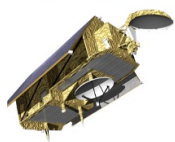


JASON-3



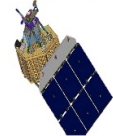
SENTINEL-6 MF



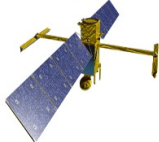
SMAP



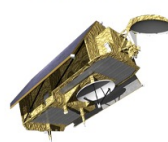
COWVR



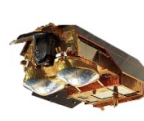
SWOT



SENTINEL 6-B



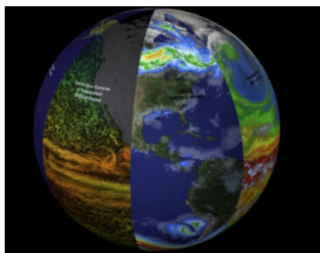
CRISTAL



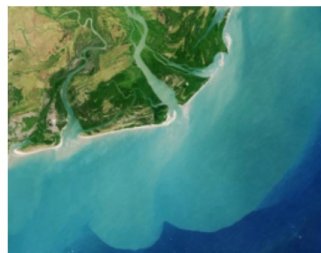
S-MODE



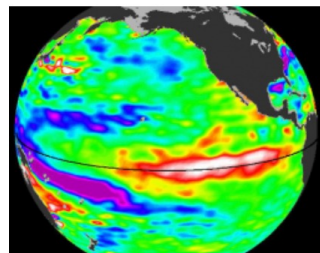
SASSIE



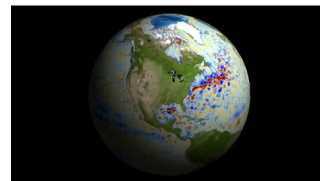
**Physical Oceanography (PO)**



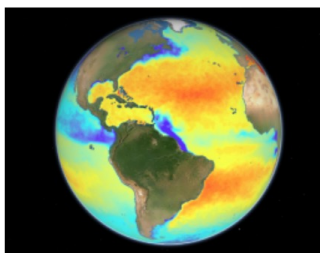
**Sea Level Change (N-SLCT)**



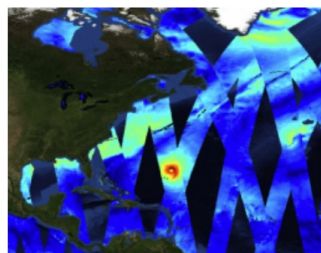
**Ocean Surface Topography (OSTST)**



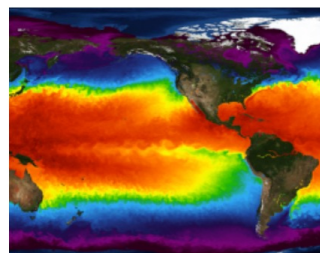
**Surface Water and Ocean Topography (SWOT)**



