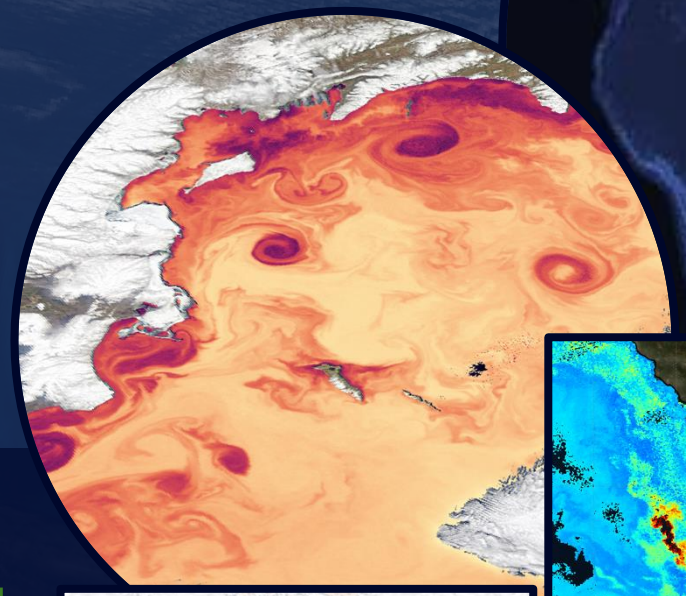
Monthly Gross Primary Productivity
March – November 2024

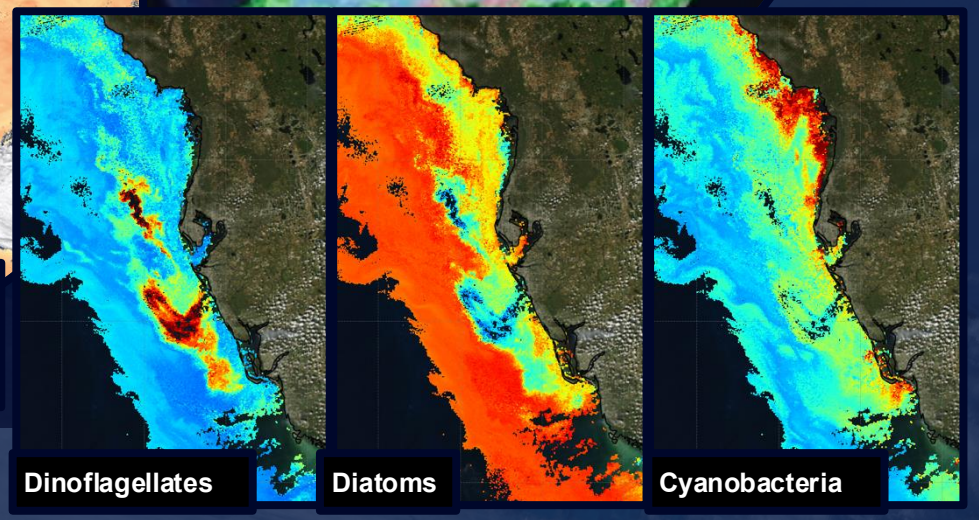
IDENTIFYING BENEFICIAL PHYTOPLANKTON COMMUNITIES

Unique, new satellite phytoplankton identification algorithms enabled by OCI's hyperspectral capabilities

- Atlantic **cyanobacteria** (*Prochlorococcus*, *Synechococcus*) (MOANA)
- Atlantic **picoeukaryotes** (MOANA)
- **Diatoms** (Chase et al.)
- Gulf Coast phytoplankton (Liu et al.)





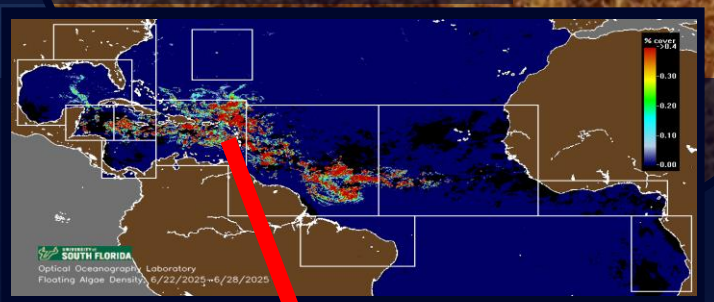


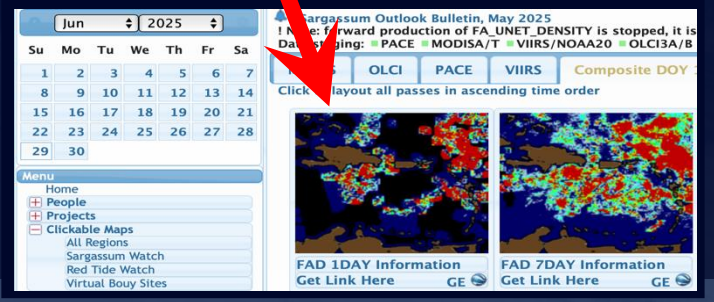
PHYTOPLANKTON ARE AT THE BASE OF THE OCEAN FOOD CHAIN AND FEED OUR FISHERIES

IDENTIFYING HARMFUL PHYTOPLANKTON COMMUNITIES

Sargassum causes infrastructure damage, resulting in fishery and major tourism losses

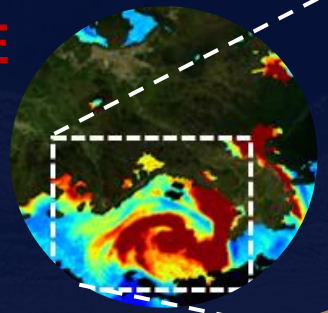
2014-15 Sargassum Inundation Event (Wynne 2017)

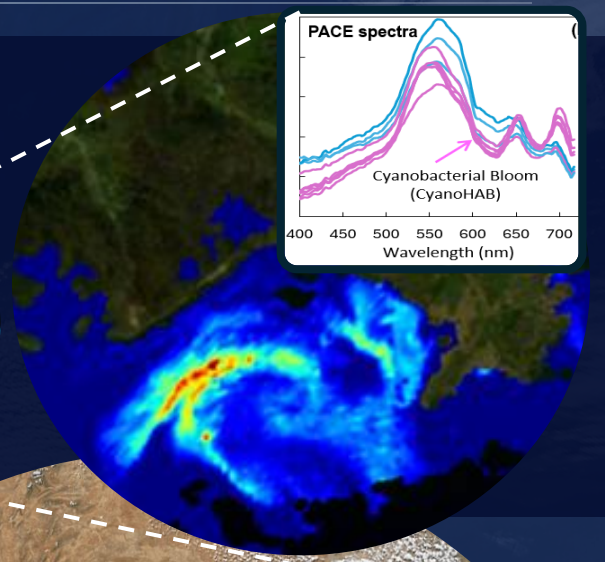


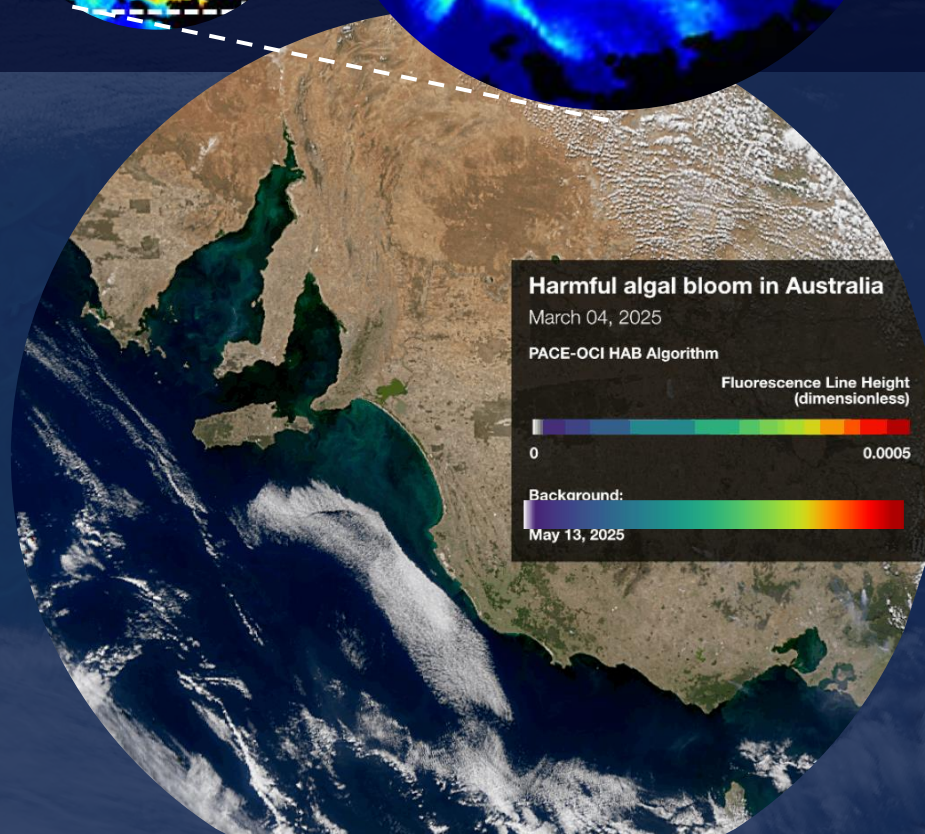


SARGASSUM is now better detected from space thanks to OCI's global coverage and hyperspectral and SWIR capabilities

PACE can uniquely identify the NUISANCE and TOXIC ALGAE within a larger plankton bloom



