Aerosonde(Unmanned Aircraft)-Observed Characteristics of Typhoon and Cold Front Environment

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Generally speaking, the Changma (rainy season in Korea) front and typhoon largely associated with meso-scale convective systems migrates northward from the South China Sea where observations are much less dense observations than over the land. Because of the sparse observation network over the ocean except for the limited use of satellite soundings for initial analyses, there frequently takes place lower model prediction skill of meso-scale severe weather systems in summer. Also, this scarcity of observations is believed to limit improvements in the understanding of atmospheric structure of such meso-scale weather systems over the ocean. For improvements in the model prediction accuracy and understanding of severe weather system, comprehensive sounding data over the ocean are essential.

In situ measurements using Aerosonde(unmanned aircraft) and dropwindsondes continue to play a vital role in producing additional observational data over the ocean. Many investigators have reported that enhancing wind and thermodynamic observations in the environment and core of tropical cyclone would improve the initial representation and model track forecasts of tropical cyclones (Burpee et al., 1984; Burpee et al., 1996; Tuleya and Lord, 1997).

The Meteorological Research Institute(METRI), Korea Meteorological Administration(KMA) conducted the Aerosonde observation over the south and southwest ocean off Jeju Island during the period of September 25 to October 6, 2001 to understand the spatial and temporal atmospheric structure of severe weather system approaching toward the Korean peninsula from the East China Sea. During the period of about 100-hour Aerosonde flight, there exists typhoon approaching toward the East China Sea and cold front migrating southeastward from the northern part of Yellow Sea to the southwestern part of Korea.

In this study, the analysis result demonstrates the potential of the Aerosonde data for better understanding the spatial and temporal atmospheric structure of meso-scale weather phenomena such as typhoon environment. It would be mentioned

that the Aerosonde obsevational data provide strong experimental evidence that Aerosonde may be one of the useful observing systems for better understanding the atmosphere vertical structure of typhoon environment.

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