Commonwealth Center for Coastal Physical Oceanography
Old Dominion University
Fall 2013 Seminar Series

"ATMOSPHERE-OCEAN COUPLING CAUSING ICE SHELF MELT IN ANTARCTICA—ACCIMA"

JOHN KLINCK
CCPO

Monday, November 25, 2013
3:30 PM
Room 1202, Engineering and Computational Sciences Building

Abstract

This collaborative project links researchers from New York University, Ohio State University, and ODU in a study of the polar Southern Hemisphere (SH) atmosphere, ocean, sea ice and land surface processes that cause basal melt of floating Antarctic ice shelves. Basal melt allows ice sheets to move off the land, contributing to global sea level rise.

The aims of the project are to understand: 1) the effects of decadal scale atmospheric variability on the processes that deliver heat to the coastal ocean causing basal melt, and 2) the influence of katabatic winds, coastal polynyas and small spatial scale orographic processes at the coast on coastal circulation and water mass conversion. We use a coupled atmosphere/ocean/sea ice/land model, based on the Community Earth System Model (CESM), to run 10-year retrospective simulations with mesoscale resolution to compare to existing observations. The 10-year simulation (60 km atmosphere/20 km ocean) reveals the need for different model parameterizations for the SH compared to those used for Arctic simulations. This coupled model compares well with observations. We are proceeding with higher resolution simulations, which will resolve the atmospheric and oceanic mesoscale and allow a detailed analysis of heat transport mechanisms.

Biography

John Klinck earned a B.S. in Physics from Clemson University, a M.S. in Physics from the University of North Carolina, and a Ph.D. in Marine Science from North Carolina State University. He is a professor in the Department of Ocean, Earth and Atmospheric Sciences at Old Dominion University, and he is the director of the Center for Coastal Physical Oceanography. Dr. Klinck's research interests include analytical and numerical modeling of physical and biological processes in oceanic, coastal, and estuarine environments.

Reception before seminar at 3:00 PM