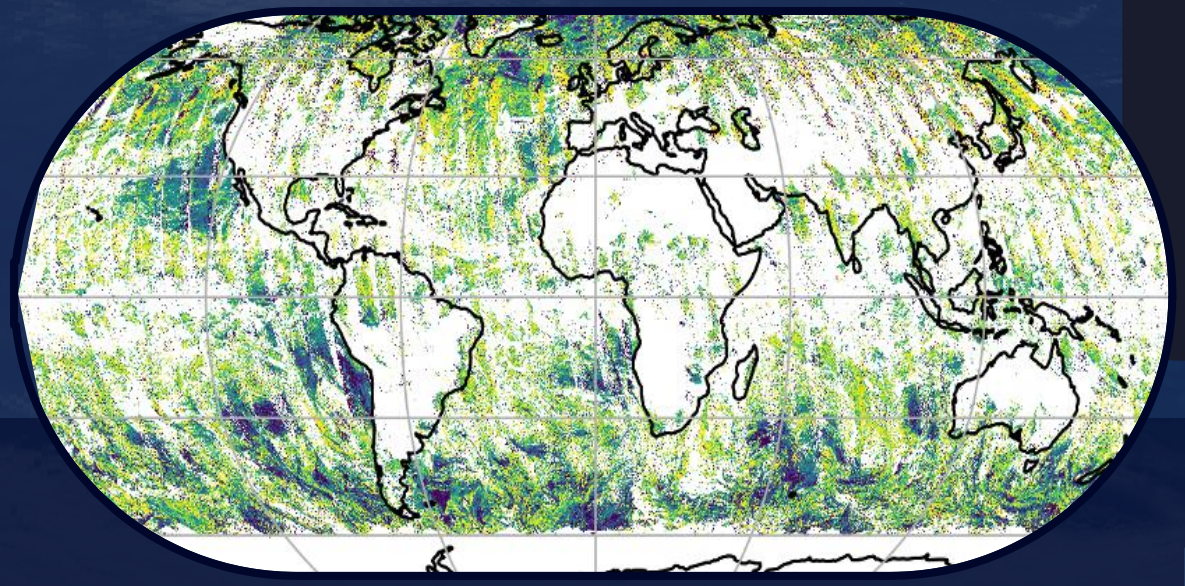


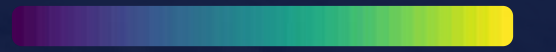


RETRIEVING NOVEL CLOUD PROPERTIES

Ship track identification in clouds

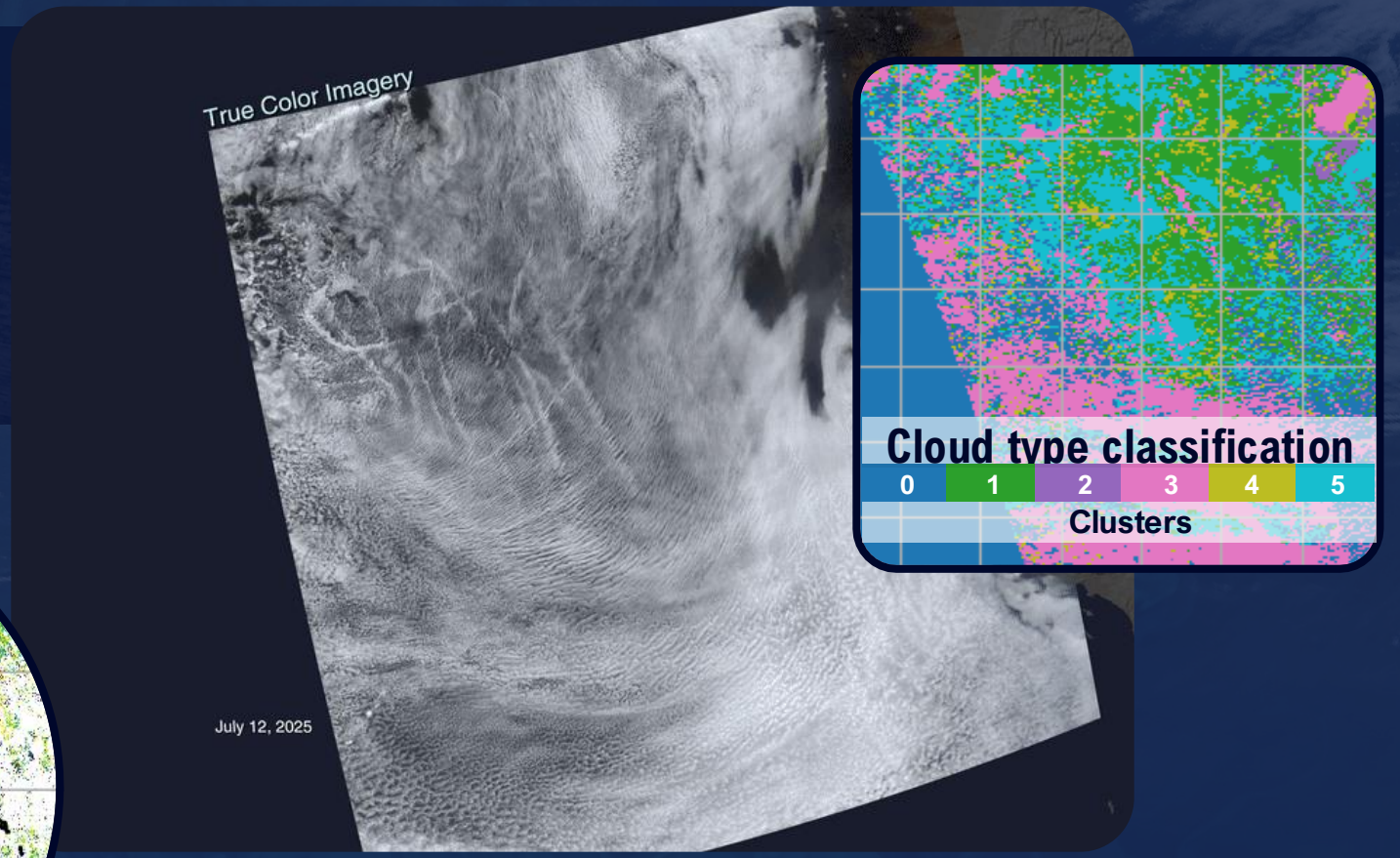
Offers insight into the impact of aerosols on clouds and Earth's energy balance





0.005 0.05 0.4

Cloud droplet effective variance

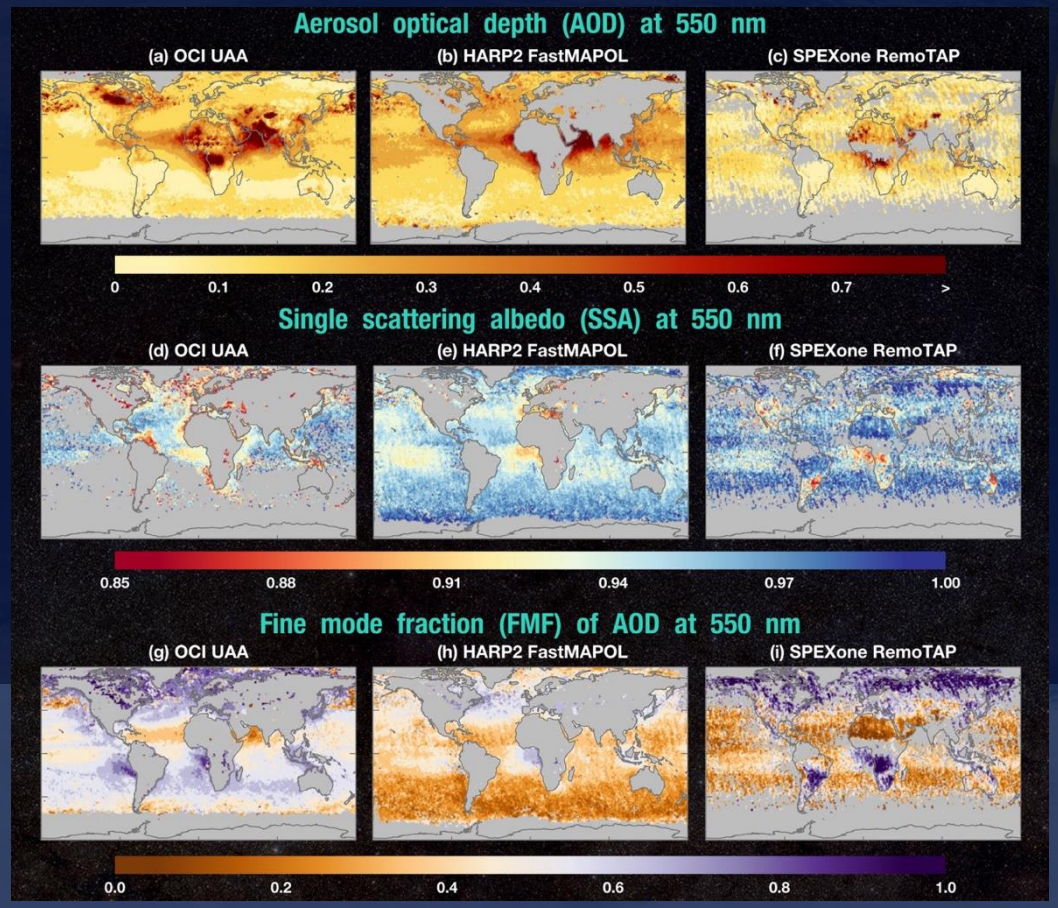


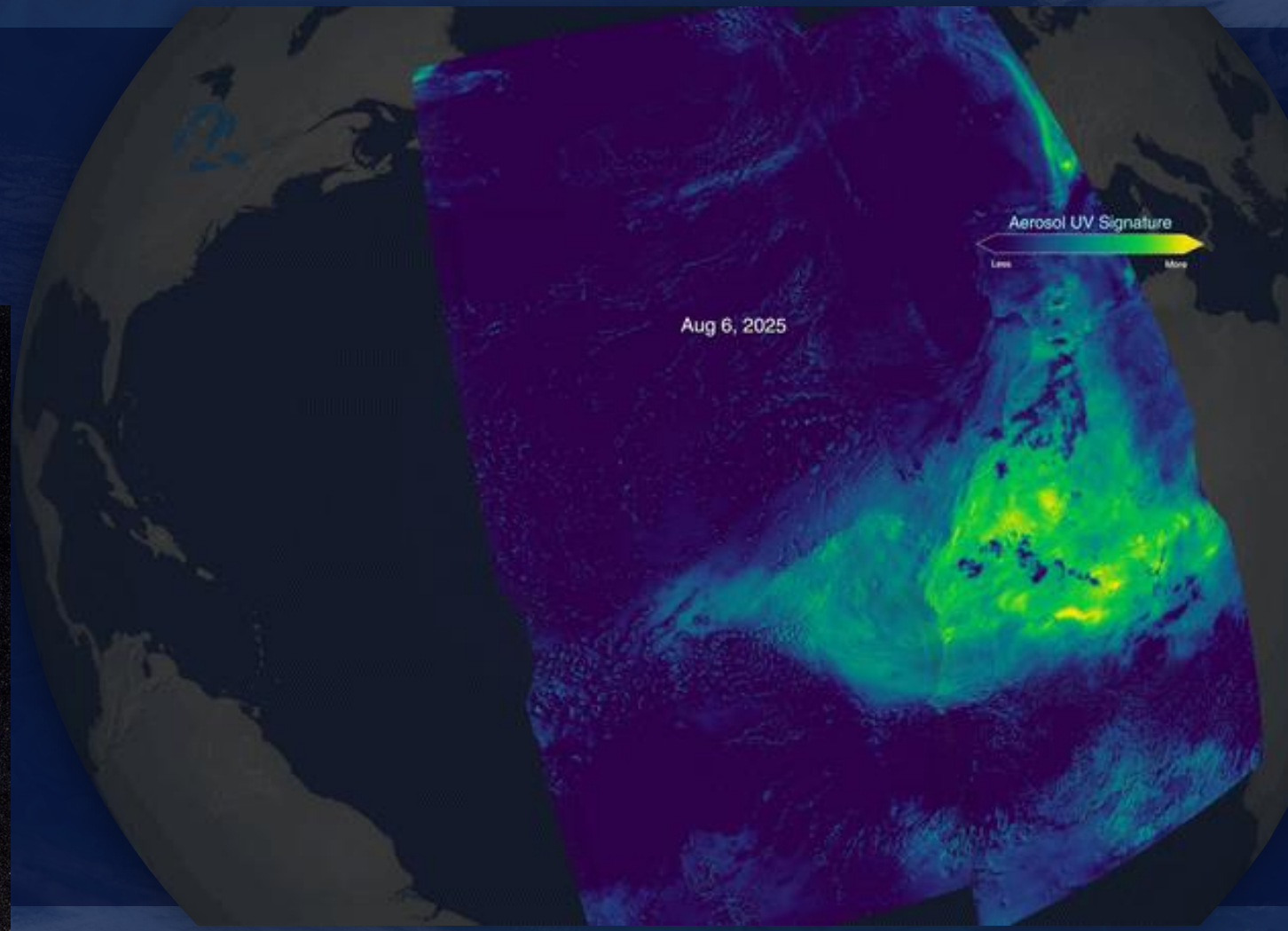
FIRST EVER OBSERVATION OF VARIABILITY OF CLOUD DROPLET SIZE

RETRIEVING NOVEL ATMOSPHERIC AEROSOL PROPERTIES

PACE allows identification of aerosols

All three of PACE's instruments inform on atmospheric aerosol size, shape, and composition

