



Wind modulation on the offshore transport of estuary plume in the northern South China Sea

Bo Hong (1), Hui Wu (2), and Wenping Gong (3)

(1) Naval Architecture and Ocean Engineering, South China University of Technology, China (bohong@scut.edu.cn), (2) State Key Laboratory of Estuarine and Coastal Research, East China Normal University, (3) Center for Coastal Ocean Science and Technology Research, School of Marine Sciences, Sun Yat-Sen University

The offshore transport of estuary plume is very important for the spreading of terrestrial substances, thereby highly related to the biogeochemical process and marine environmental resources. The plume of Pearl River Estuary (PRE), the largest estuary on the China southern coast, was simulated using a fully calibrated 3-D hydrodynamic model. It was found the offshore transport of PRE plume has fast response to the change of wind forcing. Accompanied by the seasonal variations of river discharge and East-Asia monsoon, the dynamic response of plume transport to external forcing were explored. The eastward spreading of terrestrial substances from the Pearl River Delta can lead to the detention of nutrients and pollutant along the coast of HK Island. The water exchange between the estuary and open sea is a key process that controls the offshore transport of dissolved substances. The results presented in this study is important to understand the effect of PRE on the coastal biogeochemical processes in the northern South China Sea.