

CGD SEMINAR SERIES



DATE: **Friday**, 23 May 2008

TIME: 3:30 p.m.

LOCATION: MESA LAB, MAIN SEMINAR ROOM
NCAR, 1850 Table Mesa Drive

SPEAKER: HYODAE SEO
UCLA

TITLE: MODELING OF MESOSCALE
COUPLED OCEAN-ATMOSPHERE
INTERACTION IN THE WESTERN
ARABIAN SEA

ABSTRACT: The observations of the western Arabian Sea in the recent decade have revealed the rich filamentary eddy structure in the ocean with a large horizontal SST gradient in response to the southwest monsoon winds. This summertime oceanic condition triggers the intense mesoscale coupled interaction, whose overall influence on the regional ocean remains uncertain. In this study, a high-resolution regional coupled model (SCOAR model) is employed to explore this feedback effect on to the long-term dynamical and thermodynamical structure of the ocean.

The Ekman velocity ($\sim 1\text{m/day}$) made possible by the wind-eddy interaction accounts for approximately 10-20% of the oceanic vertical velocity, which indicates that contribution from the nonlinear Ekman pumping to the dynamical structure of the upper ocean can be significant. Furthermore, latent heat flux damping effect on the cold filament is estimated $0.3\text{-}0.4^\circ\text{C/month}$ ($0.1\text{-}0.2^\circ\text{C/month}$) for a single season with a strong eddy activity (for a 12-year mean), rendering overall low-frequency modulation of SST by heat flux possible. Potential dynamic and thermodynamic impacts of this observed air-sea interaction on the monsoons and regional climate are yet to be quantified given the strong correlation between the Findlater Jet and the Indian summer monsoons.