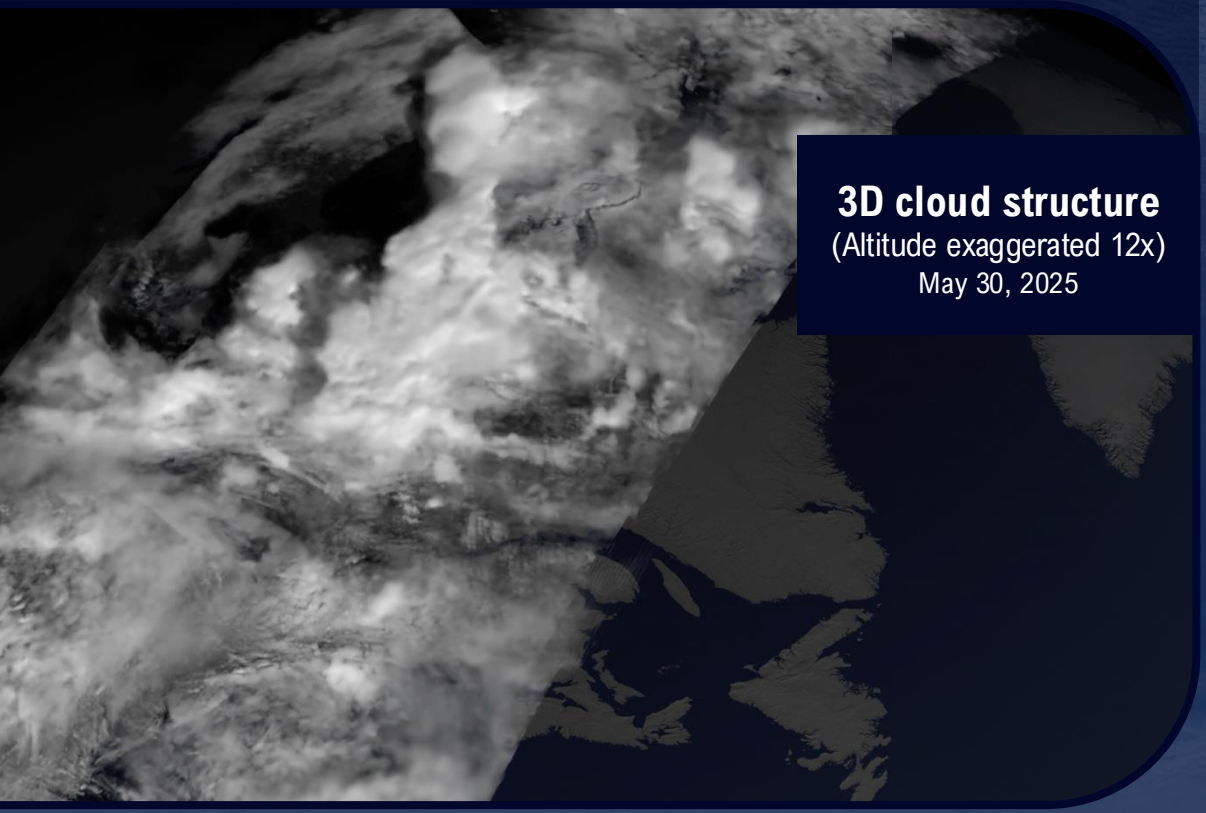




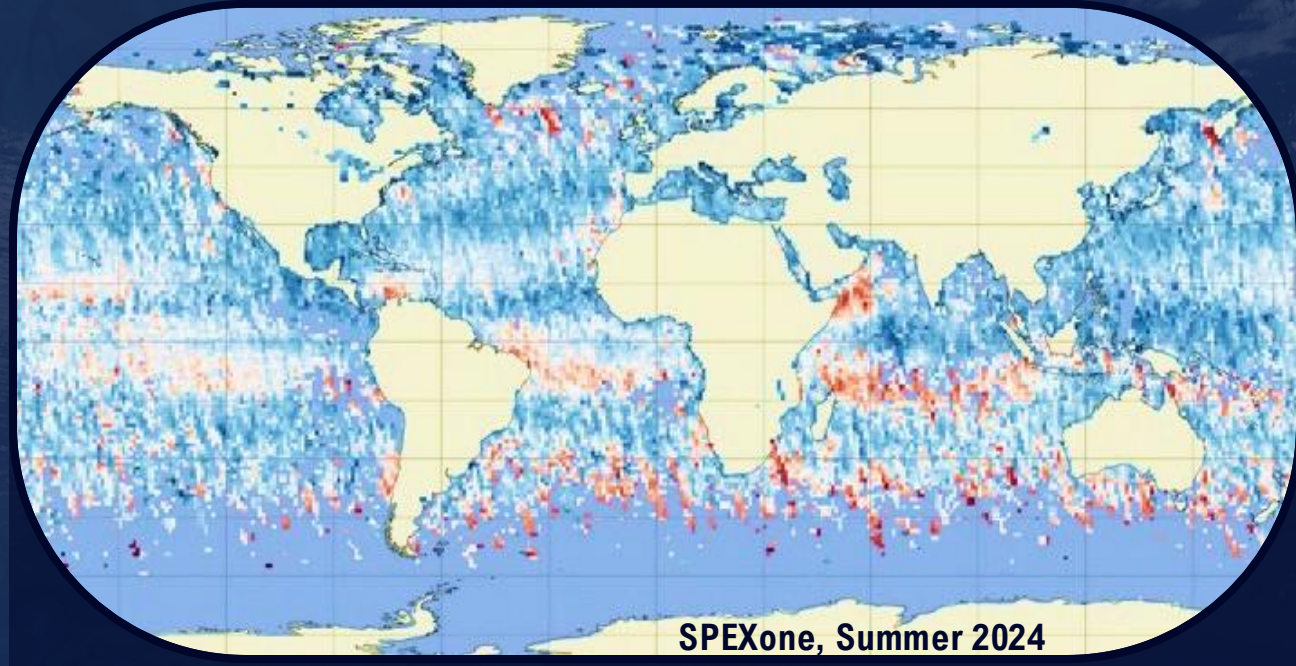
PROVIDES CRITICAL ROUTINE, GLOBAL OBSERVATION OF AEROSOL SPECIATION

EXPLOITING THE ANGULAR NATURE OF OUR POLARIMETERS

PACE's unique angular polarimetry allows us to study the 3D structure of clouds



3D cloud structure
(Altitude exaggerated 12x)
May 30, 2025



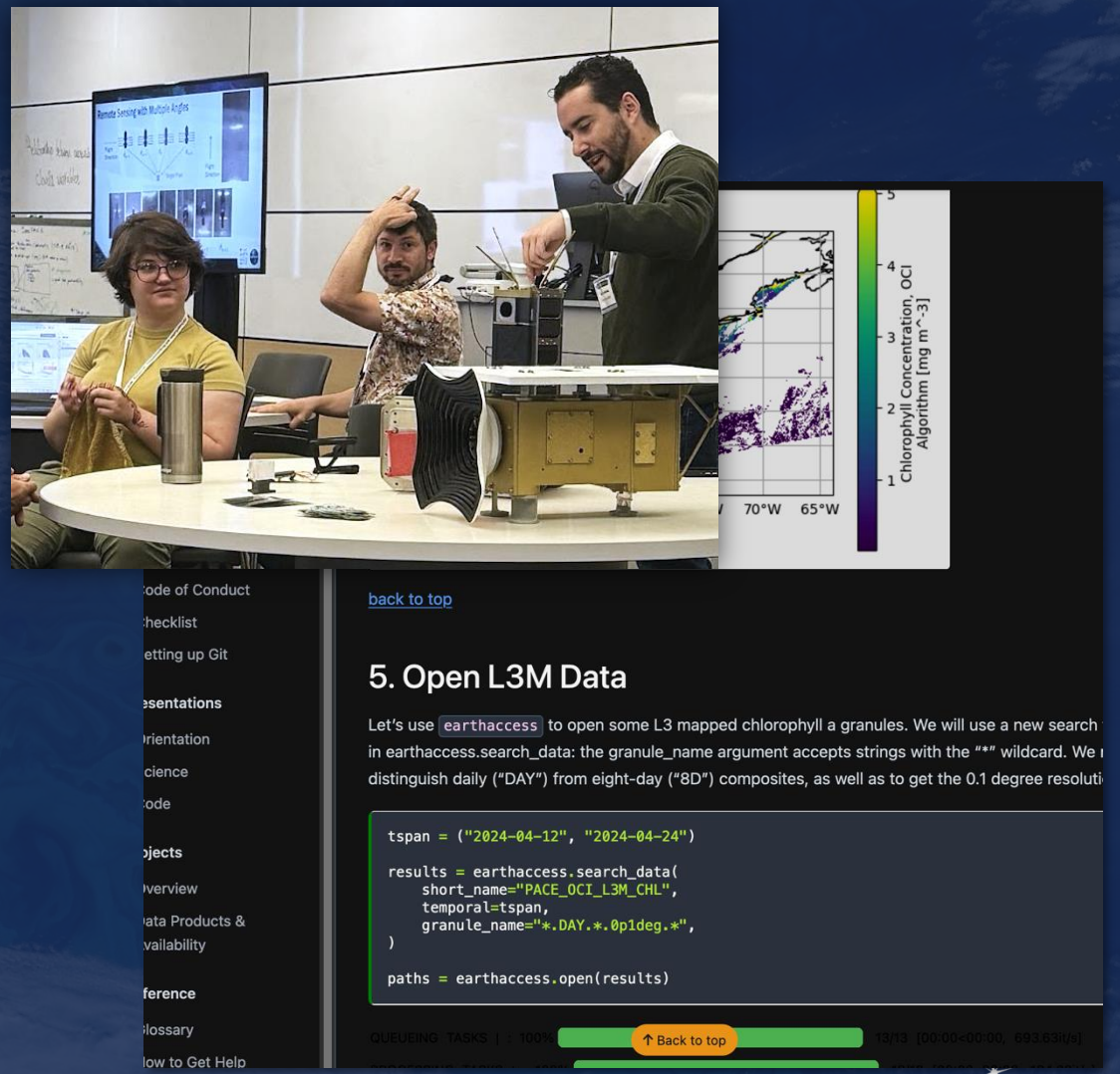
It also enables unique measurements of wind speed, on spatial scales smaller than previously available

PACE Communications

briefly, in no particular order

PACE HACKWEEKS
EMPOWERING DATA USERS WITH CUTTING-EDGE TOOLS

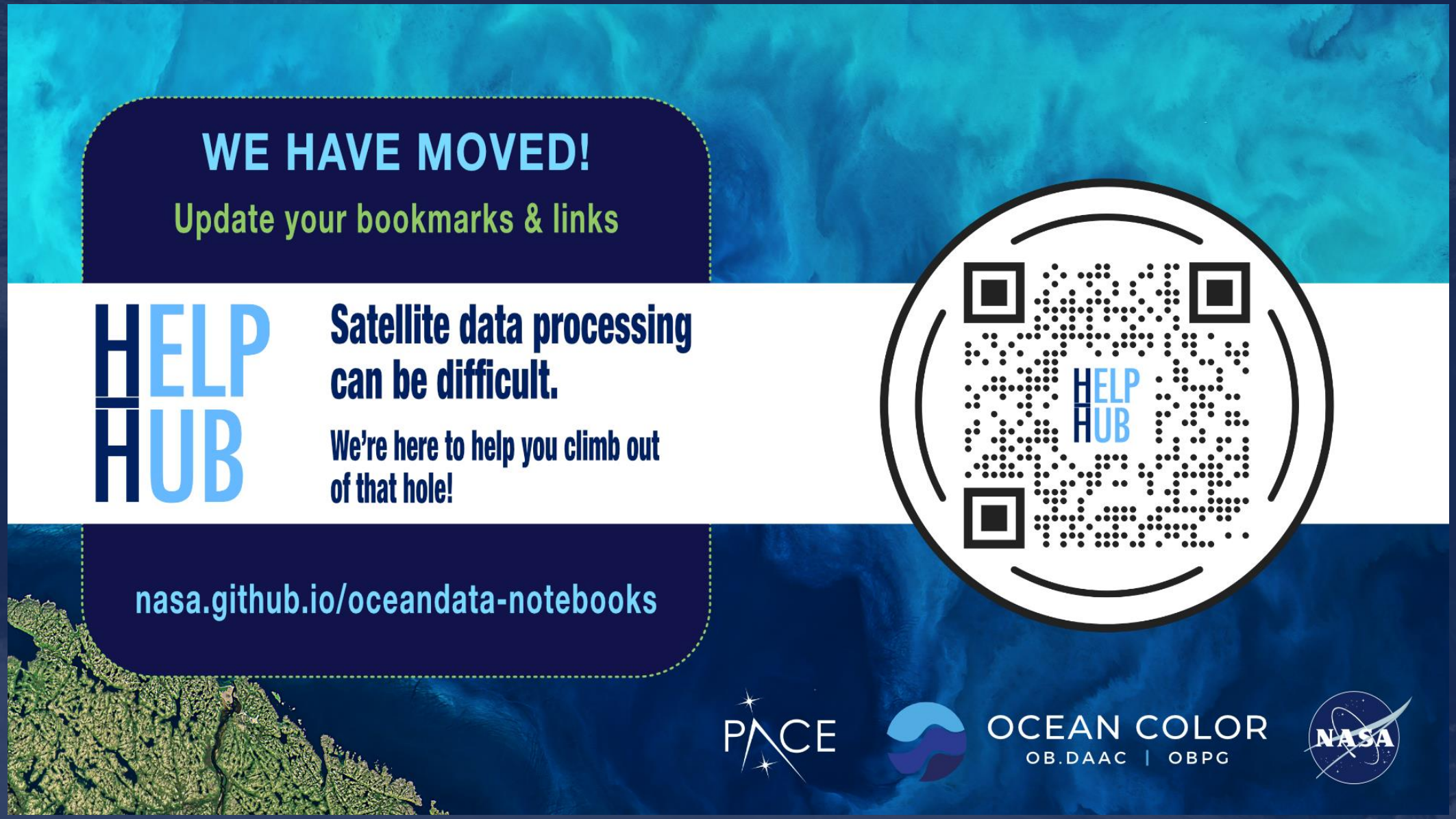
- Comprehensive learning approach
- Multi-instrument focus
- Open science
- Revolutionary cloud access
- Kickstarting research



