This manuscript developed a three-dimensional wave-current coupled model (WCCM) for a large shallow lake, and optimized the descriptions of wind input, wave influence, and turbulence scheme basing on the field hydrodynamic data measured during wind-induced upwelling process in Lake Taihu. In this manuscript, the equations of the WCCM were correctly described, and the simulations seem fairly successful comparing with the high-quality field hydrodynamic data. This original work can give us new insight of wind-induced hydrodynamics and promote model development for large shallow lakes. Moreover, this manuscript is well organized and ideally situated for the journal. Therefore, I encourage this MS to be publish in GMD after minor revision.

My specific comments are as follows.

(1) Lines 71, 73, 83, the units should be superscript. Line 71, it covers a water area....

(2) The variable of water density (ρ) hasn't been clearly described in the manuscript. Is it determined by water temperature?

(3) The proposed wind drag coefficient equations are very interesting (Fig. R1). It seemed similar with the COARE 3.5 (Edson et al., 2013) and Large and Pond (1981) equation s (Fig. 1). Is there any relationship between your equation and those equations?

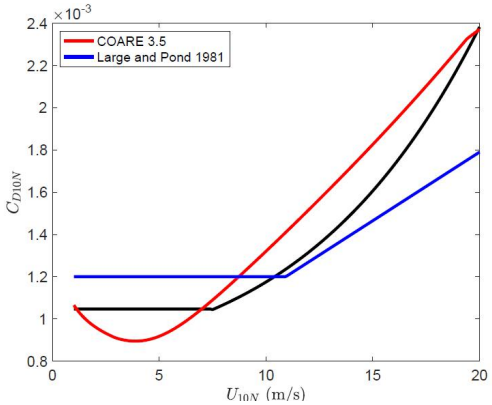

Figure R1 Comparison of the wind drag coefficient equation with the COARE 3.5 (Edson et al., 2013) and Large and Pond (1981)

(4) Wind waves are very important for large shallow lakes. It is necessary to develop SWAN model to simulate wind waves in Lake Taihu. However, it is will be better to verify the performance of SWAN.

(5) Lines 253-255, this demonstrates the importance of wind wave radiation stress. It will be impact the simulation of the buoyancy cyanobacteria which is the most serious environment problem in Lake Taihu.

(6) Section 5.2: it is a very meaningful work for large shallow lake simulation. It firstly proved the important effects of wind waves on lake current simulation in large shallow lakes. I suggest that the authors or other limnologists can try to consider the influence of wave-driven bottom shear stress on lake current simulation in future work.

Edson, J. B., et al., 2013: On the exchange of momentum over the open ocean. J. Phys. Oceanogr., 43, 1589–1610.

Large, W. G., and S. Pond, 1981: Open ocean momentum flux measurements in moderate to strong winds. J. Phys. Ocean., 11, 324–336.