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**Retrieval of Temperature Profiles in Tropical Cyclones from Resampled  
Advanced Technology Microwave Sounder Observations**

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In the past, satellite microwave sounding data are often utilized for retrieving the thermal structure of tropical cyclones (TCs). However, the spatial resolutions and scan pattern of the instruments vary from one to another and can affect the retrievals of TC structures. In this study, three algorithms including Backus-Gilbert Inversion (BGI), ATOVS and AVHRR Pre-processing Package (AAPP) and  $N \times N$  field-of-views (FOVs) average algorithms are utilized to resample the Advanced Technology Microwave Sounder (ATMS) data and the impacts from different resampling algorithms on brightness temperature structures and retrieved atmospheric temperature are analyzed. It is shown that for ATMS channel 1 to 2, the larger differences between original and resampled brightness temperatures are found in cloudy areas and at the land-ocean boundary. When ATMS channels 1-16 data are resampled to the AMSU-like resolution, the brightness temperatures become less noisy at channel 3 to 16 and can lead to a higher convergence rate in the one-dimension variational (1DVAR) algorithm. However, the warm core intensity of a tropical storm is reduced and its size becomes smaller after the ATMS data is resampled to the AMSU resolution. Thus, uses of resampled ATMS observations combined with AMSU/MHS data lead to more frequent observations of tropical storms with consistent warm core intensity