GODDARD EARTH SCIENCES PACE

NASA'S PACE MISSION

HELP HUB – OUR RESOURCES REACHING MORE PEOPLE



NASA'S PACE MISSION

HELP HUB – OUR RESOURCES REACHING MORE PEOPLE

NEW PUBLICATION: RECONSTRUCTING CLOUDS IN 3D WITH MULTI-ANGULAR POLARIMETRY

Foley, S. R. et al. (2025), *3D cloud masking across a broad swath using multi-angle polarimetry and deep learning*.
DOI: 10.5194/amt-17-7027-2024

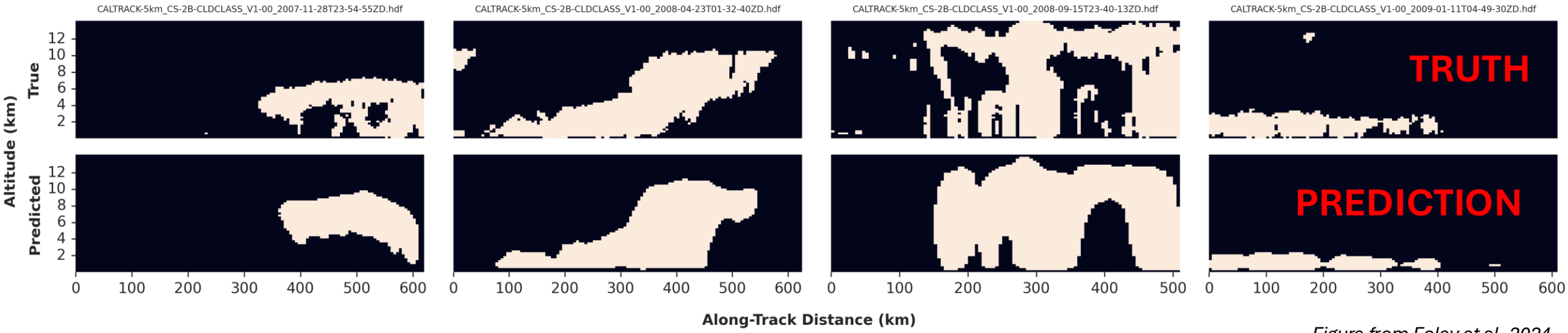


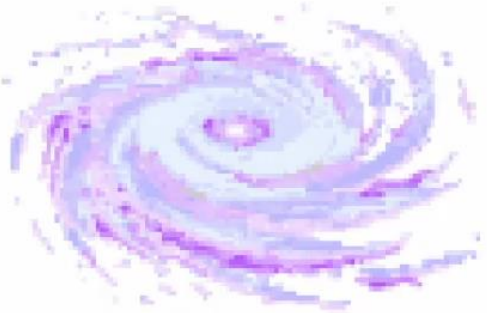
Figure from Foley et al. 2024

Ground truth CloudSat radar profiles (top) and model predictions (bottom)

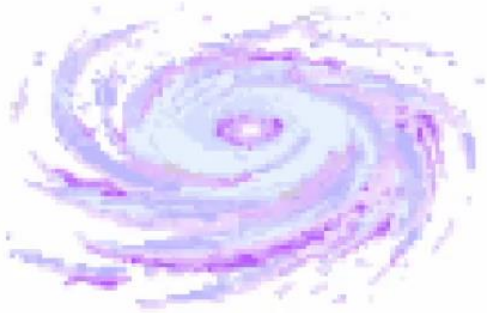
- Neural network (NN) was trained to reconstruct the 3D cloud structure using POLDER multi-angle polarimeter (MAP) observations based on coincident CloudSat radar data.
- This multi-sensor machine learning paradigm **enables the extension of active sensor products to the wide swath of MAPs,** advancing our understanding of 3D cloud properties & 3D radiative transfer, improving aviation and weather modeling applications and more.

Sean Foley, NASA GSFC/SSAI

Cyclone Courtney



A 3D CLOUD BONANZA

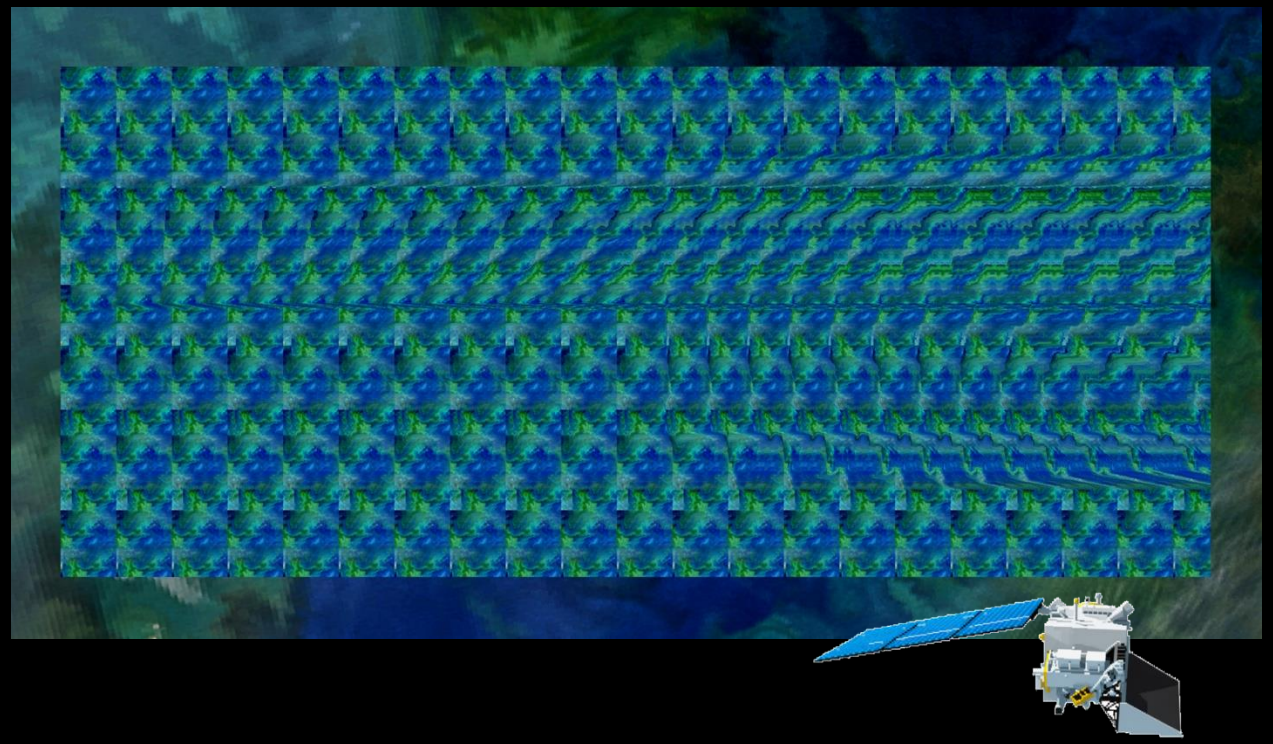


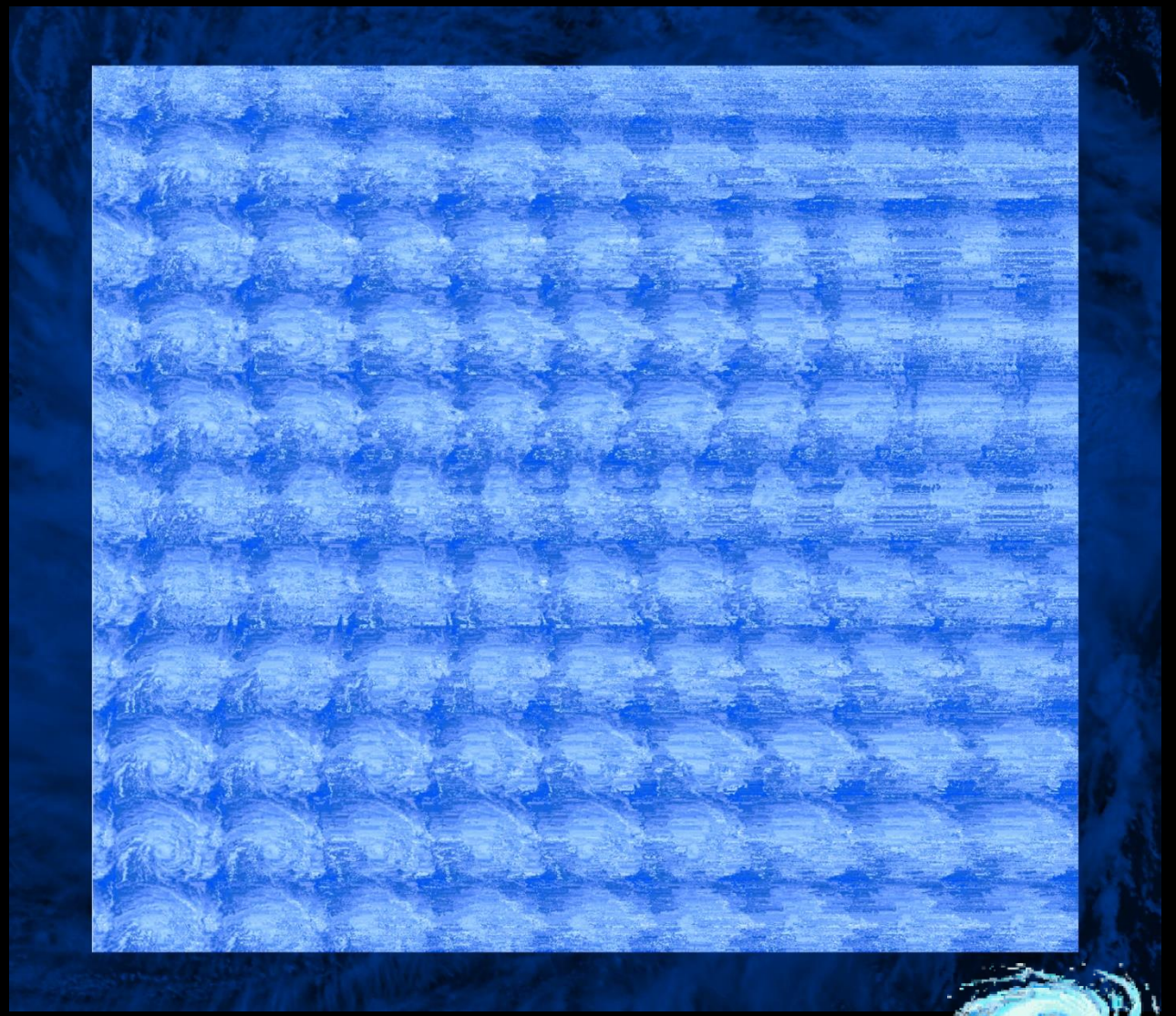
Four Ways to Visualize Storm Towers in Three Dimensions

(Yes, the 90s styling is intentional. Magic Eye stereograms and wiggle GIFs deserve a proper throwback aesthetic!)

