



ODYSEA

Ocean Dynamics and Surface Exchange with the Atmosphere

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with the ODYSEA team: Tong Lee, Fabrice Ardhuin, Justin Boland, Mark A. Bourassa, Paul Chang, Sophie E. Cravatte, J. Thomas Farrar, Melanie R. Fewings, Fanny Girard-Ardhuin, Gregg A. Jacobs, Zorana Jelenak, Florent Lyard, Jackie C May, Elisabeth D Rémy, Lionel Renault, Ernesto Rodriguez, Clément Ubelmann, Ana Beatriz Villas Bôas, and Alexander G. Wineteer

Hurricanes Idalia and Franklin

August 29, 2023

UC San Diego

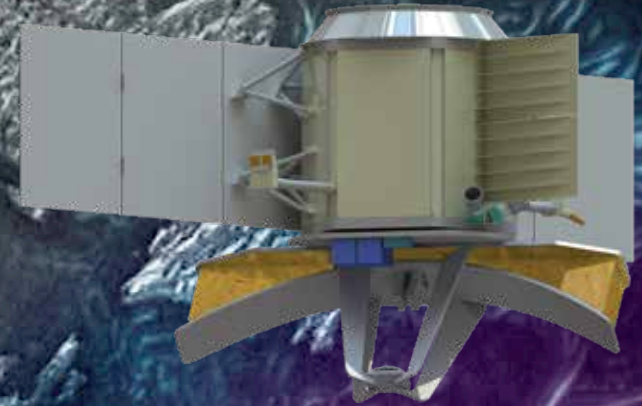
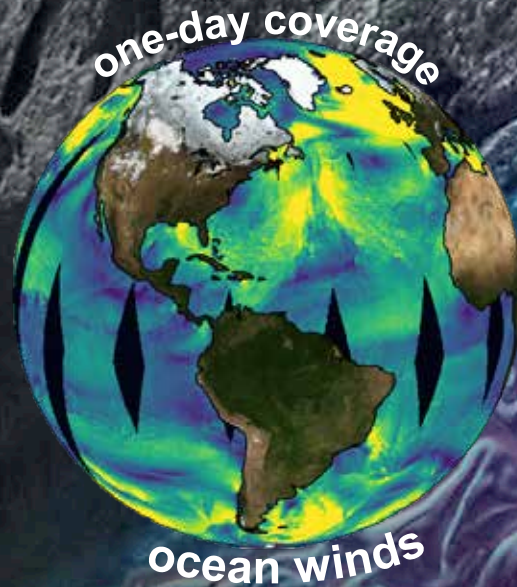
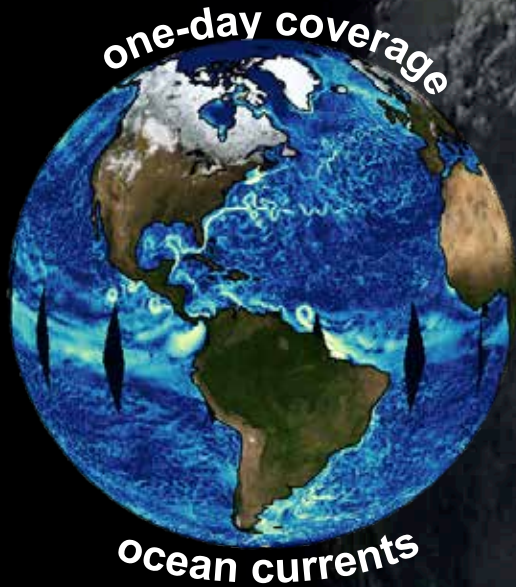


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OCEANOGRAPHY



Jet Propulsion Laboratory
California Institute of Technology

ODYSEA will provide the first daily, simultaneous, global measurements of surface currents and winds at unprecedented resolution.

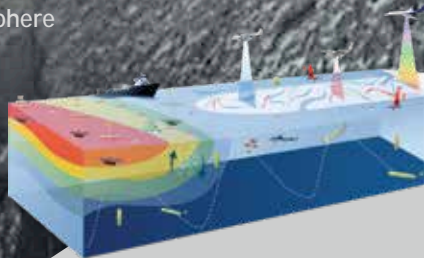


ODYSEA is one of four Earth System Explorer missions selected into a competitive phase A by NASA. Two will be selected in 2025 for flight in 2030 and 2032.