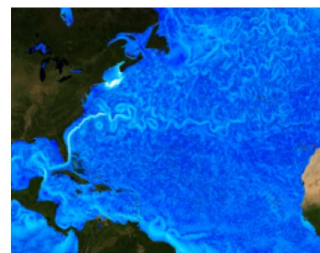
**Ocean Surface Salinity (OSST)**



**Ocean Vector Winds (OVWST)**



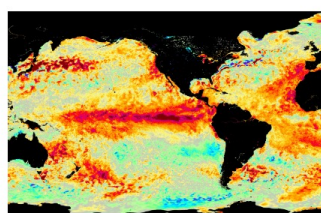
**Sea Surface Temperature (SST)**



**Estimating Circulation and Climate of the Ocean (ECCO)**



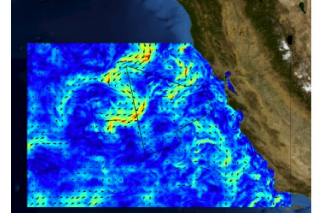
**Coastal Resilience**



**Ocean Heat and Earth Energy**



**Salinity and Stratification at the Sea Ice Edge (SASSIE)**



**Sub-Mesoscale Ocean Dynamics Experiment (S-MODE)**

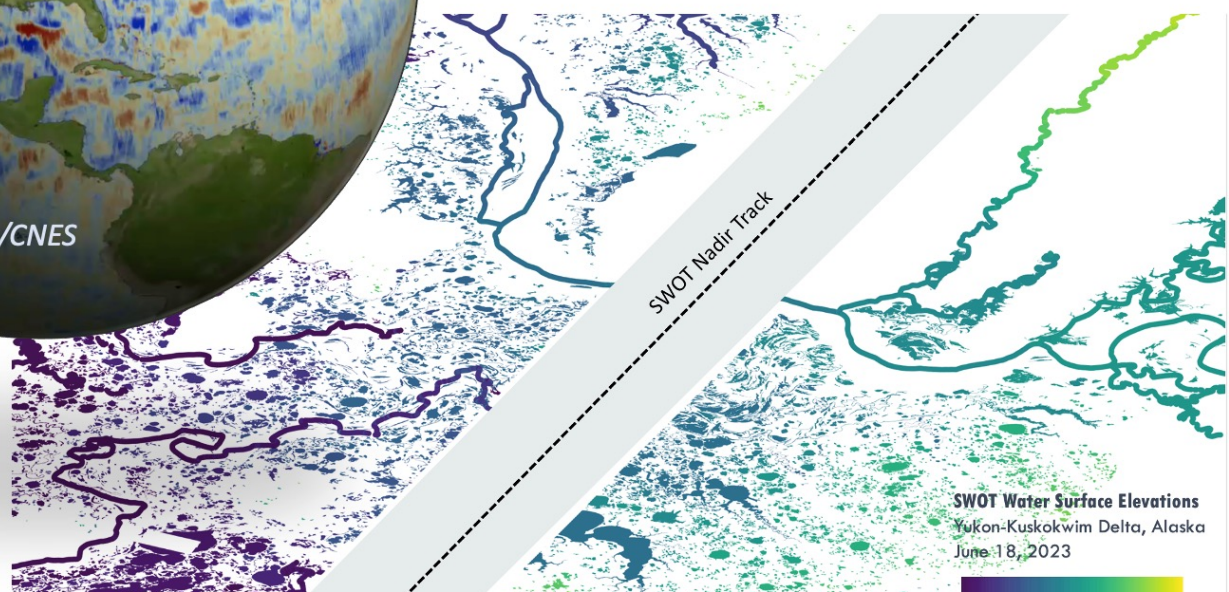
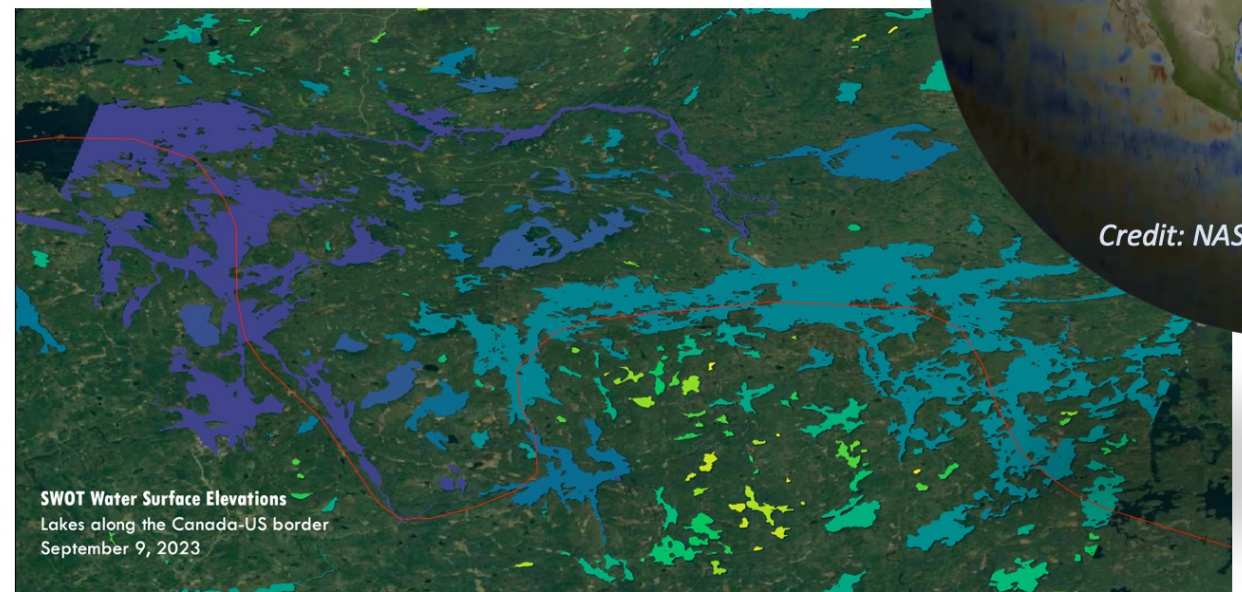
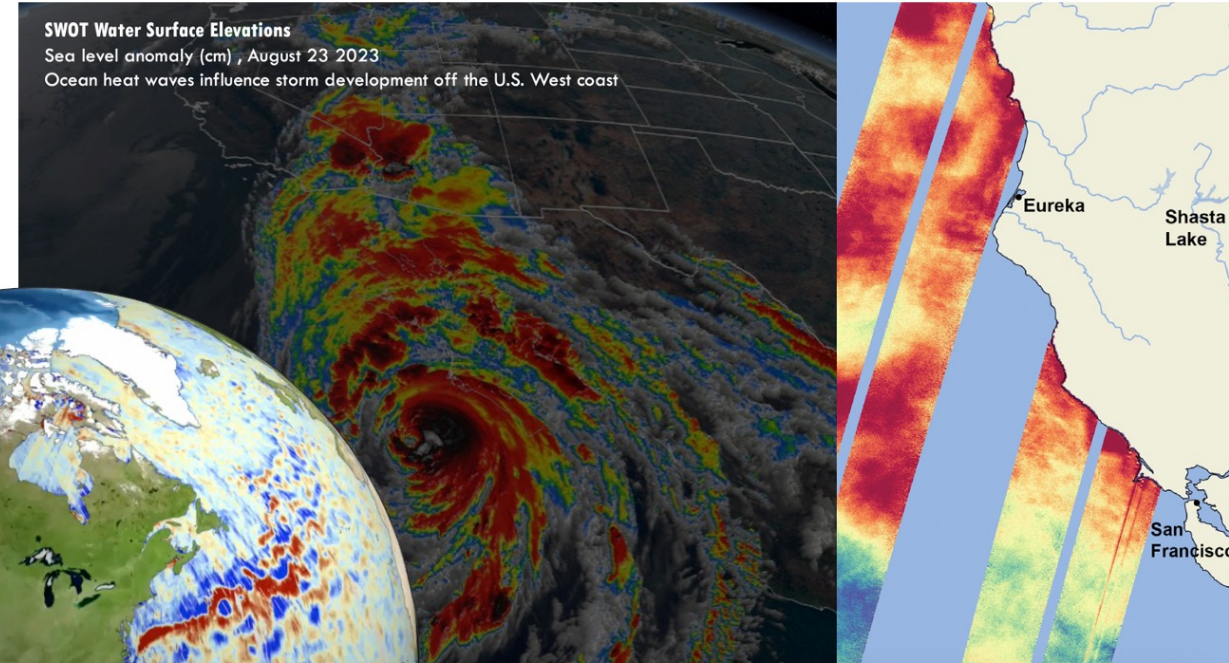
# NASA Ocean Physics

