Introduction and analysis of several FY3C-MWHTS cloud/rain screening methods

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Data assimilation of satellite microwave sounders are very important for numerical weather prediction. Fengyun-3C (FY-3C),launched in September, 2013, has two such sounders: MWTS (MicroWave Temperature Sounder) and MWHTS (MicroWave Humidity and Temperature Sounder). These data should be quality-controlled before assimilation and cloud/rain detection is one of the crucial steps. This paper introduced different cloud/rain detection methods based on MWHTS, VIRR (Visible and InfraRed Radiometer) and MWRI (Microwave Radiation Imager) observations. We designed 6 cloud/rain detection combinations and then analyzed the application effect of these schemes. The difference between observations and model simulations for FY-3C MWHTS channels were calculated as a parameter for analysis. Both RTTOV and CRTM were used to fast simulate radiances of MWHTS channels.