PACE Satellite Data | 2025-03-29 | Location: -18.00°N, 91.00°E

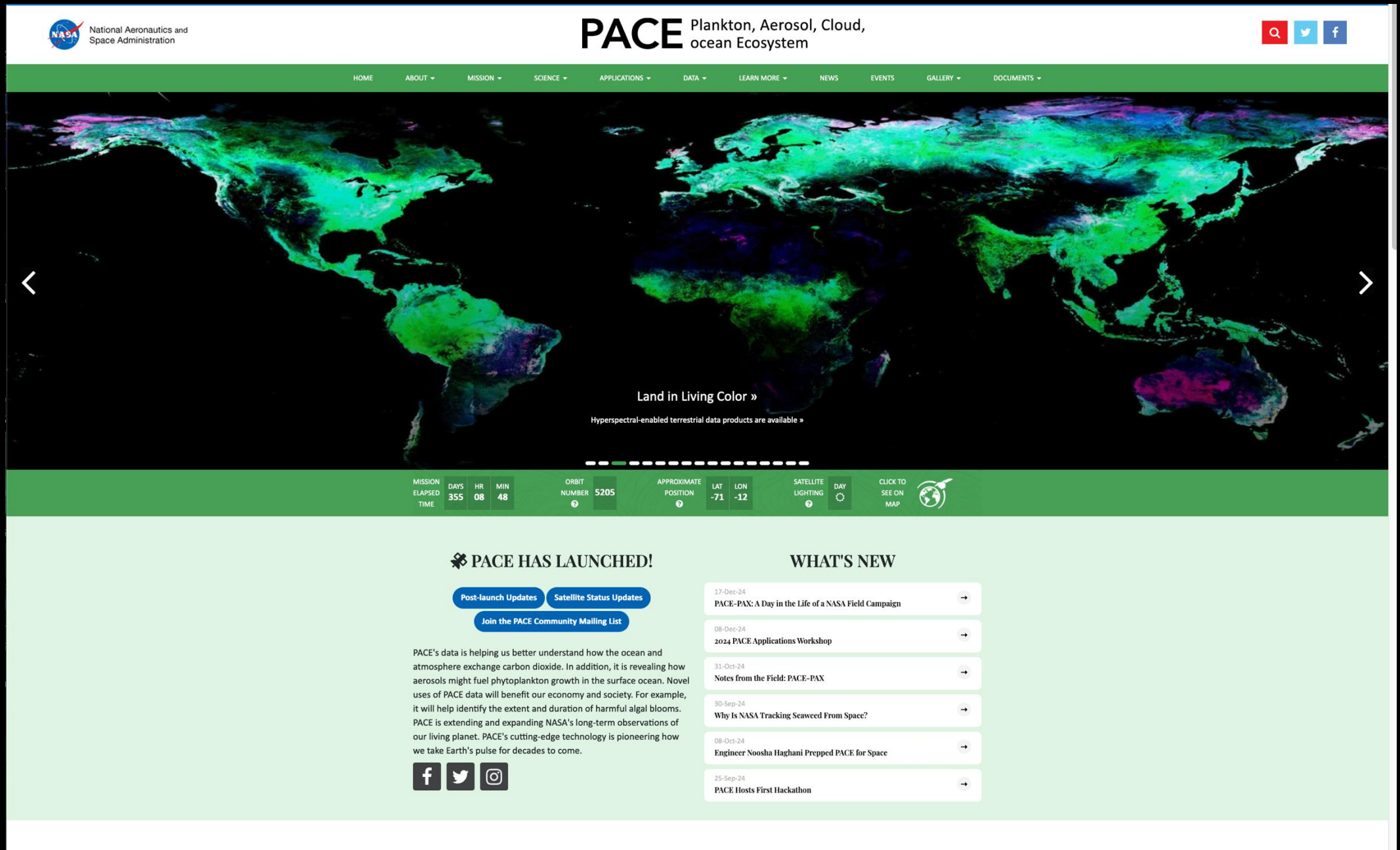
Magic Eye Stereograms



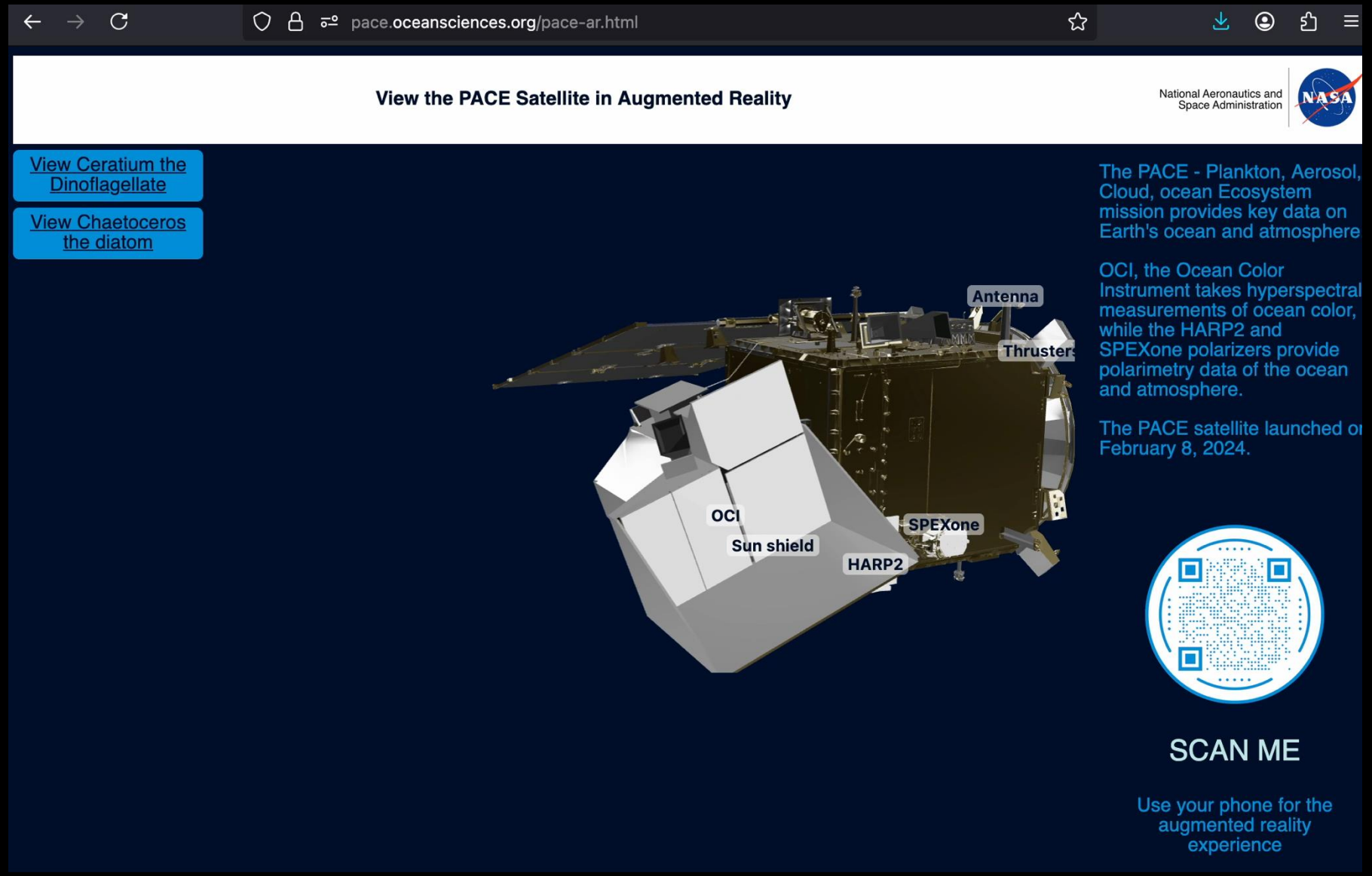


- Position your face very close to the screen
- Relax your eyes as if you're looking at something far in the distance
- Slowly move your head backward
- Be patient. This can take 30-60 seconds of practice to achieve

