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Preliminary results and some comparisons from assimilation of FY3A data in GRAPES and WRF model

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The significant improvement to weather forecast skill due to directly assimilating the satellite-observed radiance data was witnessed. Chinese Meteorological Administration has developed a three dimensional data assimilation system (Grapes 3Dvar), and with the radiance data directly assimilated by RTTOV as observation operator.
On 27 May 2008, China has successfully launched the FY-3A meteorological satellite as a research and development (R&D) satellite, with 11 payloads mounted, especially including 3 vertical atmospheric sounding instruments: MicroWave Temperature Sounder (MWTS), MicroWave Humidity Sounder and InfraRed Atmospheric Sounder, generally called Vertical Atmospheric Sounder System, i.e., VASS, which will help to improve NWP forecast skill. To assimilating the FY-3A VASS data into Chinese 3Dvar assimilation system (Grapes 3Dvar), there are many new challenging works to do, such as generation of the RTTOV coefficients for FY-3A VASS three instruments, data quality control, channel selection and bias correction, etc. In this paper, the above works on FY-3A VASS data assimilation in Grapes 3Dvar is introduced in detail and some comparisons form assimilation of FY3A in GRAPES and WRF assimilation and forecast model system. The preliminary results indicate that: the forecast skills are improved greater after FY-3A VASS data assimilation than before in both GRAPES and WRF assimilation and forecast system.