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PRELIMINARY COMPARISONS OF TEMPERATURE AND OZONE PROFILES MEASURED BY MIPAS AND HALOE

Abstract

The temperature and ozone volume mixing ratio (VMR) profiles observed by MIPAS/ENVISAT and HALOE/UARS are compared. General consistencies are found to exist for the measurements of the two instruments, though the data sets are limited and reflect some characteristics of the individual instruments and observation scenarios. More cross-validations of similar type are under way.

Data and Analysis Method

The MIPAS data are retrieved using IMK data analysis processor. The HALOE are taken from Level 2 -version 19 database through BADC (British Atmospheric Data Centre) .

Coincidence Criteria: Measurements on the same day and within a bin of 5 by 10 degrees in latitude and longitude.

Data are interpolated to a common grid. No averaging kernel is used.

Preliminary Results

Reasonable agreement on a profile-by-profile basis.

Basic feature: MIPAS looks hotter than HALOE by 1-2 K below 70 km. HALOE significantly colder (~5 K) above 70 km.

It is known that HALOE has 3-5 K cold bias within ±5 km of stratopause [see Upper Atmosphere Research Satellite (UARS) Halogen Occultation Experiment (HALOE) Standard Formatted Data Unit (SFDU) Level 2 Metadata Document].

Ozone VMR of MIPAS is generally larger than that of HALOE, with large height variability.

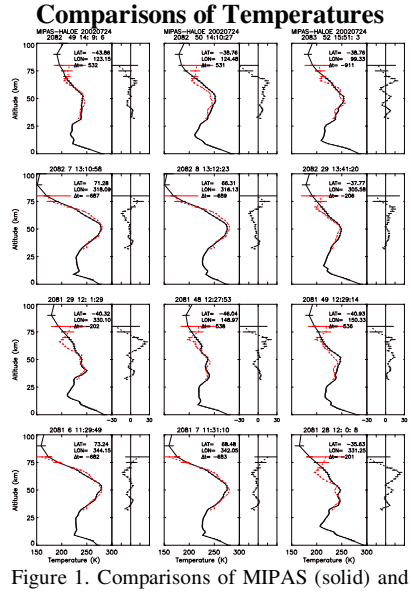

Figure 1. Comparisons of MIPAS (solid) and HALOE (dotted) temperatures (in Kelvin) profiles observed on 24 July, 2002. Denoted are the latitude and longitude (in degrees) of MIPAS observations and the time differences (in minutes) between the measurements of the two instruments.

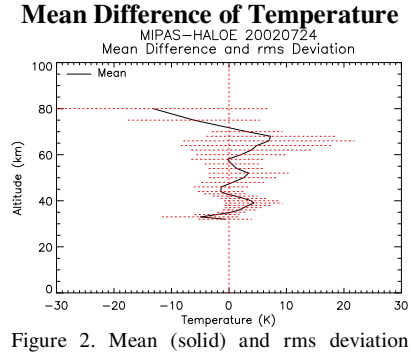

Figure 2. Mean (solid) and rms deviation (dotted) in Kelvin of the difference between MIPAS and HALOE temperatures on 24 July, 2002.

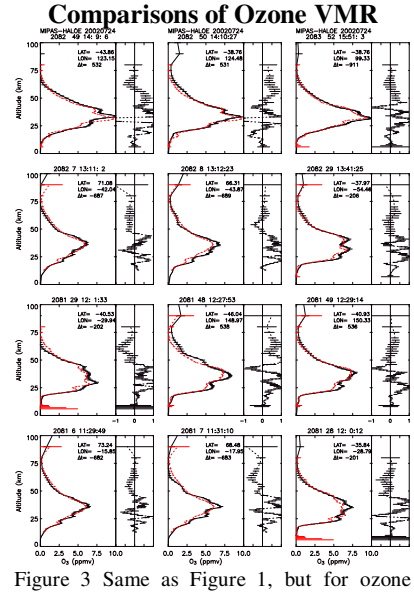

Figure 3 Same as Figure 1, but for ozone mixing ratio in ppmv (parts per million by volume).

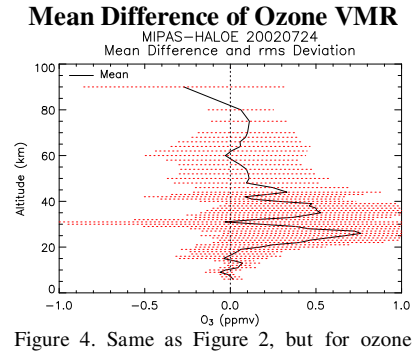

Figure 4. Same as Figure 2, but for ozone mixing ration in ppmv.