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S-MODE
EVS-3 (2019)

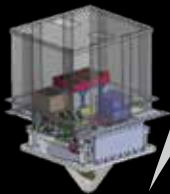
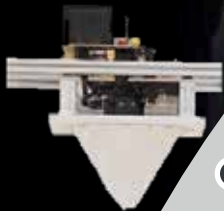
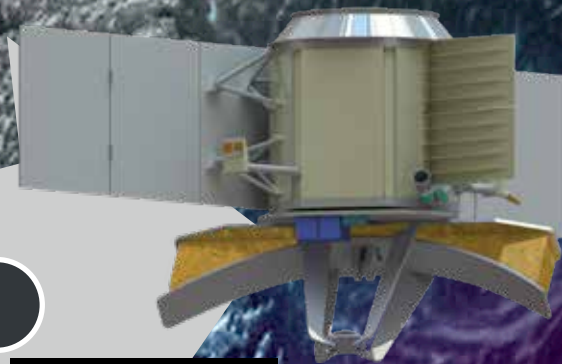
ODYSEA ESE
(2023)



DopplerScatt
AITT (2016)

DopplerScatt
IIP (2014)

DopplerScatt
Concept (2013)





ODYSEA

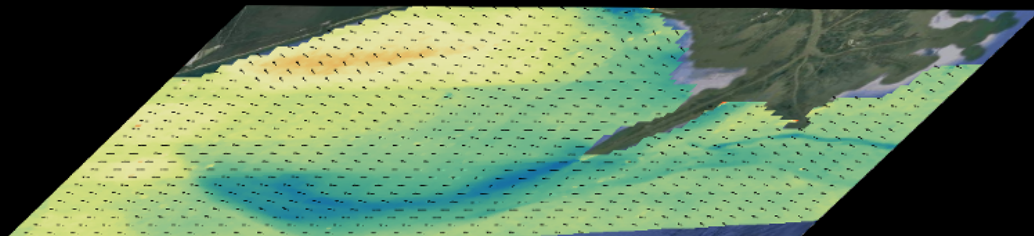


Ocean Dynamics and Surface Exchange with the Atmosphere

ODYSEA's Ka-band Doppler Scatterometer

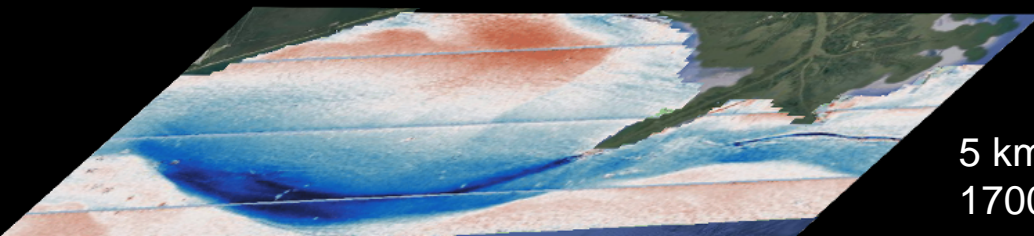
Provides the **first-ever** global measure of total surface currents. Includes simultaneous ocean vector winds with improved resolution for coupled air-sea science and applications closer than ever to the coast.

Earth System Explorer proposed to NASA with strong support from CNES (+ US Space Force)



Ocean Vector Winds

*Web: odysea.ucsd.edu
PI: Sarah Gille sgille@ucsd.edu
Project Scientist: Tong Lee, tlee@jpl.nasa.gov*



