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A new method for the validation of the GOMOS high resolution temperature profiles products

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Abstract

This article proposes a new validation method for GOMOS HRTTP atmospheric temperature and density profiles, with the aim of detecting and removing 0.2 to 5 km scale vertical structures in order to minimise the impact of atmospheric artefacts in the comparison exercises. The proposed approach is based on the use of the "Morlet" Continuous Wavelet Transformation (CWT), for the characterisation and removal of non-stationary and localised vertical structures, in order to produce wave-free profiles of atmospheric temperature and density. Comparison of wave-free temperature/density profiles and wavy structures profiles with those estimated from a limited number of collocated SHADOZ soundings for the years of 2003, 2004 and 2008, is discussed in detail. First results suggest that the proposed approach could lead to a significantly improved HRTTP validation scheme, in terms of reduced uncertainties in the estimated biases. Furthermore, this method may be adopted for the study of the vertical component of gravity waves from high spatial/temporal resolution data.

Keywords

Gomos HRTTP; Atmospheric waves; Temperature profiles; Validation; Wavelet transform

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References

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
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