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Vertical Temperature and Moisture Structure in Lower Atmosphere Retrived from Terra/MODIS

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Two MODIS instruments on board the Terra and Aqua Satellites are operational for global remote sensing of the land, ocean and atmosphere. Atmospheric sounding data with a high spatial resolution from MODIS will provide a wealth of useful information. The vertical air temperature and moisture data were retrieved using the MODIS data, and compared with the radiosonde data obtained in the Korean Peninsula. The most accurate MODIS temperature retrievals are found between 800-400hPa, where the rmse is approximately 1.6 K. Near the surface, rmse increased to 2.2 K. Moisture retrieval accuracy decreases with height from an rmse maximum of 3.5 K at the lowest levels. The correlation coefficient are 0.99 and 0.89 for air temperature and moisture cases, respectively. Air temperature data were relatively good agreement, but the moisture data from MODIS were underestimated. Terra–MODIS algorithms have been adapted to the second MODIS instrument on board the Aqua platform. Aqua-MODIS provides better depiction of gradients and allows full use of high spatial resolution measurements. Future work will focus on validation and application of Aqua-MODIS atmospheric retrievals.

Keywords: Terra, MODIS, sounding

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