

Forward Simulation for FY-3 MWHS using RTTOV-7

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MWHS (MicroWave Humidity Sounder), together with MWTS (MicroWave Temperature Sounder) and IRAS (Infrared Atmospheric Sounder), constitutes vertical atmospheric sounding system (VASS) in FY3, the next generation polar orbit meteorological satellite of China. MWHS can provide three-dimensional distribution of global atmospheric humidity for all weather. Before research has been performed on forward simulation for MWHS by using RTTOV-7, Liebe-MPM89 and Liebe-MPM92 are used to compute line-by-line transmittances. Based on these transmittances, spectral parameters for MWHS and predictors defined in RTTOV-7, coefficients are calculated by a multiple linear regression model. In order to compare with AMSU-B, standard atmospheric profile of the United States is used to generate the weighting function of MWHS. After profiles in TIGR43 dataset are selected to yield the fast transmittances coefficients for MWHS, validation is performed by comparing the brightness temperature and the transmittances calculated by RTTOV7 and generated by the Line-by-line model.

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