Simulation of Wave Effects on Turbulence in Ocean Environment

*Lian Shen[1]

1. St. Anthony Falls Laboratory and Department of Mechanical Engineering, University of Minnesota

Turbulence in upper oceans and marine atmospheric surface layer is strongly affected by ocean waves. Previous simulation-based studies often use simplified models and parameterizations for the wave effects on turbulence. With the advancements in numerical algorithms and the increase in computing power, it has recently become feasible to resolve the wave motions explicitly in the simulations of many problems. In this talk, some of our recent developments in numerical methods for nonlinear wave field evolution and turbulence in wave environment will first be introduced, and then the flow physics learned from our wave-phase-resolved simulations of wave-turbulence interactions will be discussed.

Keywords: Wave, turbulence, atmosphere, ocean, simulation

