The Korea Institute of Atmospheric Prediction Systems (KIAPS) was founded in 2011 by the Korea Meteorological Administration (KMA) to develop Korea’s own Global HWP model as nine years (2011-2019) project. Data Assimilation team at KIAPS has been developing the observation processing system (KIAPS Package for Observation Processing: KPOP) to provide optimal observations to the data assimilation system for the KIAPS Global Model (KIAPS Integrated Model: KIM). Currently, the KPOP provides AMSU-A, IASI radiance and GPS-RO data for Local Ensemble Transform Kalman Filter (LETKF) and also provides AMSU-A radiance, Sonde, Surface, and AIRCRAFT data for three-dimensional variational assimilation (3DVAR).

Aircraft Meteorological Data Relay (AMDAR) is the automated real-time reports of atmospheric conditions from an commercial aircraft platform at a lower cost relative to that derived from conventional radiosonde programs. Typically, AMDAR data include temperature and winds referenced to the location and altitude of the aircraft. Many studies have demonstrated the positive impact of AMDAR data on numerical model performance. Preliminary results and details on each major processing step for the AIRCRAFT observation data are introduced in this presentation.

**KPOP Design and Progress**

Development of AIRCRAFT data processing system and impact on a 3DVAR system at KIAPS

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**Summary and Future Plan**

- Have been developed AIRCRAFT observation data processing package.
- KPOP-AIRCRAFT system showed reasonable accuracy - the statistics of KPOP-AIRCRAFT system is similar to that of KMA OPS.
- Wind components (u/v) of AIRCRAFT are shows significant impact relative to that of Temperature on 3DVAR and most AIRCRAFT impacts are concentrated around 250 hPa height.
- Planning to provide profile temperature and wind components.

**Table 1. Progresses and plans for development of KPOP**

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**Fig. 1. Design of KIM cycle run and brief description of KPOP elements.**

**Fig. 2. Block diagram for the KPOP structure.**

**Fig. 3. Block diagram for the KPOP-AIRCRAFT.**

**Fig. 4. Block-diagram for gross-qc (L) and flight-ID check (R).**

**Fig. 5. a) Observation error profile for the background check, and b) block diagram for thinning process.**

**Fig. 6. Spatial distribution of a) observed temp., b) T departure from raw obs., and c) final T departure with statistics.**

**Fig. 7. Distribution of T-depart. with vertical levels.**

**Fig. 8. Statistics on each processing step.**

**Fig. 9. Status of KMA oper. OPS.**

**Fig. 10. a) Observation error profile for the background check, and b) block diagram for thinning process.**

**Fig. 11. Spatial distribution of a) observed temp., b) T departure from raw obs., and c) final T departure with statistics.**

**Fig. 12. Distribution of T-depart. with vertical levels.**

**Fig. 13. Statistics on each processing step.**

**Fig. 14. Status of KMA oper. OPS.**