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A stratospheric BrO climatology based on the BASCOE 3D chemical transport model

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We present a stratospheric BrO profile climatology based on one year of output data from the 3D CTM BASCOE. The impact of the atmospheric dynamic on the stratospheric BrO distribution is considered by adopting a profile classification based on the latitude, month and the O_3column. The effect of the photochemistry on stratospheric BrO is taken into account by using a parameterization depending on the stratospheric NO_2columns and the solar zenith angle. The suitability of this approach is assessed based on the model results. Furthermore, the modeled BrO profile dataset is validated through comparisons with ground-based, balloon-borne and satellite limb (SCIAMACHY) stratospheric BrO observations. The uncertainties related to (1) the estimation of the total inorganic bromine budget (in particular the contribution from very short-lived brominated sources gases), and (2) the simulation of the main chemical processes that control the partitioning BrO/Bry are evaluated and discussed.