About Don L. Boyer

Don Lamar Boyer, a pioneer of physical modeling of rotating and stratified topographic flows, passed away in Las Vegas, Nevada on June 19, 2020. A visionary in and champion for geophysical and environmental fluid dynamics research, a dedicated mentor and a skilled administrator, he played an influential leadership role in the evolution of laboratory-based research in environmental flows.

Endowed Annual Lecture

In his honor, the Don L. Boyer Memorial Endowment for Excellence in Environmental Fluid Dynamics has been created to support groundbreaking, crucial lectures in the important fields of environmental prediction, risks, and sustainability. These lectures, emphasizing the fundamental dynamics of environmental flows in the spirit of the research of Don L. Boyer, will enliven the conversation around these topics in the college and beyond. This lecture will be supported annually in perpetuity by the fund.

The endowment was established by an initial gift from Dr. Dustin Boyer, Don's son. Donations to the fund can be made at giveto.nd.edu.

https://efmlab.nd.edu/don-l-boyer-memorial-endowment/

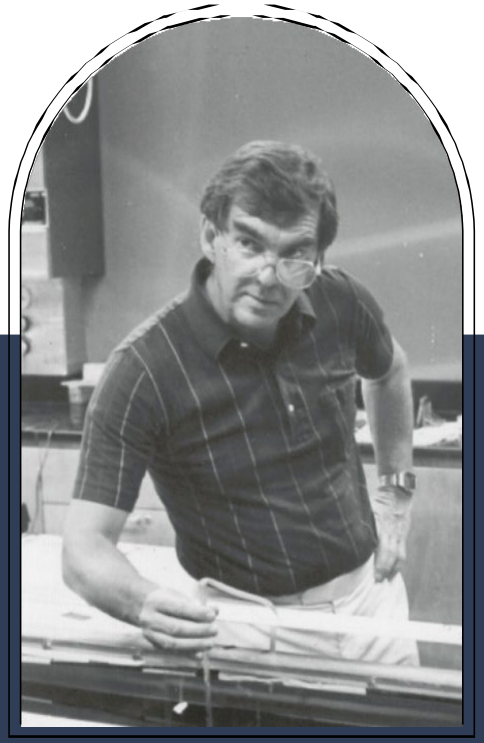
ENGINEERING AT NOTRE DAME

Engineering at Notre Dame combines technical inquiry with a creative bent to develop innovations that can improve the health, well-being, and quality of life for all persons. Consistent with the University's Catholic mission and heritage, the College of Engineering's mission is founded on the principle that the creation and transfer of fundamental knowledge should reflect a profound and complete respect for the dignity of all persons and for the greater common good of humanity. The Don L. Boyer Memorial Endowment supports faculty, students, and the scientific community at large in the pursuit of achieving the educational mission and outreach of the University.

UNIVERSITY OF NOTRE DAME

DON L. BOYER 4th DISTINGUISHED LECTURE

in Environmental Fluid Mechanics



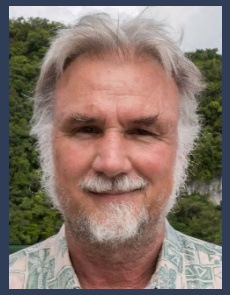
Tuesday, March 18, 2025

Lecture 11:00 am - 12:00 pm

Lunch Reception 12:00 pm - 1:00 pm

Eck Visitors Center Auditorium

Professor Stephen Monismith



Professor Steve Monismith, NAE
Obayashi Professor in the
School of Engineering and
Professor of Oceans, Stanford University
Stanford, CA

BIOGRAPHY

California native Stephen Monismith, the Obayashi Professor in the School of Engineering and Professor in the departments of Civil and Environmental Engineering and Oceans at Stanford University, received all his degrees (in Civil Engineering) from UC Berkeley. Following completion of his thesis, he did a postdoc in Western Australia focusing on the fluid mechanics of stratified flows in lakes. He has been at Stanford in the Dept of Civil and Environmental Engineering since 1987, and was department chair between 2009 and 2016. His research is focused on estuarine and lake physics, as well as nearshore flows with waves and stratification, focusing on mixing and transport processes that are central to ecology, biogeochemistry and environmental management. Through his work on estuarine dynamics, he has been active in San Francisco Bay-Delta issues, including helping to develop the scientific underpinnings of freshwater flow regulations. In recent years, much of his effort has focused on the physics of coral reef flows, with fieldwork and modeling carried out on reefs in the Red Sea, and in nearshore waters of Hawaii, Moorea, Palmyra Atoll, American Samoa, and Palau. He has parallel interests studying the inner shelf flows found near and inside the (much colder) kelp forests of California. He is a fellow of the Fluid Dynamics division of the American Physical Society and was elected to the National Academy of Engineering in 2022.

Internal Waves in The Nearshore Coastal Ocean

ABSTRACT

Internal waves play an important role in the dynamics of much of the world's ocean. This is especially true for many parts of the nearshore coastal ocean, where internal waves, often generated tidally can have amplitudes that are comparable to the local depth. Consequently, local stratification and flow structure and strength, and hence turbulent mixing and dispersion, can be strongly shaped by what are often remotely generated internal waves. In this talk, I will show results from field experiments examining (a) turbulent mixing driven by breaking internal waves; (b) horizontal shear flow dispersion associated with internal waves; and (c) the important role that cross-shore internal waves can have in modulating longshore flows through kelp forests like those that exist along much of the coast of California. Thus, I will argue that in order to predict transport important to practical concerns such as management of coastal water quality or of coastal fisheries, the sources and behavior of internal waves must be included in our circulation models.