

2012 Special Program in Applied Mathematics and Applied Mechanics

Revisit on microscale air-sea interaction processes using numerical simulation

2012 - 02 - 22 (Wed.)

15:00 - 17:00

308, Mathematics Research Center Building (ori. New Math. Bldg.)

The interaction between the lower atmosphere and upper oceans involves flow processes of various length scales ranging from several millimeters to thousands kilometers. For the microscale processes of millimeters to centimeters, laboratory experiment has been the conventional study approach. Numerical simulations based on the first-principle formulation in both conservation equations and boundary conditions offer another means for improving the understanding of the interaction processes. But only recently have numerical models and computing capability advanced to make such computations possible. In this talk we will present our continuing efforts in developing novel numerical schemes for simulating the turbulent flows next to a dynamic wavy air-water interface. Applications of the developed numerical models to reveal underlying mechanisms, which have not been possible by experimental measurements, will also be discussed.

