Geophysical Research Abstracts
Vol. 17, EGU2015-8170, 2015
EGU General Assembly 2015


# Development of KIAPS Observation Processing Package for Data Assimilation System

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The Korea Institute of Atmospheric Prediction Systems (KIAPS) was founded in 2011 by the Korea Meteorological Administration (KMA) to develop Korea's own global Numerical Weather Prediction (NWP) system as nine year (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 – Spectral Element method based on HOMME: KIM-SH). Currently, the KPOP is capable of processing the satellite radiance data (AMSU-A, IASI), GPS Radio Occultation (GPS-RO), AIRCRAFT (AMDAR, AIREP, and etc…), and synoptic observation (SONDE and SURFACE). KPOP adopted Radiative Transfer for TOVS version 10 (RTTOV_v10) to get brightness temperature (TB) for each channel at top of the atmosphere (TOA), and Radio Occultation Processing Package (ROPP) 1-dimensional forward module to get bending angle (BA) at each tangent point. The observation data are obtained from the KMA which has been composited with BUFR format to be converted with ODB that are used for operational data assimilation and monitoring at the KMA. The Unified Model (UM), Community Atmosphere – Spectral Element (CAM-SE) and KIM-SH model outputs are used for the bias correction (BC) and quality control (QC) of the observations, respectively. KPOP provides radiance and RO data for Local Ensemble Transform Kalman Filter (LETKF) and also provides SONDE, SURFACE and AIRCRAFT data for Three-Dimensional Variational Assimilation (3DVAR). We are expecting all of the observation type which processed in KPOP could be combined with both of the data assimilation method as soon as possible.
The preliminary results from each observation type will be introduced with the current development status of the KPOP.