

# Center for Environmental & Applied Fluid Mechanics



## **“Turbulent Wakes in the Environment”**

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The wake of an object in motion with respect to its environment is a flow whose importance stems from engineering (ships, wind turbines, aircraft, underwater submersibles, marine energy), biology (marine swimmers, aerial flyers) and geophysical (flow past underwater topography or hills and mountains) applications.

We will discuss results from high-resolution simulations in a homogeneous fluid that show how the shape of an oceanic submersible, even for canonical examples, influences how the flow progresses from at the body to the near wake and into the far wake. Non-equilibrium scaling of turbulent dissipation is found to affect the progression.

We will then turn to a density-stratified fluid where the structure of the submerged wake is inevitable changed. It becomes long-lived and its manifestation through turbulence, coherent motions and internal gravity waves changes qualitatively. We will demonstrate how buoyancy is linked to these changes.



**Fall 2023 CEA FM Seminar Series**  
**September 8, 2023 ✦ 3:00 PM ✦ Hodson Hall 210**