



Comparison of Calculated Air-sea Fluxes by Vortex relation and Bulk formula methods

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Comparison were done between the calculated results of air-sea fluxes by vortex relation method and bulk formula (COARE 3.0) method using observations on a tower platform over north of South China Sea during summer of 2009. It was found that during the situation with higher wind speed cause by a tropical cyclone, the air-sea fluxes calculated by those two methods have no significant difference while during the situation with weaker wind speed, difference of fluxes derived by those two methods are quite apparent. Some times the results calculated by the vortex relation method are larger than the results calculated by bulk formula and sometimes the result is quite the contrary. Although the horizontal wind velocity is approximately the same. By examining the weather system and the diagnostic field of vertical velocity we found that the synoptic scale cyclonic weather system with upward vertical velocity can favor the increase of fluxes from sea to air while the anti-cyclonic weather system with downward vertical velocity can restrain the upward fluxes. Thus in the air-sea fluxes calculation, correction must be taken in bulk formula calculation of fluxes owing to different weather systems.

Key words: comparison; vertical velocity; favor and restrain; air-sea fluxes