



ESA MesosphEO

MesosphEO WP 4.3: Mesospheric Na climatology D. Fussen, BISA

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1. Introduction

This document defines the netCDF formats to be used for Level 3 products in the ESA's MesosphEO project.

2. Selection of format

The files will be made for netCDF4. For convenience, equivalent Matlab files are also available as well as 2-D sectional plots.

3. User guidance for data

The data set consists of the following variables:

- ! z [km] : altitude grid
- ! lat [°] : latitude bin centers
- ! month : month of the year
- ! PROF [cm⁻³] : 3-D array of Na vertical concentration profiles.
- ! DPROF [cm⁻³] : 3-D array of estimated total error on PROF values.

4. Level 3 vertically gridded data format

As the signal to noise ratio for the detection of the sodium doublet absorption is too weak, the retrieval of the Na optical depth in individual star occultations is impossible.

Instead, it was necessary to average a large number of transmittances into 10° monthly bins before performing the inversion. In that sense, only L3 data exist for the sodium concentration profiles.

The geometrical altitude grid has a 1 km spacing from 50 to 120 km.

5. Repository

BISA will preserve the new data sets created in the MesosphEO project and make them available by the project's web-page.

6. References

Fussen, D., Vanhellemont, F., Tétard, C., Matshvili, N., Dekemper, E., Loodts, N., Bingen, C., Kyrölä, E., Tamminen, J., Sofieva, V., Hauchecorne, A., Dalaudier, F., Bertaux, J.-L., Barrot, G., Blanot, L., Fanton d'Andon, O., Fehr, T., Saavedra, L., Yuan, T., and She, C.-Y.: A global climatology of the mesospheric sodium layer from GOMOS data during the 2002–2008 period, *Atmos. Chem. Phys.*, 10, 9225-9236, doi:10.5194/acp-10-9225-2010, 2010.

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