Air-sea fluxes of moist, heat and momentum at the Sochengcho Ocean Research Station

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Exact measurement of surface turbulent fluxes between the atmosphere and the ocean, which is one of the major challenges in geosciences, is essential to understand the physical processes related to atmosphere-ocean interaction. This study focuses on measurement and analysis of air-sea fluxes of moist, heat and momentum at the Sochengcho ocean research station (SORS). The SORS, which has been installed since October 2014, is important place for monitoring various weather phenomena. However, there are potential difficulties that observation data could be distorted under atmospheric and oceanic conditions. Therefore, an important issue is how we can improve the quality of air-sea fluxes. In this study, the 20 Hz SORS data is improved through the quality control (QC) process. From demonstrating that the quality controlled data matches well with the NCEP FNL reanalysis data, it showed that the quality controlled data is reliable. The errors of flux measurements are closely related to horizontal wind speed, significant wave height, relative humidity and visibility. Especially, a bunch of water vapor records is eliminated by the QC. It is to do with that the flux data become contaminated due to intense sea fog under the weak wind stable conditions. Plus, the study examines the relationship between wind speed and surface turbulent fluxes according to the stability and sea-air temperature difference.

Key words: Sochengcho Ocean Research Station, air-sea turbulent fluxes, quality control