

BASCOE Reanalysis of Aura MLS (BRAM)

Q. Errera¹, G. Braathen², S. Chabrillat¹, Y. Christophe¹, J. Deboscher¹, M. Santee³ and S. Skachko⁴

¹*Royal Belgian Institute for Space Aeronomy (BIRA-IASB), Brussels, Belgium*

²*WMO, Geneva, Switzerland*

³*Jet Propulsion Laboratory, California Institute of Technology, Pasadena, USA*

⁴*Meteorological Research Division, Environment and Climatic Change Canada, Dorval, Canada*

The Belgian Assimilation System for Chemical Observations (BASCOE) has been used to reanalyse Aura MLS observations. The system is based on the Ensemble Kalman Filter (EnKF) and a Chemistry Transport Model (CTM) involving 58 chemical species focusing on the stratosphere. The CTM account for the advection, the chemistry (gas phase, photolysis and heterogeneous reactions), the micro-physics of the Polar Stratospheric Cloud (PSC) and water dehydration in the stratosphere. The model is driven by ERA-Interim dynamical fields with a horizontal resolution of 2.5° in latitude and 3.75° in longitude. Vertically, the model has 37 levels from the surface to 0.1 hPa which correspond to the ERA-Interim levels in the stratosphere and a subset of them in the troposphere. The period of the reanalysis starts in August 2004, at the beginning of the MLS mission, and go up to the present. Assimilated species are: O₃, CO, H₂O, N₂O, HNO₃, HCl, ClO and CH₃Cl. BRAM analyses are delivered every 6 hour and are publicly available (see <http://strato.aeronomie.be> > Datasets > BRAM).

This contribution will summarize the validation of BRAM against assimilated MLS observations and additional independent observations, with a focus on the middle stratosphere, the winter poles and the UTLS.

Key words: reanalysis, stratospheric composition, Aura MLS