

Quality-Controlled High-Resolution Upper-Air Sounding Dataset for TASSE: Development and Corrections of the “Storm Tracker” Observations

Hungjui YU, Hung-Chi KUO, Po-Hsiung LIN, Wei-Chung HUNAG
Department of Atmospheric Sciences, National Taiwan University

Ching-Hwang LIU, Shih-Hao SU, Jing-Hwa YANG
Department of Atmospheric Sciences, Chinese Culture University

Abstract

Taipei Summer Storm Experiment (TASSE) had been conducted during the summers from 2016 to 2019, and spring in 2020, aiming to gain further understanding of the short-term, extremely heavy afternoon thunderstorms and the induced flash floods occurring in the Taipei metropolitan area (the Taipei basin). By the deployment of multiple observational platforms including several upper-air sounding sites around Taipei city, the experiment had acquired the unprecedented datasets of the atmosphere over the basin with temporal resolution up to 1-hourly during the daytime.

During the TASSE campaigns, the experimental upper-air observational instrument developed by NTU, a.k.a. the Storm Tracker was utilized to gain the details of the land-sea breeze around the basin. The Storm Tracker was launched at several upper-air radiosonde observational sites every hour during the daytime. In particular at Banqiao site, the Storm Tracker was attached to the Vaisala RS41 radiosonde for intercomparison and data correction. In total, the data from over 500 co-launched Storm Trackers and Vaisala RS41 radiosondes were successfully collected in the TASSE campaigns. And the dataset now serve an essential role for future Storm Tracker validation and correction.

This study presents the results of the upper-air observations in TASSE and the data reliability and applicability of the Storm Tracker.

Keywords: TASSE, Storm Tracker