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**Division of Environment
S E M I N A R**

**Study of Seasonal Variability and Heat Budget of the East Australian Current
Using Two Eddy-resolving Ocean Circulation Models**

by

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Abstract

Two mutually exclusive ocean models, Ocean general circulation model for the Earth Simulator (OFES) and the Bluelink ReANalysis (version 2.1; BRAN2.1), and the spin-up model (SPINUP4) of BRAN2.1 were used to investigate seasonal variability of the East Australian Current (EAC). These model outputs were tested against satellite and in-situ data. The seasonally averaged sea surface temperature (SST) in the OFES and SPINUP4 shows a negative bias of 1oC. However, the OFES, SPINUP4, and BRAN2.1 have a similar seasonal cycle in SST. The annual mean EAC transport computed at 28oS from the three models shows a good agreement with annual mean transport computed using the in-situ data. However, they have considerable differences in terms of annual cycle. A better performance of the BRAN2.1 in simulating the temperature field is a result of data assimilation. The advection of heat across the open boundaries contributes ~50% of the heat content change in the region. This study suggests that the advection by the EAC plays a significant role in heat content change of the region.

Bio of Prof. Xiao Hua Wang graduated from Ocean University of China, and holds a PhD in Physical Oceanography from James Cook University in Australia. He is the Founding Director of the Sino-Australian Research Centre for Coastal Management, University of New South Wales, Australia, and a member of editorial board for Estuarine, Coastal and Shelf Science. He has been appointed as an Adjunct Professor at the Ocean University of China and also at the Second Institute of Oceanography, SOA. He has over 20 years experience in both undergraduate and postgraduate teaching. His research concerns modelling of water circulation, sediment transport dynamics, and understanding of coastal management issues. He has over 60 publications including peer-reviewed journal papers, book chapters, international conference abstracts and government/technical reports. His work has been funded by a variety sources including the Australia Research Council, the EU Framework, and US Office of Naval Research.

Much of Xiao Hua Wang's research work is based on numerical modelling and this has included modelling water circulation in estuaries, harbours and coastal embayments, bottom boundary layer dynamics in estuaries and ocean basin. In recent years his work has been involved in understanding and modelling sediment transport and nepheloid layer (fluid-mud layer) effects on the bottom boundary layers in coastal seas. This research has largely been based on the Adriatic Sea (Italy), Yellow and East China Seas, Jervis Bay (New South Wales, Australia) and Darwin Harbour (Northern Territory, Australia). His work on bottom boundary layers and sediment transport has been his major and most important research contribution to international Oceanography, and the results of this work have been applied to the study of biogeochemical processes in marine ecosystems and coastal management. This is both innovative and cutting-edge research. He has been involved in several international collaborative projects with both European and US scientists. He was a visiting scientist at Princeton University USA in 1995; a visiting scientist in the Institute of Atmospheric and Oceanic Sciences-CNR, Italy in 1999; a visiting professor at the University of Bologna Italy in 2001; and a guest investigator in Woods Hole Oceanographic Institution in 2005. From 1999-2004, he spent approximately one month per year in Bolonga, Italy to conduct his study about the Adriatic Sea. Since 2005, he has spent one month per year in China to study sediment dynamics in the Yellow and East China Seas.

Date: 13 June 2013 (Thursday)

Time: 2:00pm

Venue: Room 1003, IENV (Lift 4)

~ All are welcome ~