



## **Reanalysis of stratospheric chemical composition based on assimilation of EOS Aura MLS, MIPAS and SCIAMACHY data: early results**

Quentin Errera, Simon Chabrillat, Yves Christophe, Karolien Lefever, Sergeys Skachko, Sébastien Viscardy, and Edith Botek

Belgium Institute for Space Aeronomy (BIRA-IASB), Brussels, Belgium (quentin@aeronomie.be)

BIRA-IASB is planning a reanalysis of the stratospheric chemical composition for the period 2002-2012 using the Belgian Assimilation System for Chemical ObsErvations (BASCOE). BASCOE is a 4D-Var system based on a chemistry transport model that has 57 chemical species, 200 chemical reactions and a PSC parameterization. For this reanalysis, the model will be driven by the ECMWF ERA-Interim dynamical fields with a spatial resolution of  $2.5^\circ$  latitude  $\times$   $3.75^\circ$  longitude  $\times$  37 levels (surface to 0.1 hPa). The goal of our reanalysis is to provide daily global maps of all the relevant chemical species of the stratosphere as well as total ozone. Observations from EOS Aura MLS, MIPAS and SCIAMACHY will be assimilated providing the following list of target species: O<sub>3</sub>, H<sub>2</sub>O, OH, CH<sub>4</sub>, N<sub>2</sub>O, HNO<sub>3</sub>, NO<sub>2</sub>, N<sub>2</sub>O<sub>5</sub>, ClONO<sub>2</sub>, ClO, BrO, CFC11, CFC12 and total ozone column.

In this contribution, we will present early results obtained for the year 2008 where the SCIAMACHY data have not been assimilated, i.e., leaving out BrO and total ozone data. The quality of the analyses will be discussed using comparison against ozonesondes and ACEFTS data. We will also discuss the ability of the system to produce useful analyses in the following stratospheric conditions: polar winters (i.e. denitrification, dehydration, chlorine activation and ozone destruction), polar winters perturbed by descent of mesospheric NO<sub>x</sub>, and the UTLS.

This reanalysis will be made available to the community.