## Science Teams & Missions



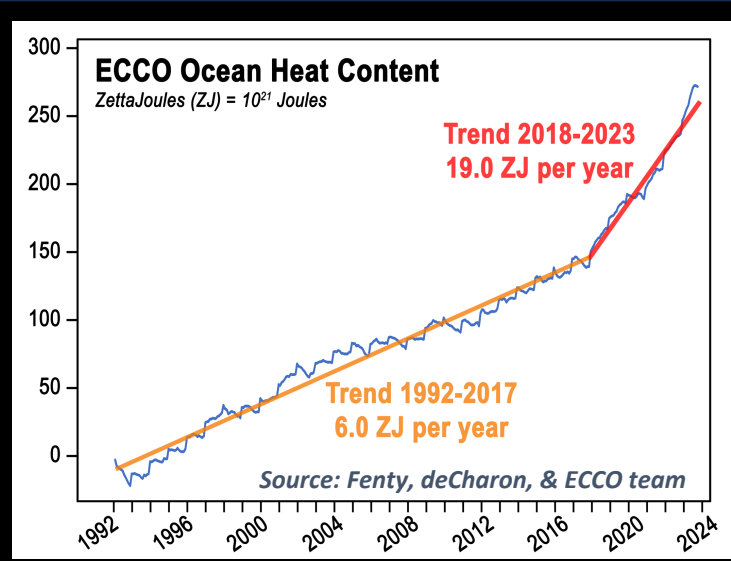
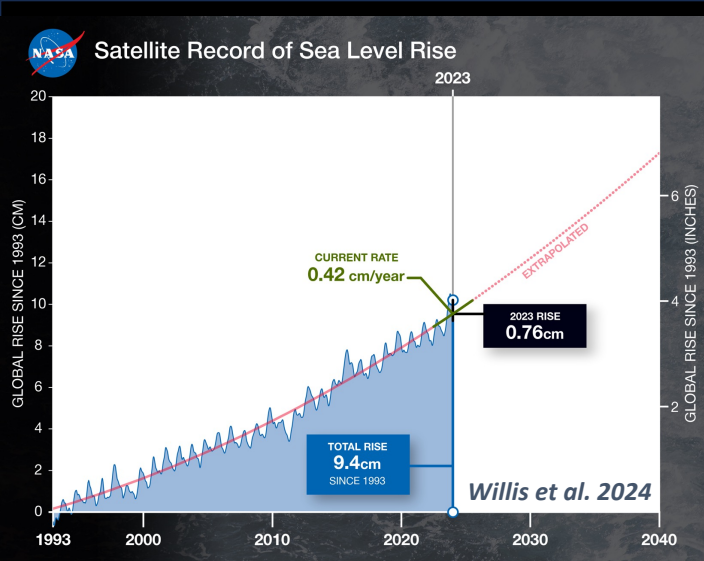
Dr. Nadya Vinogradova Shiffer  
<https://go.nasa.gov/phocean>  
nadya@nasa.gov



