

Mixing ratio profiles from AMSU-B data using an empirical neural network method

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Radiance measurements from satellites offer the opportunity to retrieval atmospheric parameters at much higher resolution than is presently afforded by in situ measurement (such as radiosondes). The main aim of this study is to replace the radiosonde measurements by Advanced Microwave Sounding Unit-B (AMSU-B) data for retrieving of mixing ratio and use it for stations that in situ measurement facilities are not available (e. g. there are many such places in Iran). For this purpose a neural network retrieval method has been applied to investigate AMSU-B atmospheric mixing ratio profile capability and transferability of the model for different places. It has been applied on a meso-scale area in Iran and large atmospheric situations (two years). This approach allows that retrievals to be performed even in cloudy conditions, only using AMSU-B data. In comparison of this technique with results from the linear regression retrievals, it was found that the neural-network mixing ratio retrievals had consistent improvement over comparable regression retrievals.