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## On the use of mass-conserving wind fields in chemistry-transport models

B. Bregman<sup>1</sup>, A. Segers<sup>1</sup>, M. Krol<sup>2</sup>, E. Meijer<sup>1</sup>, and P. van Velthoven<sup>1</sup><sup>1</sup>Royal Netherlands Meteorological Institute, P.O. Box 201, 3730 AE, De Bilt, The Netherlands<sup>2</sup>Institute for Marine and Atmospheric Research Utrecht, Princetonplein 5, 3584 CC, The Netherlands

**Abstract.** A new method has been developed that provides mass-conserving wind fields for global chemistry-transport models. In previous global Eulerian modeling studies a mass-imbalance was found between the model mass transport and the surface pressure tendencies. Several methods have been suggested to correct for this imbalance, but so far no satisfactory solution has been found. Our new method solves these problems by using the wind fields in a spherical harmonical form (divergence and vorticity) by mimicing the physics of the weather forecast model as closely as possible. A 3-D chemistry-transport model was used to show that the calculated ozone fields with the new processing method agree remarkably better with ozone observations in the upper troposphere and lower stratosphere. In addition, the calculated age of air in the lower stratosphere show better agreement with observations, although the air remains still too young in the extra-tropical stratosphere.

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