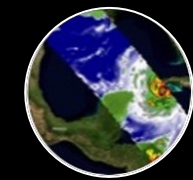


Credit: NASA/CNES

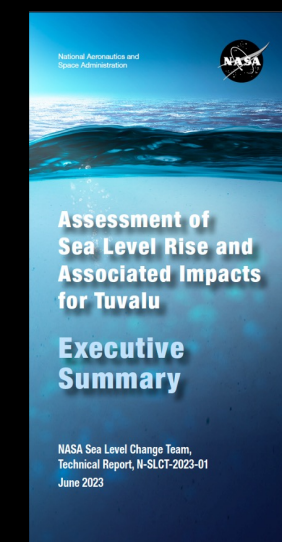
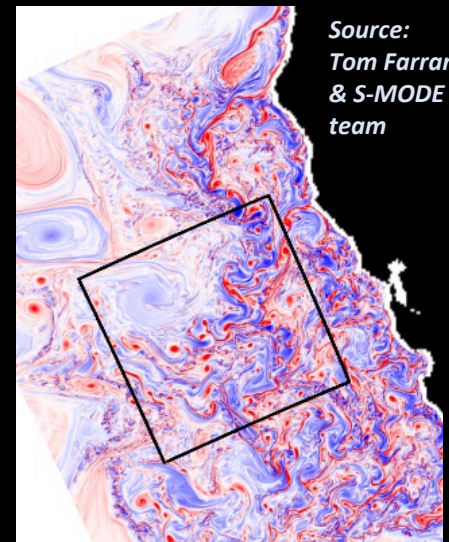




**CRISTAL**  
KDP A/B



**COWVR**  
Wind &  
Convection



# (Other) NASA Ocean Physics Highlights 2023



The background of the slide is a composite image. On the left, a portion of the Earth is visible from space, showing blue oceans, white clouds, and brownish-green landmasses. A satellite is shown in orbit around the Earth. On the right, a vertical strip of data visualization is overlaid, showing a color gradient from blue at the top to yellow and red at the bottom, representing oceanographic data. The background is a dark, starry space.

# Research Opportunities 2024 –

Physical Oceanography (ROSES A.08)

Ocean Surface Topography Science Team (ROSES A.12)

Integrated SWOT Water Field Campaign (ROSES A.14)

## Welcome New Teams & Studies –

Ocean Heat Content and Earth Energy Imbalance

Earth-Moon system in a changing climate

Coastal Resilience Science Team

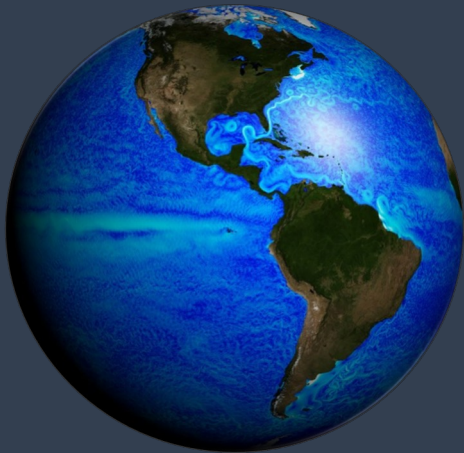
NASA Sea Level Change Team (pending)

SWOT Science Team (pending)



# ECCO

Understand the physics of the Earth's ocean as it transitions to a new climate



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## 1. Production

- Scheduled production & delivery
- More discipline on milestones (latency, resolution, coupling)
- Increased robustness of central estimate
- New data? SWOT?
- Impact and success metrics?

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## 3. NASA missions

- Involvement in future mission planning
- Become instrumental in OSSEs for NASA PO-related cal/val campaigns

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## 2. R&D

- Interpret ongoing changes
- Get ready to resolve future ocean
- Ocean's integrated role?
- Modeling and adjoint capabilities for DT and/or prediction?

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## 4. Engagement

- Continue providing open-source tools and training
- Userbase expansion
- Annual state of the ocean update and analysis
- Serve as the science and informational foundation for Federal climate activities