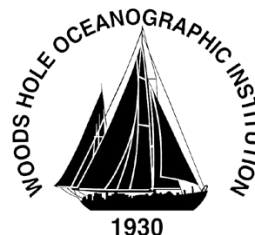


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Woods Hole Oceanographic Institution  
**Biology Department Seminar**



Thursday, November 16, 2023 – 12:00 Noon

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## **Lagrangian Eddy Trapping Fosters Chlorophyll Hot Spots in the North Pacific Subtropical Gyre**

**Alexandra Jones-Kellett**  
WHOI-MIT Joint Program Student

Vertical motions associated with mesoscale ocean eddies modulate the light and nutrient environment, stimulating anomalies in phytoplankton biomass and chlorophyll. Phytoplankton populations can be subsequently trapped by the horizontal circulation or laterally diluted. In a time-varying flow, Lagrangian methods are needed to qualify eddy trapping, also known as Lagrangian coherency. From two decades of remote sensing observations in the North Pacific Subtropical Gyre, we built a Lagrangian coherent eddy atlas for biogeochemical applications. We compared the atlas with a coincident Eulerian eddy atlas to assess the impact of eddy trapping on chlorophyll concentration in the surface ocean. We found higher chlorophyll within Lagrangian coherent boundaries than in Eulerian eddies and outside-eddy waters. Yet, there are differences regionally and seasonally. For example, chlorophyll is most enriched within coherent boundaries of the Hawaiian Lee eddies and to the south of 23N in fall and winter. Our results suggest that by not accounting for lateral dilution, Eulerian analyses may underestimate the role of mesoscale eddies in enhancing surface chlorophyll.

HYBRID! **In person:** Redfield Auditorium **Zoom:** <https://whoi-edu.zoom.us/j/91765342223> Meeting ID: 917 6534 2223 **By phone:** Find your local number: <https://whoi-edu.zoom.us/u/acd6ltUC75>