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On small-scale ozone variability in the stratosphere: signatures of gravity waves

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The information about the small-scale natural variability of the ozone field is very important for validation, data assimilation and multi-instrument data analyses. To obtain this, very accurate (with uncertainty significantly smaller than the natural variability) ozone measurements closely collocated in time and space are required.

In this work, we have analyzed MIPAS ozone profiles closely collocated in time and in space with the aim of obtaining information about the small-scale ozone variability.

We have found:

- (i) The ozone natural small-scale variability is small in tropics and rather large in polar winter stratosphere;
- (ii) In the tropics, enhancements over typical regions of deep convection are observed;
- (iii) Clear indication of gravity wave activity is observed in ozone variability field in the upper stratosphere.