Total Surface Currents

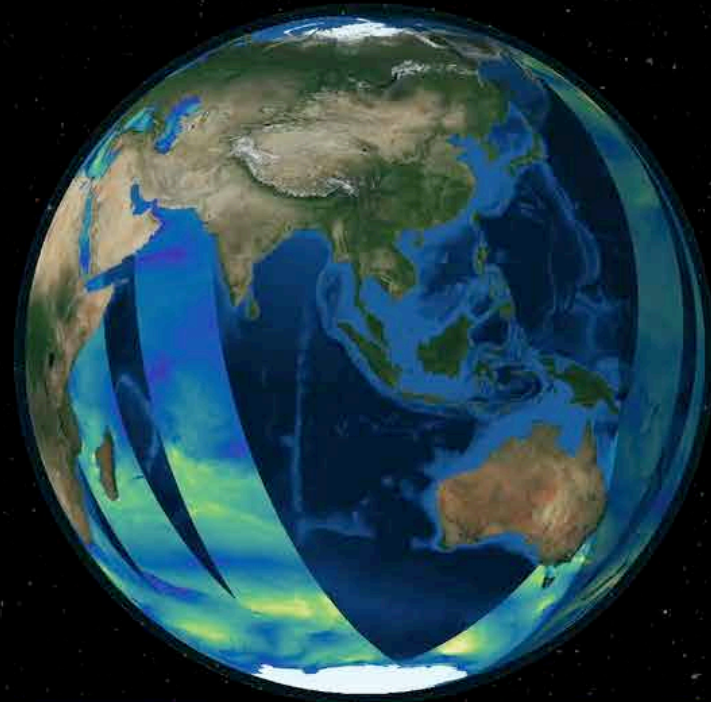
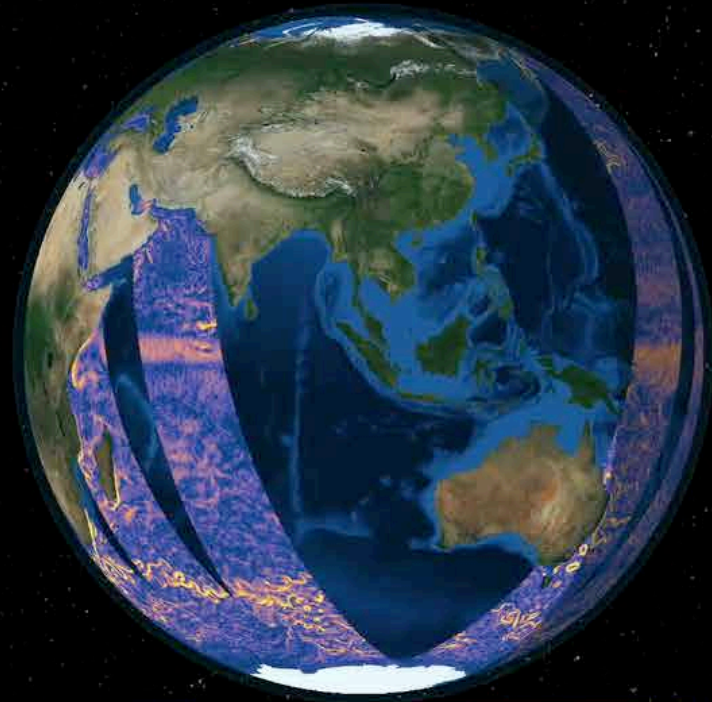
French lead: Fabrice Ardhuin

5 km postings
1700 km swath

Daily coverage, near-real time

What can we do with winds and currents?

