



## **The 2009 stratospheric major warming described from synergistic use of BASCOE water vapour analyses and EOS Aura MLS observations**

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During the wintertime stratosphere, a strong cyclonic polar vortex is usually observed. However, during January–February 2009, an unprecedented major warming took place in the Arctic stratosphere, which involved a split of the vortex and disrupted the typical air circulation in this region. The purpose of this contribution is to study the dynamical evolution of the stratosphere during this specific event. The originality of this work is to use synergistically stratospheric water vapor analyses in combination with meteorological data from ECMWF and GEOS-5 and along-orbit cuts of stratospheric water vapor observations from Aura MLS to provide a physically-based 3-d picture of the stratosphere. The water vapor analyses are produced by the assimilation of Aura MLS data by BASCOE (Belgian Assimilation System for Chemical ObsErvations). The use of these analyses has the advantage of filling in the observational gaps between the viewing tracks in an objective way, and allow an estimation of diabatic descent in the stratosphere.