



# SPRING 2017 SEMINAR SERIES

DEPARTMENT OF OCEAN, EARTH, AND ATMOSPHERIC SCIENCES  
3:00PM – ROOM 200 IN THE OCEANOGRAPHY/PHYSICS BUILDING  
THURSDAY JANUARY 26<sup>th</sup>, 2017

## *“Generation of Nonlinear Internal Waves: From Mid-ocean Ridges to Fluidized Coastal Sediments.”*

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### ABSTRACT

Internal waves are omnipresent in oceans, estuaries, and lakes. They are a major driver of mixing in the water column and affect ocean circulation, and can affect nutrient and pollutant exchange with sea bed, and sediment transport. Internal waves exist at various scales. The propagation of tides over bathymetry generates internal tides that can be tens of meters high and tens to hundreds of kilometers long. On the other hand, internal waves observed over fluid mud have amplitudes of a few millimeters and wavelengths of a few centimeters. Understanding the mechanisms of internal wave generation and dissipation helps better predict mixing in ocean and coastal waters. In this presentation, we discuss two mechanisms of internal wave generation. First, we discuss results of recent numerical simulations of internal tide generation in continuous stratification over an idealized submerged ridge. The numerical simulations are used to investigate internal tide energetics at the generation region. Second, generation of interfacial waves in a two-layer fluid, which represents a water/fluid mud system, by surface waves through nonlinear interaction is studied using an analytical model. The effects of important parameters in the system such as density, viscosity, and depth ratio of the layers are discussed.

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