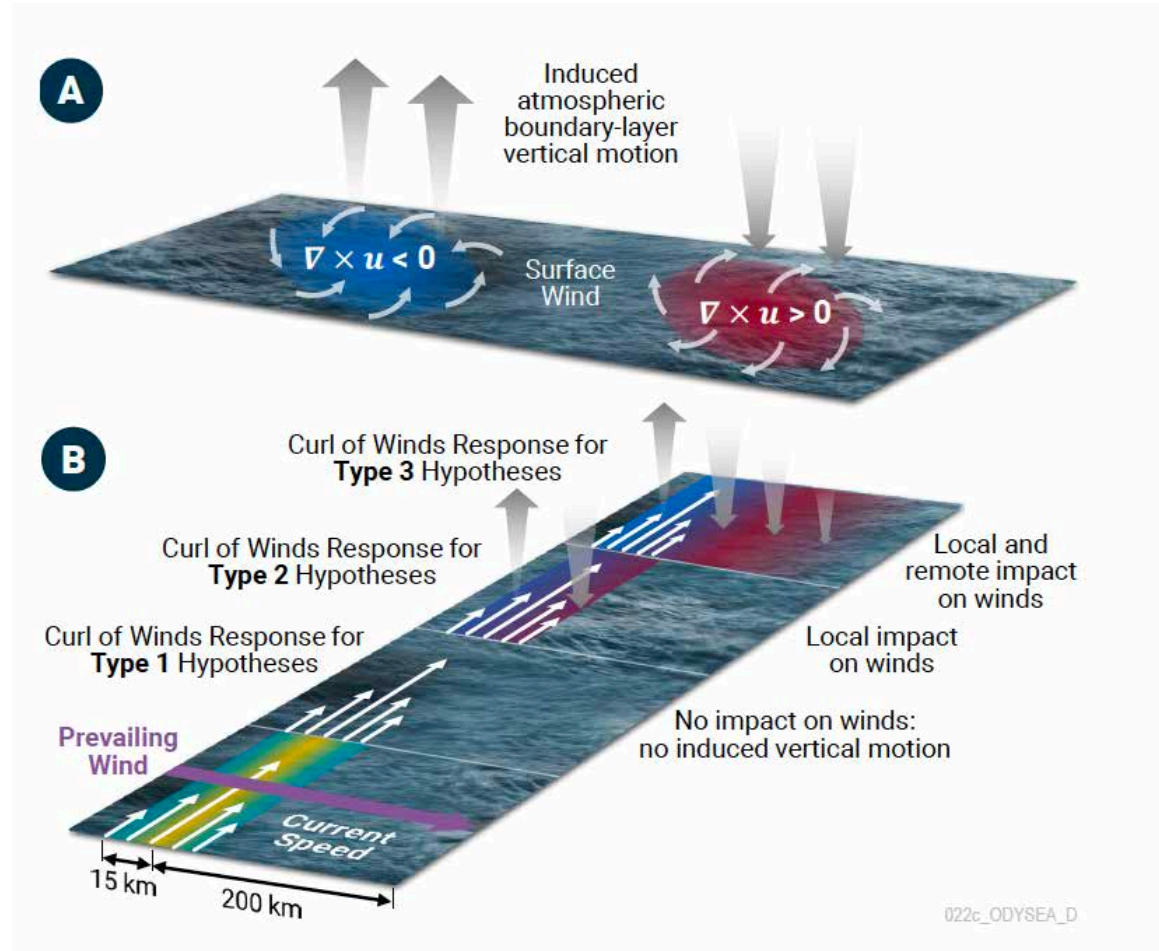
2012-03-01 08:19:20



- 2 science objectives
- 1 applications objective

Science

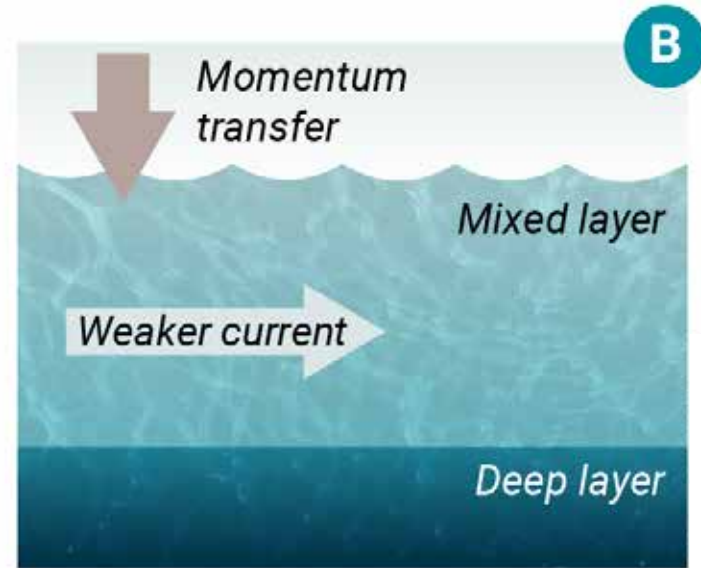
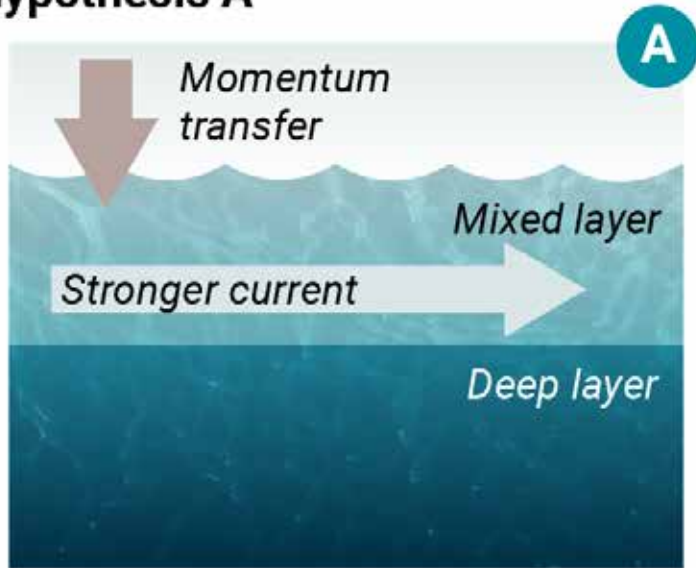
Objective 1: Competing hypotheses of wind—current coupling