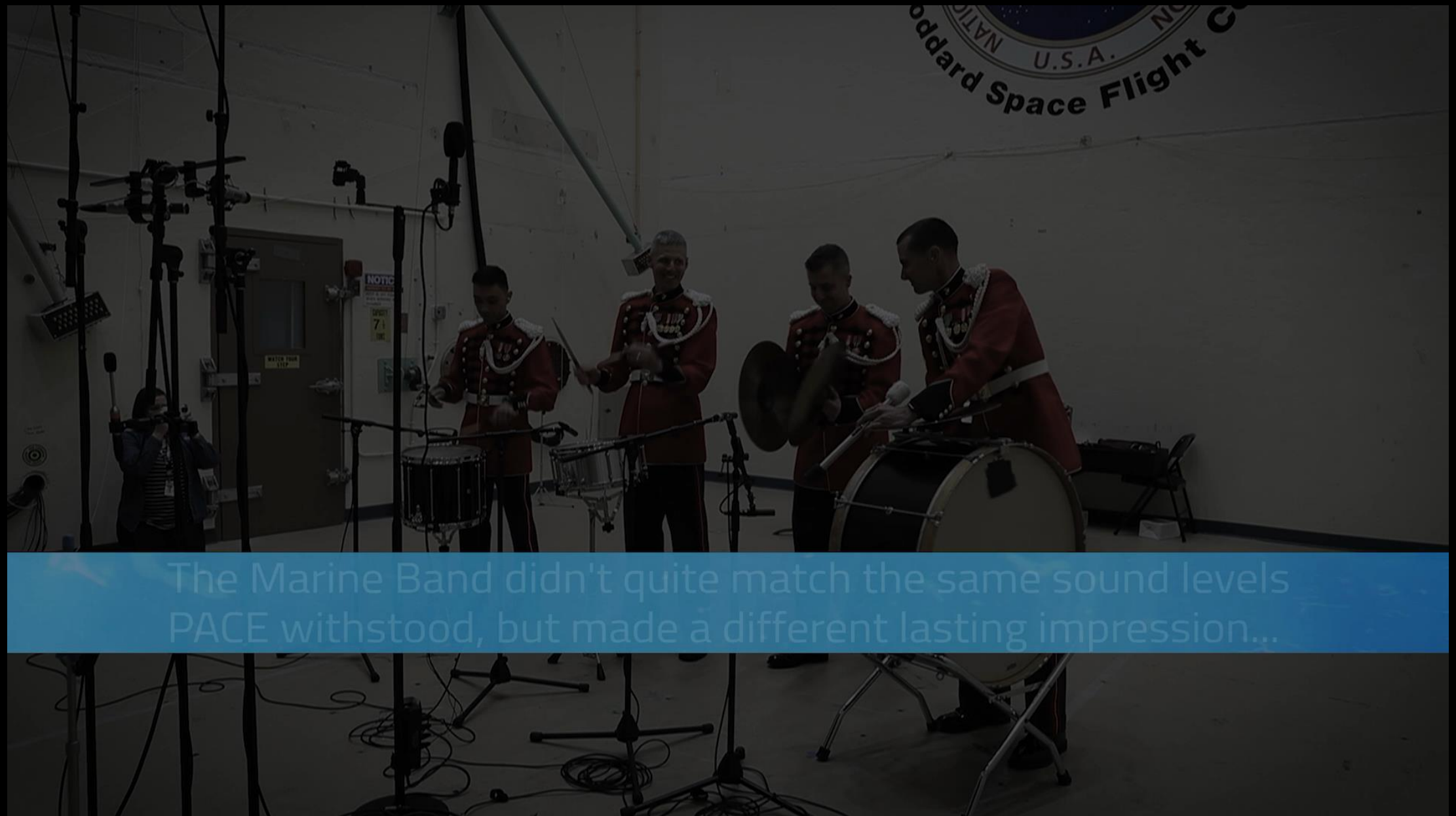
Communications: pace.oceansciences.org



Communications : PACE observatory in Augmented Reality

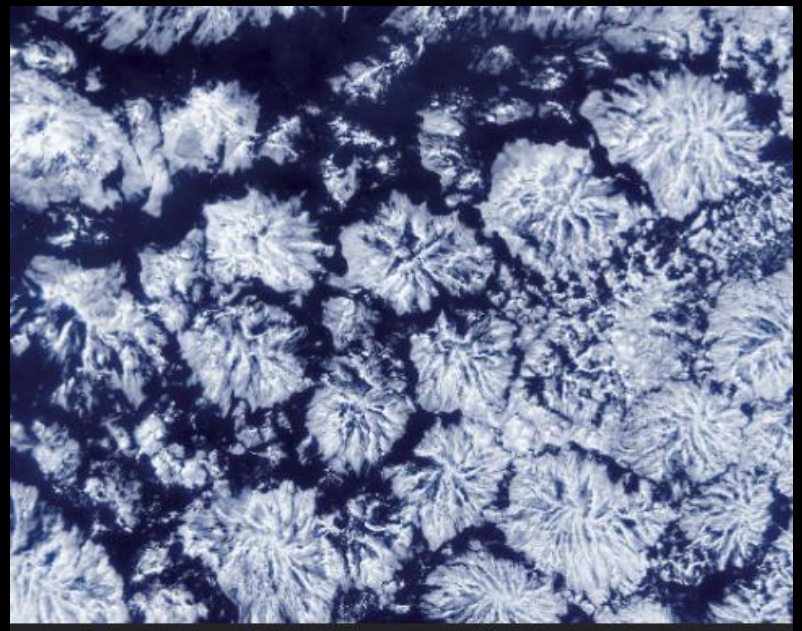


Communications : US Marine Band performance



Communications : Conversation with Alex Honnold

2026 NASA Science Calendar



April 2026

Cloud Rays Over the Peruvian Coast. These low-lying clouds over the Pacific Ocean near Peru might bring to mind snowflakes under a magnifying glass, or high mountain peaks as seen from above. They're named actinoform clouds, from the Greek word for "ray" because of their distinctive radiating shapes. Researchers use satellite data to investigate clouds as they gather, move across the globe, and dissipate, getting a big-picture view of this essential element in Earth's weather and energy budget. Some clouds reflect solar energy back into space, while others act as an insulating blanket for the planet, trapping heat closer to the ground. This image was taken July 14, 2024, by the Ocean Color Instrument on NASA's PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) satellite. PACE also carries specialized instruments called polarimeters designed to measure clouds and other particles in the atmosphere, including dust, wildfire smoke, and pollution. With these new tools, scientists can track air quality and explore key questions about how clouds form and change over time. **Credit:** NASA/PACE Ocean Color Instrument

https://go.nasa.gov/46gcL71

ER-2 Flies High for PACE. NASA pilot Greg "Coach" Hähnle prepares for a flight on the ER-2 aircraft at NASA's Armstrong Flight Research Center in Palmdale, California. His mission: to collect measurements that help assess the performance of NASA's PACE satellite, which observes tiny particles in the atmosphere and microscopic organisms in oceans and other bodies of water. These high-altitude flights were just one element of a 2024 field campaign called PACE-PAX (short for PACE Postlaunch Advance eXperiment), which also involved scientists taking flight in a propeller plane and sailing aboard a research vessel to collect data. **Credit:** NASA

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Did you know that April is Citizen Science Month? NASA's citizen science projects are collaborations between scientists and interested members of the public. Many projects can be done by anyone, anywhere, with just a cellphone or laptop. Visit https://science.nasa.gov/citizenscience or scan the QR code to get started.			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

March 2026

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

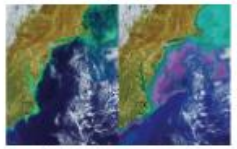
May 2026

S	M	T	W	T	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

August 2026

Pyramid Lake in Bloom. Dense bands of blue-green algae, or cyanobacteria, swirled through the waters of Pyramid Lake in October 2024. This lake in western Nevada experiences blooms almost every year, some of which produce toxins that can sicken people and animals. Satellite instruments, such as the one that captured this image from the joint NASA/U.S. Geological Survey's Landsat mission, can detect the green chlorophyll pigments in these algae. If there's a sharp increase that indicates a bloom, satellite data can help recreation managers and water resource departments determine where to focus water quality testing, enabling them to issue timely alerts for swimmers and boaters when necessary. **Credit:** NASA Earth Observatory/Landsat

https://go.nasa.gov/3BUgB4W



Ultramarine Life, Identified from Space. The hyperspectral Ocean Color Instrument (OCI) aboard NASA's PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) satellite provides an unprecedented view of life on Earth, revealing information about the tiny organisms that play an outsized role in our ocean ecosystems. It images Earth's billion-acre ocean each week, such as the area of the U.S. East Coast and Atlantic Ocean shown on the left, and can identify kinds of green phytoplankton. But with this new instrument aboard PACE, scientists can visualize different wavelengths of light to identify which types of phytoplankton are present—an important distinction, as some are toxic while others are essential for fisheries and the planet's carbon cycle. **Credit:** PACE/Caitlyn Poulin

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23 30	24 31	25	26	27	28	29

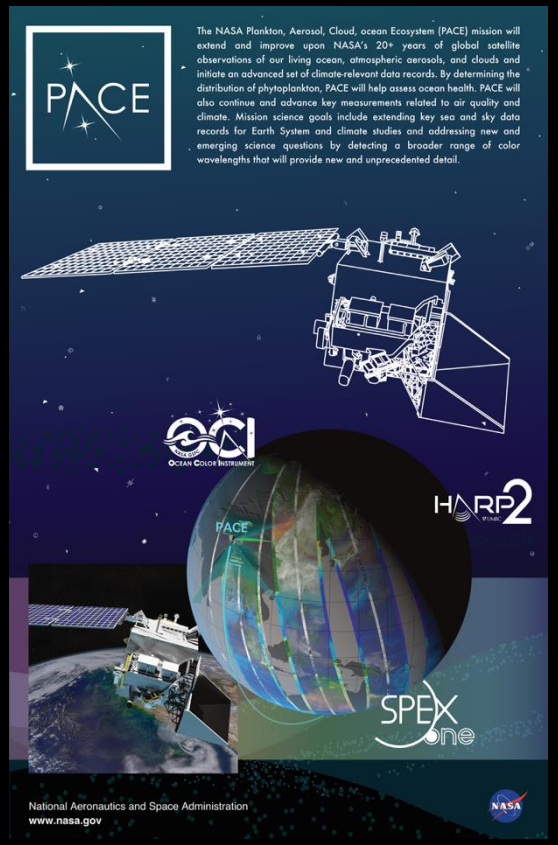
July 2026

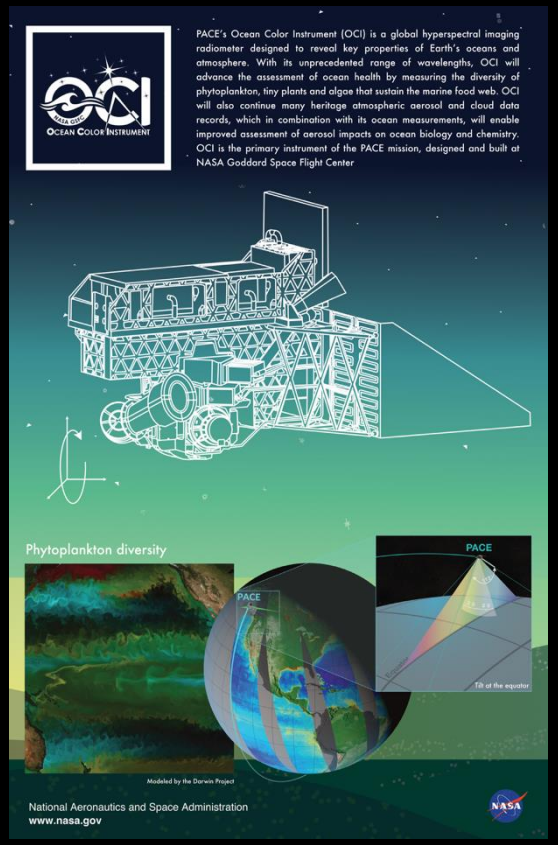
S	M	T	W	T	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

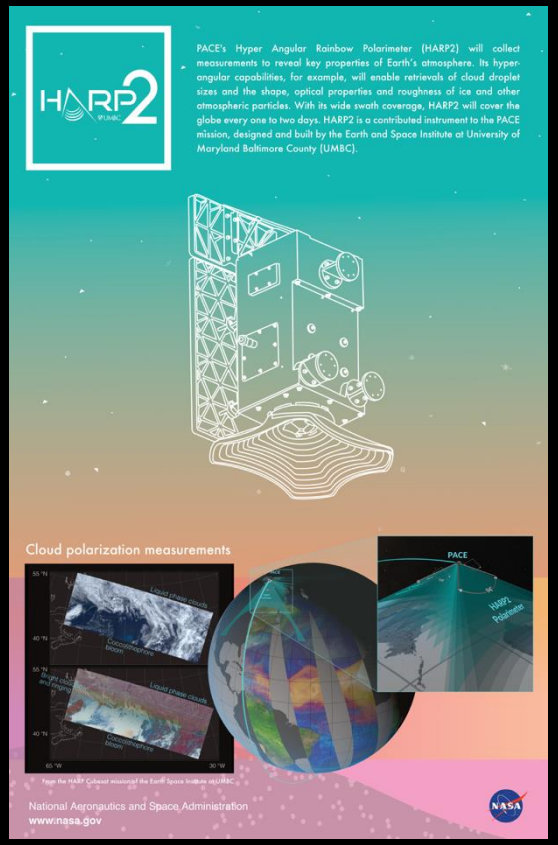
September 2026

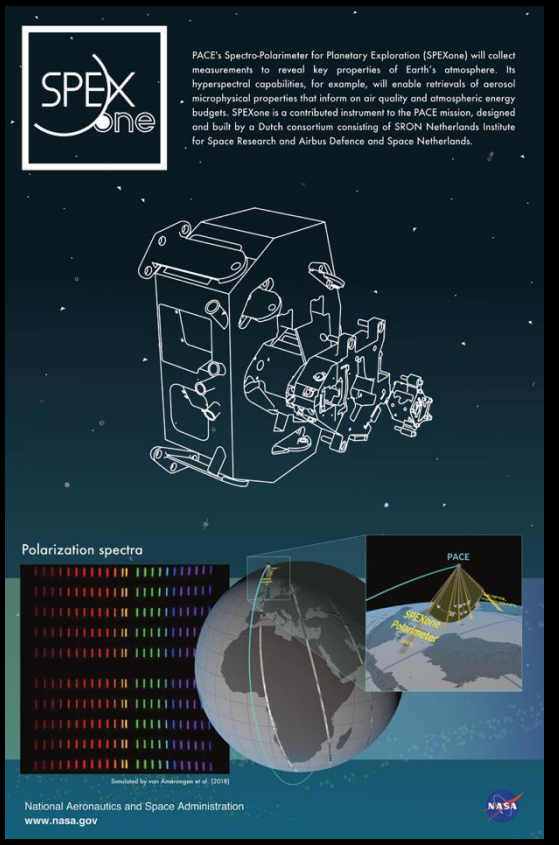
S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

