



## **Current Status of the Satellite Data Assimilation in KMA**

This paper reports the recent progress of the satellite data assimilation in the numerical weather prediction at Korea Meteorological Administration (KMA).

## **Progress of the satellite data assimilation in KMA**

### **1. The assimilation of satellite data in UM/VAR system**

KMA(Korea Meteorological Administration) plans to operate UK Met Office's Unified Model(UM) and data assimilation(4DVAR) system in 2010. To operate the 4DVAR with the observation data collected by KMA, observation DB(ODB) and observation preprocess(OPS) in addition to UM VAR system have been constructed and parallelly operated with the current NWP system since April 2009. The employment of UM VAR system(4DVAR) is expected to greatly improve the application of satellite data.

#### 1.1 Achievements

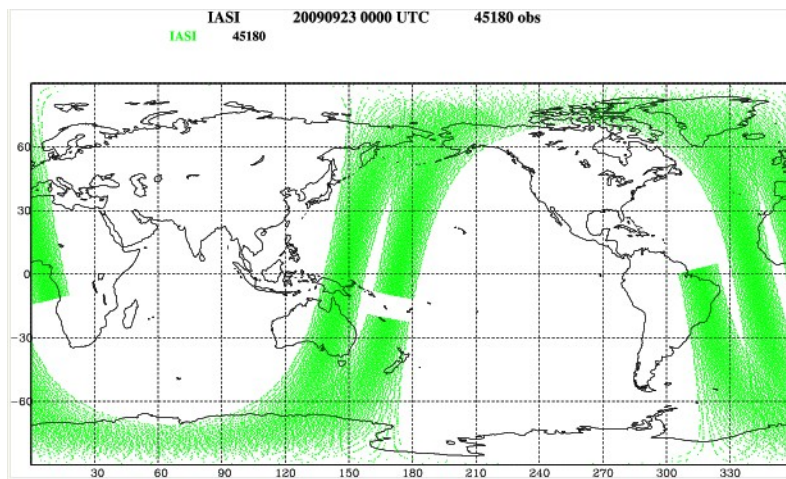
UM 4DVAR made it possible to use the diverse satellite data more effectively. New data sources for satellite were surveyed and the various efforts to get more satellite data were attempted through the ODB(Observation Data Base developed by ECMWF) and OPS(Observation Preprocess of UM/VAR).

As a result of introduction of UM/VAR system and following activities for data acquisition, more AMV data from GOES, MTSAT and METEOSAT have been used in 4DVAR compared with the current system. Also, the number of ATOVS and MODIS was considerably increased. SSMI, AIRS, and ASCAT data which have not been used in the current NWP system, were newly assimilated with UM/VAR

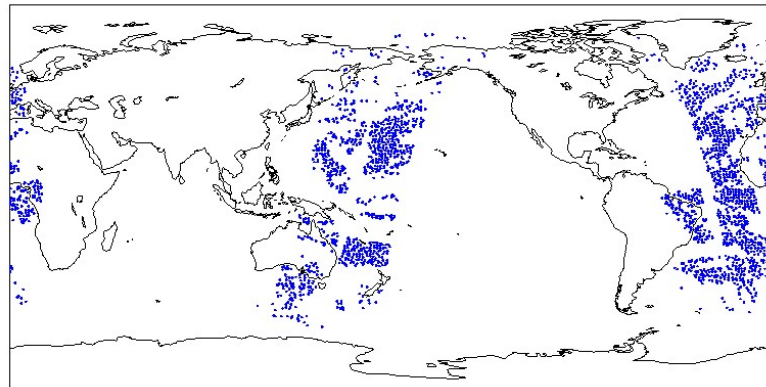
The impact of MetOp IASI that will be introduced at the end of 2009 is being evaluated. IASI data was quality controlled in OPS and assimilated in UM 4DVAR. Several decode and quality control processes were modified to make IASI available for UM VAR. Fig. 1 and 2 show the horizontal distribution of IASI raw data and quality controlled IASI data, respectively. It was found that quite many data was excluded by the quality control and analysis impact of IASI coincided well with IASI distribution. The forecast impact in terms of 5 days GPH error at 500hPa showed 1~5% improvement in assimilating IASI data. Especially the improvement rate was larger in the tropics.

#### 1.2 Plans

In 2010, GPSRO and SSMIS will be additionally assimilated for UM/VAR system. The local use of satellite data will be tried with the start of the regional data assimilation over the East Asia. International activities to acquire more satellite data will be reinforced and preprocess and quality control will be improved to use satellite data more efficiently. The preparation for COMS data assimilation will be started in next year too.



**Fig. 1. The horizontal distribution of IASI raw data at 00 UTC 23 Sep. 2009.**



**Fig. 2. The horizontal distribution of IASI data incoming to UM/VAR system after QC by OPS at 00 UTC 23 Sep. 2009.**