Science Objective 2:

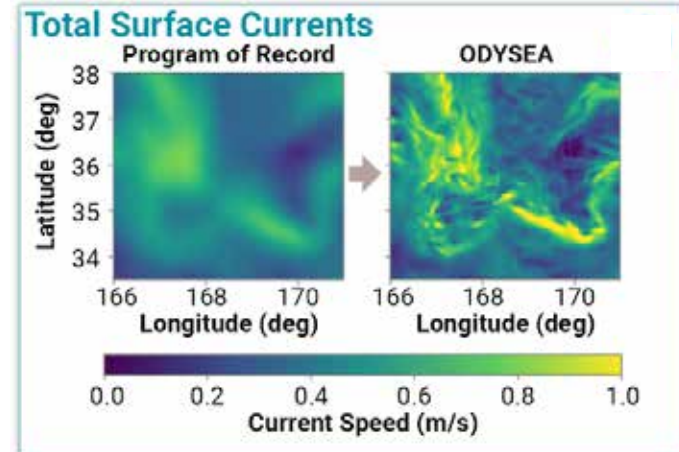
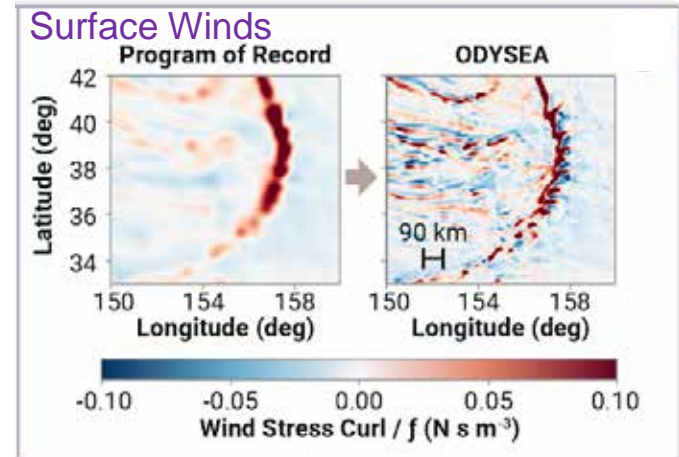
Hypothesis: High stratification implies faster surface currents ... or the opposite

Hypothesis A



ODYSEA will meet operational needs

- Near real time winds and currents
- Storm evolution, surface waves, maritime safety, debris transport
- Support NOAA, Navy, Coast Guard Search and Rescue, Mercator Ocean international



How can you get involved?

1. Test science ideas using the ODYSEA simulator (<https://odysea.ucsd.edu>)
2. Let us know if you want to be an early adopter
3. Join the discussion:

OASIS Grand Idea #2: Air-Sea Fluxes from Space

Webinar Tuesdays at 8 am PT, 11 am ET, 5 pm CET

Sign up from the OASIS web site:
<https://airseaobs.org/>

Find previous recordings on youtube



Backup

ODYSEA Schedule and Input Needs

ODYSEA is in completed phase A, with a step 2 proposal due in March 2025.