PACE, OCI, HARP2 and SPEXone technical posters

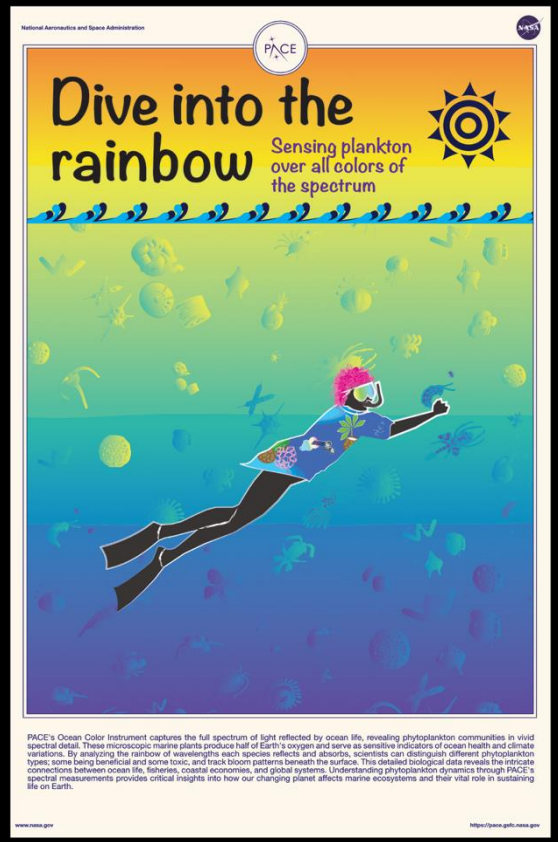




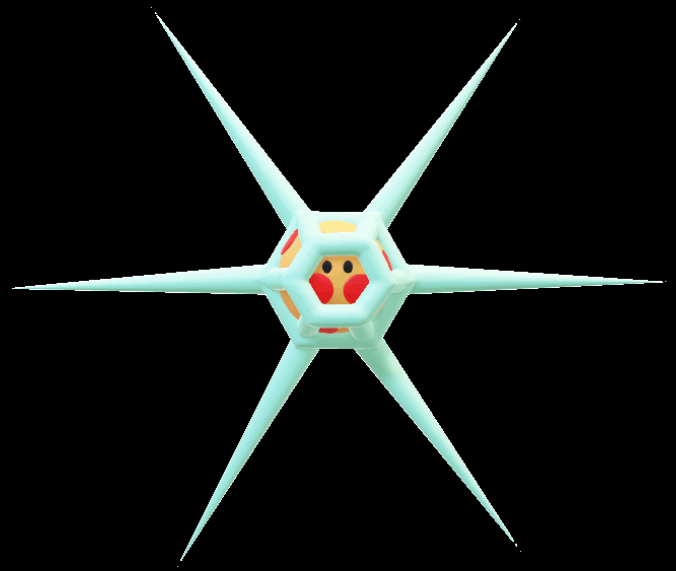


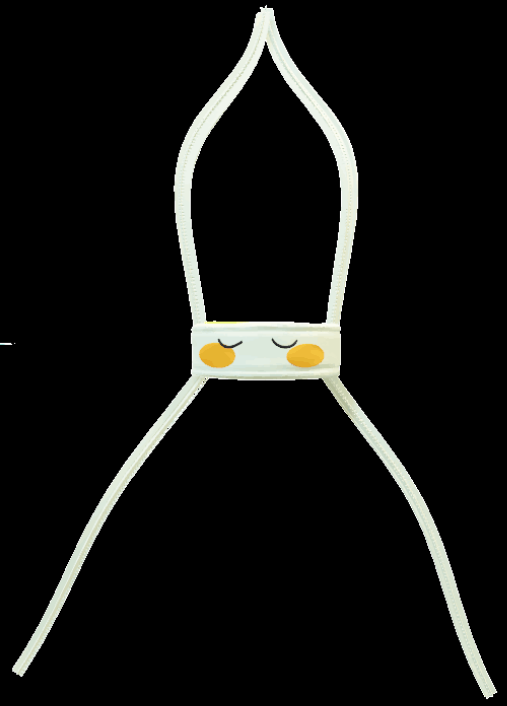


Travel-style posters for clouds, ocean, aerosols and land



Communications : Plankton





science.nasa.gov/eclips/videos

Our World: Phytoplankton – Powering the Ocean Food Web

Did you know some of the tiniest living things in the ocean help make the air you breathe? Meet phytoplankton,...

DEC 18, 2025

Real World: Phytoplankton, Microscopic Drifters

What can something smaller than the width of your hair do to our whole planet? A lot! In this NASA...

DEC 17, 2025

Ask SME: Oceanographer Dr. Ivona Cetinić

In this close-up video, Dr. Ivona Cetinić, oceanographer at NASA's Goddard Space Flight Center, shares her love of exploring the...

DEC 11, 2025

mynasadata.larc.nasa.gov – Explore PACE data and make easy visualizations

my NASA data

Search places

Google Earth Engine Apps

https://mynasadata.larc.nasa.gov

Earth System Data Explorer

Monthly Concentration of Synechococcus

Date: Apr 2025

Units: Cells per Milliliter

0 15000 30000

Change to Grayscale Palette

Description: This quantity describes the concentration of Synechococcus in oceans. Synechococcus is a group of single-celled phytoplankton (cyanobacteria). They are very small, ranging in size from 0.8 to 1.5 micrometers in diameter. They are abundant in marine environments and play crucial roles as primary producers and in marine food webs. They are found in both marine and freshwater environments. They are known for their efficient photosynthesis, rapid growth, and diversity of habitats they are found in. They live among many different environments and light conditions. Many can even move around with a unique swimming ability. These data have a grid spacing of 4 km by 4 km.

Source: PACE

Dataset Selection

1. Select a Sphere of the Earth System

Biosphere

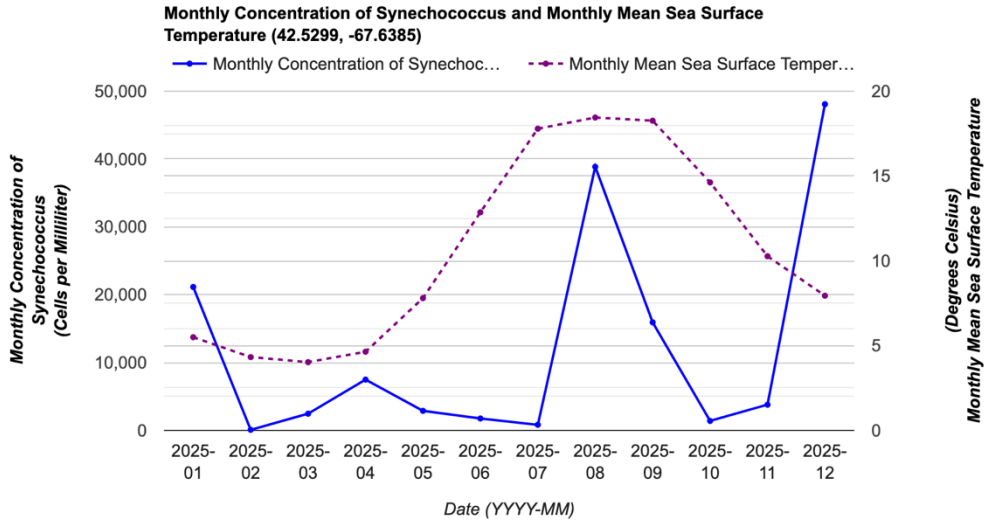
2. Select a Category

Phytoplankton

3. Select a Dataset

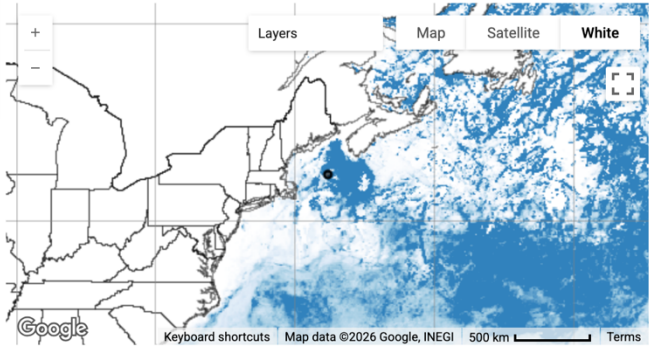
Monthly Concentration of Synechococcus

4. Select the Date



Notice: If your second dataset fails to load, it may be because your second chosen dataset does not have data available for the time period selected. To see a list of data collections and their available dates, visit:

Link to data collections



Time Plot Instructions

1. Select a Location

Click a location on the map or enter the latitude and longitude of a location in the textboxes below.

Latitude: 42.5299 Longitude: -67.6385

2. Select the Start and End Dates

Start Date:

2025 Apr

End Date:

Year Month

3. (Optional) Add a second variable

☑ Check Box to Add Second Variable

4. Select a Sphere of the Earth System

Choose Sphere

5. Select a Category

Choose Category

6. Select a Dataset

Choose Dataset

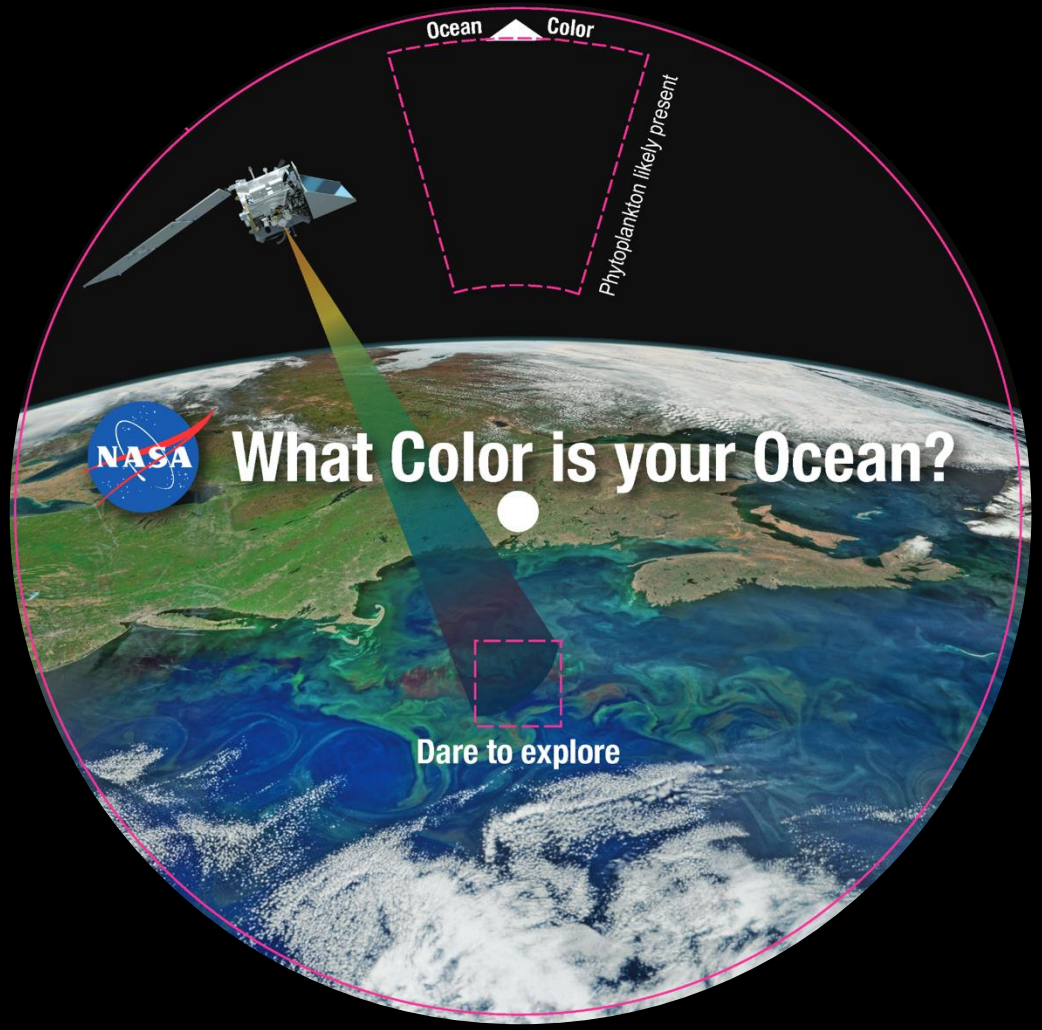
7. Generate the Time Plot

Generate Plot

8. Exit Time Plot

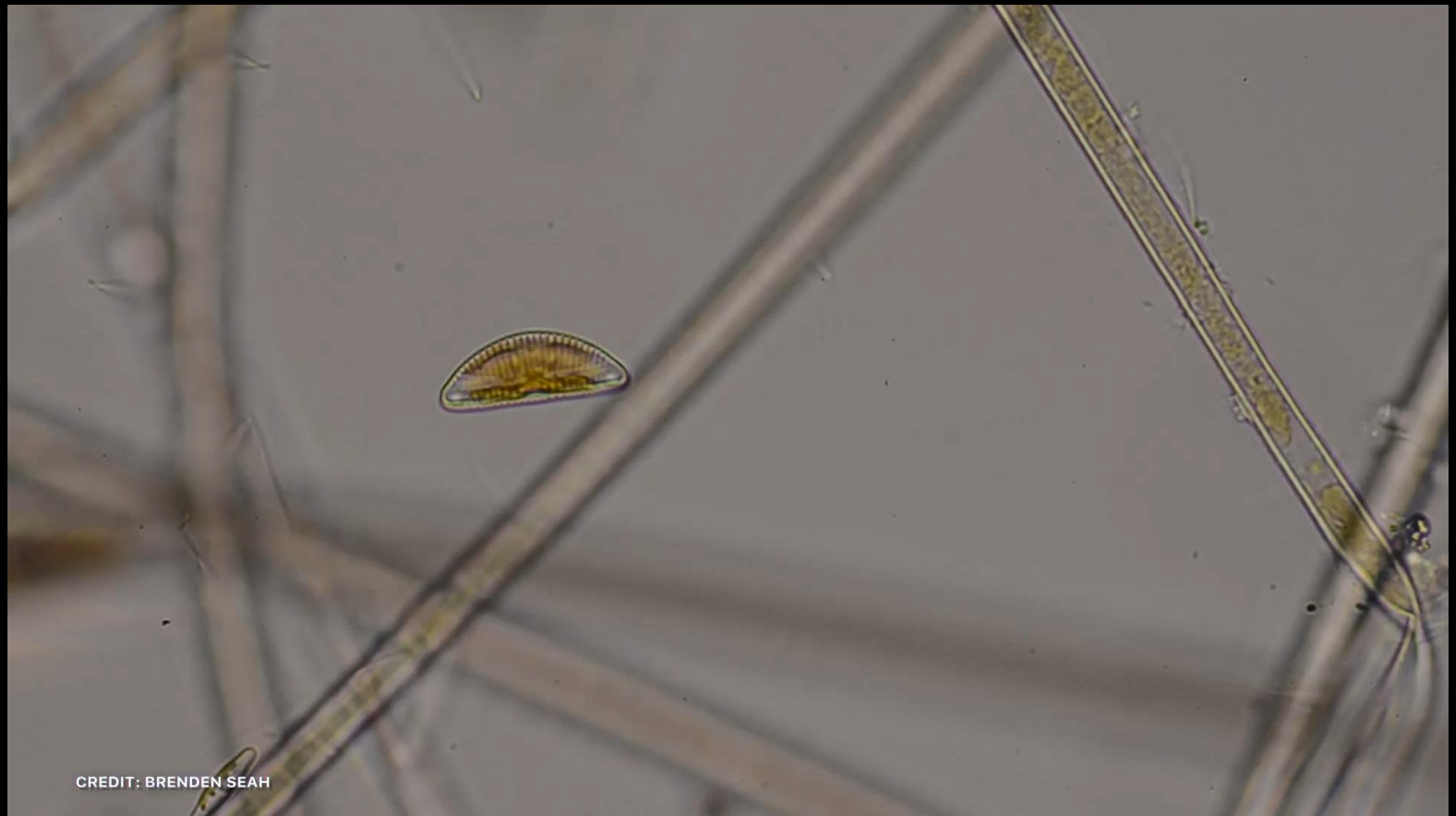
Exit Time Plot

Communications : Plankton wheel



Communications : NASA SVS videos – Phyto Phyters

Communications : SVS videos – Phyto Phyters



Communications : Traveling Immersive Experience

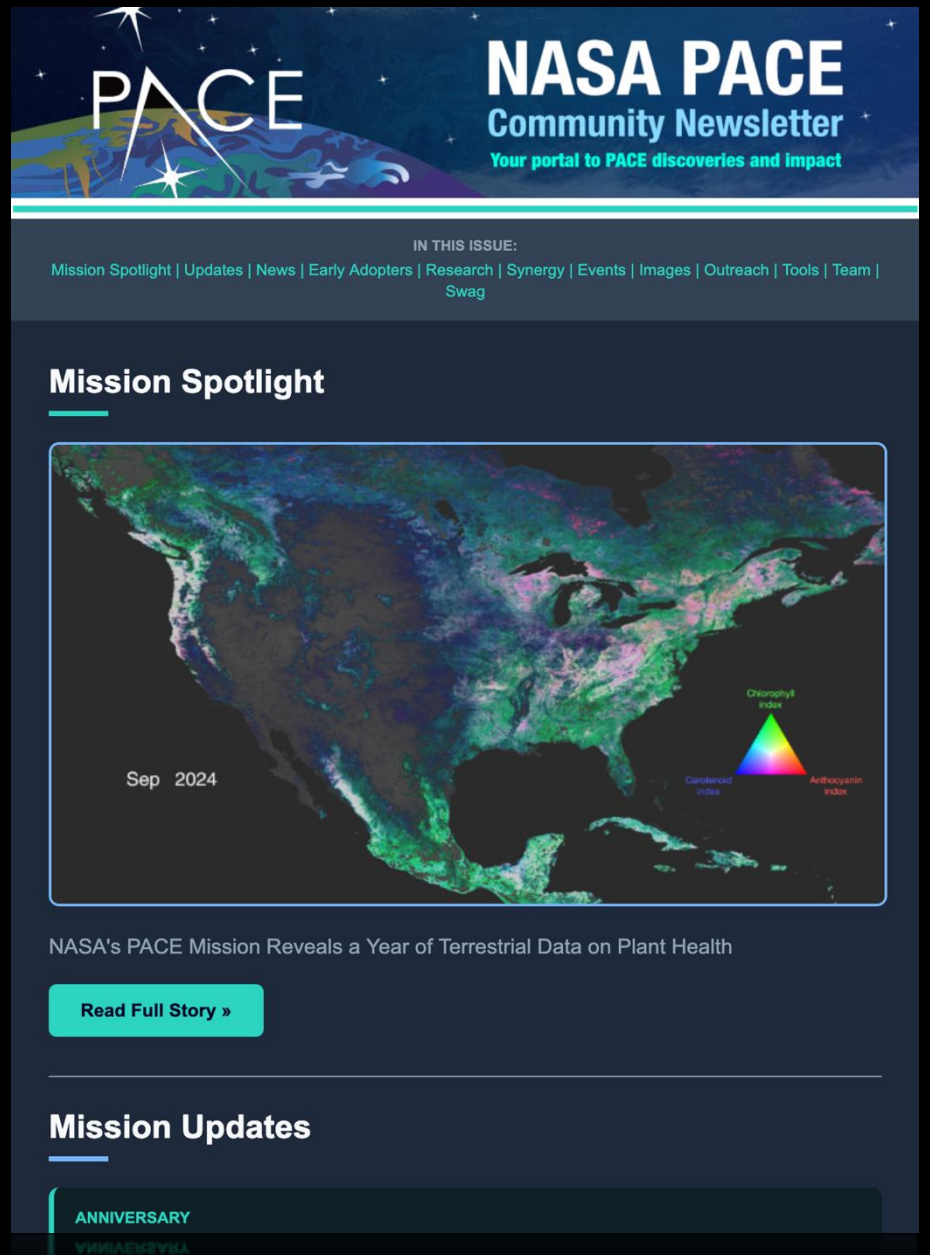
Wave: from space to ocean, premiered at the Kennedy Center in Washington, DC.

Communications : PACE-PAX Field validation campaign

Simultaneous measurements
by plane, boat and satellite

PACE-PAX

Stay connected! Subscribe to the PACE Community Newsletter



Email pace-community-request@lists.nasa.gov with "subscribe" in the subject

Links for PACE resources

Numerous Storymaps that teach about many different subjects:

https://pace.oceansciences.org/gallery.htm?id=storymap

Here is our video gallery:

https://pace.oceansciences.org/gallery.htm?id=video

A card matching game about PACE and the color spectrum:

https://pace.oceansciences.org/shapes.htm

Build your own PACE satellite

https://pace.oceansciences.org/paper_model.htm

Ocean color wheel

https://pace.oceansciences.org/learn-more.cgi?id=1

What phytoplankton are you?

https://pace.oceansciences.org/phyto_quiz.cgi

PACE and phytolankton in augmented reality:

https://pace.oceansciences.org/pace-ar.html

Shedding light on PACE

https://pace.oceansciences.org/whatispace_main.htm

Aerosol quiz

https://pace.oceansciences.org/aerosol_quiz.htm

Here are some visuals, mostly from NASA's Scientific Visualization Studio:

Various PACE visuals:

https://svs.gsfc.nasa.gov/14518/

PACE Makes the invisible visible:

https://svs.gsfc.nasa.gov/14600/

The insanely important world of phytoplankton:

https://svs.gsfc.nasa.gov/14361/

True color vs false color

https://svs.gsfc.nasa.gov/14579/

Links for PACE resources

Ocean currents:

https://svs.gsfc.nasa.gov/5425

Harmful algal blooms:

https://svs.gsfc.nasa.gov/14648/

PACE polarimetry:

https://svs.gsfc.nasa.gov/5177/

PACE image gallery (the images on the first page of the gallery are all from PACE, previous images are from other sensors. The sensor is named in the image descriptions) : https://oceancolor.gsfc.nasa.gov/gallery/

From NASA SVS:

Real-time global biosphere:

https://svs.gsfc.nasa.gov/5075/

PACE orbit with swaths and instrument fields of view:

https://svs.gsfc.nasa.gov/5019/

From PACE data to image

https://svs.gsfc.nasa.gov/14579/

Darwin Model of Ocean Microbes Updated:

https://svs.gsfc.nasa.gov/4977/

Ocean Surface CO2 Flux with Surface Winds:

https://svs.gsfc.nasa.gov/4873/

Earth: A System of Systems (updated)

https://svs.gsfc.nasa.gov/31139/

PACE - Studying Plankton, Aerosols, Clouds, and the Ocean Ecosystem

https://svs.gsfc.nasa.gov/4700/

Global Views of PACE Land Vegetation Data

https://svs.gsfc.nasa.gov/5548/

Leaf Year: Seeing Plants in Hyperspectral Color

https://svs.gsfc.nasa.gov/14850/

PACE Scientists Take to the Sea and Air (and Really High Air)

https://svs.gsfc.nasa.gov/14723/

Links for PACE resources

US Marine Band Performance:

https://www.youtube.com/watch?v=NtVh5CvIG4I

Full PACE Fanfare by the US Marine Band

https://www.youtube.com/watch?v=96W6Vqaf3KA

Alex Honnold's conversation about PACE with Ivona Cetinic
https://svs.gsfc.nasa.gov/14514/

NASA eClips Educational content:

Our World: Phytoplankton – Powering the Ocean Food Web

https://science.nasa.gov/eclips/videos/phytoplankton-powering-the-ocean-food-web/

Real World: Phytoplankton, Microscopic Drifters

https://science.nasa.gov/eclips/videos/phytoplankton-microscopic-drifters/

Ask SME: Oceanographer Dr. Ivona Cetinić

https://science.nasa.gov/eclips/videos/oceanographer-dr-ivona-cetinic/

Archive of PACE Newsletters

https://pace.oceansciences.org/documents.htm?id=newsletter

Leaf peeping with PACE

https://svs.gsfc.nasa.gov/14769/#media_group_377191

Conoce a PACE (Spanish)

https://pace.oceansciences.org/conoce_a_pace.htm

PACE travel posters

https://pace.oceansciences.org/blog.htm?id=33

Help Hub:

https://nasa.github.io/oceandata-notebooks/

SVS Overview of PACE

https://svs.gsfc.nasa.gov/5599/

Thank you!

Jeremy Werdell, Morgaine McKibben, Sara Blumberg, Ivona Cetinic, Norman Kuring, Meng Gao, Chamara Rajapakshe, Skye Caplan, Fred Huemmrich, Sean Foley, Inia Soto Ramos, Bingqing Liu, Zach Fasnacht, Annette deCharon, Gary Davis, Jenny Mottar, Ryan Fitzgibbons and the NASA SVS team, the WAVE creative team, the PACE-PAX team, the Help Hub team and all of the PACE and OB.DAAC teams!

Questions or ideas? carina.poulin@nasa.gov