



BASCOE

NRT analysis of stratospheric ozone

NRT analysis of ozone-related species

Reanalysis of ozone and ozone-related species

Product and service description

1. Analyses of stratospheric ozone by the BASCOE data assimilation system using Aura/MLS-SCI level 2 (v2.2) satellite observations
2. Analyses of chemical species related to stratospheric ozone (H₂O, HNO₃, HCl, N₂O, HOCl, NO_x) by the BASCOE data assimilation system using Aura/MLS-SCI level 2 (v2.2) satellite observations.
3. Reanalyses of stratospheric ozone and related chemical species (O₃, H₂O, HNO₃, HCl, HOCl, N₂O) by the BASCOE data assimilation system using UARS/MLS, Envisat/MIPAS or Aura/MLS level 2 satellite observations – the list of assimilated species depends on the instrument. The reanalyses of UARS/MLS and MIPAS include only ozone.
4. The MACC stratospheric ozone service is delivered through the website <http://www.gmes-stratosphere.eu>
It is described in Lefever et al (2011b) (available on the web site under More info > User Guide)

Product generation and validation

See the product description: the datasets consist in satellite observations assimilated into the BASCOE Chemical Data Assimilation System.

Quality control

- Source codes are versioned and maintained under the Subversion versioning software
- Version changes are documented within the versioning software, in file Manifest.txt and on the internal wiki of BIRA-IASB
- The maxima of the typical value range (see T1) are not implemented yet. Negative values are clipped automatically and result in warnings in the log files.
- QI are provided in filenames and content of the daily generated log files.
- Emails with processing status are sent daily to macc@aeronomie.be
- Logfiles are listed on the web (with automatic and daily updates). Their names depend on basic processing events (no satellite data available; assimilation failed and forward modelling was used instead). Hence a quicklook on current and past processing outcome is available anytime and everywhere: see http://macc.aeronomie.be/logs/bascoe_AMLS_NRT_loglist.txt
- User feedback mechanism: email to macc@aeronomie.be

References

- Errera Q., F. Daerden, S. Chabrilat, J. C. Lambert, W. A. Lahoz, S. Viscardy, S. Bonjean, and D. Fonteyn, 4D-Var Assimilation of MIPAS Chemical Observations: Ozone and Nitrogen Dioxide Analyses, *Atmospheric Chemistry and Physics Discussions*, 8, 8009-8057, 2008.
- Errera Q, S. Viscardy and F. Baier, BASCOE ozone and Cly analyses provided in the framework of PROMOTE, ESA Special Publication SP-676, 2009.
- Geer A. J., W. A. Lahoz, S. Bekki, N. Bormann, Q. Errera, H. J. Eskes, D. Fonteyn, D. R. Jackson, M.N. Juckes, S. Massart, V.-H. Peuch, S. Rharmili, and A. Segers: The ASSET intercomparison of ozone analyses: method and first results, *Atmos. Chem. Phys.*, 6, 5445-5474, 2006.
- Lahoz, W.A., A.J. Geer, S. Bekki, N. Bormann, S. Ceccherini, Q. Errera, H.J. Eskes, D. Fonteyn, D.R. Jackson, B. Khattatov, S. Massart, V.-H. Peuch, S. Rharmili, M. Ridolfi, A. Segers, O. Talagrand, H. Thornton, A.F. Vik and T. von Clarmann. The Assimilation of Envisat data (ASSET) project. *Atmos. Chem. Phys.*, 7, 1773-1796, 2007.
- Lahoz, W.A, Q. Errera, S. Viscardy, and G.L. Manney, The 2009 stratospheric major warming described from synergistic use of BASCOE water vapour analyses and MLS observations, *Atmos. Chem. Phys.*, 11, 4689-4703, 2011.
- Lefever et al., Case study validation of stratospheric ozone, MACC deliverable D_G-RG_2_5+D_G-RG_2_8, 2011a.
- Lefever et al., Technical documentation of MACC integrated stratospheric ozone service including validation, MACC deliverable D_G-RG_2_6, 2011b.
- Thornton, H. E., D. R. Jackson, S. Bekki, N. Bormann, Q. Errera, A. J. Geer, W. A. Lahoz, and S. Rharmili, The ASSET intercomparison of stratosphere and lower mesosphere humidity analyses, *Atmos. Chem. Phys.*, 9, 995-1016, 2009.
- Vigouroux, C., M. De Mazière, Q. Errera, S. Chabrilat, E. Mahieu, P. Duchatelet, S. Wood, D. Smale, S. Mikuteit, T. Blumenstock, F. Hase, and N. Jones: Comparisons between ground-based FTIR and MIPAS N₂O and HNO₃ profiles before and after assimilation in BASCOE, *Atmos. Chem. Phys.*, 7, 377-396, 2007.
- Viscardy, S., Q. Errera, Y. Christophe, S. Chabrilat and J.-C. Lambert: Evaluation of ozone analyses from UARS MLS assimilation by BASCOE between 1992 and 1999, in press in *IEEE - Journal of Selected Topics in Earth Observation and Remote Sensing (JSTARS)*, 3, 190-202.