Center for Environmental & Applied Fluid Mechanics

"Oceanic Turbulence Measurements from UUV Systems"

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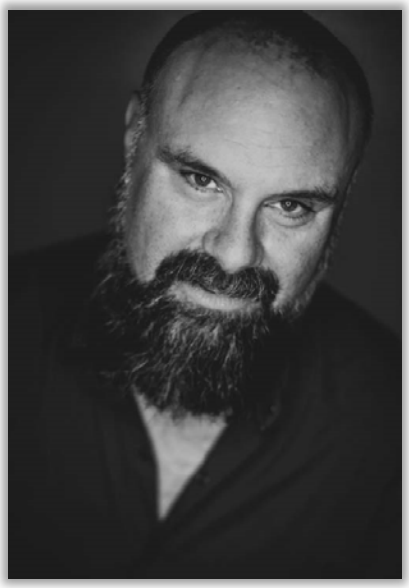

As autonomous sampling technologies have matured, ocean sensing concepts with long histories have migrated from their traditional ship-based roots to new platforms. Here, we discuss the case of ocean microstructure sensing, which provides the basis for direct measurement of small-scale turbulence processes that lead to mixing and buoyancy flux. Due to their hydrodynamic design, ocean gliders are an optimal platform for microstructure sensing. A buoyancy-driven glider can profile through the ocean with minimal vibrational noise, a common limitation of turbulence measurements from other platforms. Moreover, gliders collect uncontaminated data during both descents and ascents allowing for near-surface measurements unattainable from ship-based sensing. A broader class of Undersea Uncrewed Vehicle systems have also been adapted for ocean turbulence sensing in recent years, in particular the Remus-class of propelled systems. Unlike gliders, these systems excel in data collection along trajectories of constant depth or height above the sea floor. Advances in the science of autonomy, including the networking of multiple vehicles, and onboard signal processing, have led to innovative mission capabilities. Examples from recent field studies will be presented.

Spring 2023 CEAFM Seminar Series

April 14, 2023 ✖ 3:00 PM ✖ Gilman Hall 50