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## dlr/nd/O3\_Blackforest\_FC1\_Surface\_Hourly.nc {

dimensions:

```
time = UNLIMITED; // (24 currently)
```

```
lat = 84;
```

```
lon = 80;
```

variables:

```
float time(time=24);
```

```
    :units = "hours since 2012-05-08 00:00:00";
```

```
float lat(lat=84);
```

```
    :long_name = "latitudes";
```

```
    :units = "degrees_north";
```

```
float lon(lon=80);
```

```
    :long_name = "longitudes";
```

```
    :units = "degrees_east";
```

```
float O3(time=24, lat=84, lon=80);
```

```
    :long_name = "Ozone concentration";
```

```
    :standard_name = "mass_concentration_of_ozone_in_air";
```

```
    :unit = "microgram/m3";
```

```
    :missing_value = NaN; // double
```

```
:contact = "wdc@dlr.de";
```

```
:data_provider = "DLR";
```

```
:forecast_level = "0";
```

```
}
```

### Notes:

1. Regular lon/lat grid with equidistant time
2. It does not specify to be CF compliant
3. There is no direct metadata for CRS and Envelope
4. very small **80\*84**
5. No vertical dimension (being a subselection of the next sample, for a specified z).

## dlr/nd/sample\_polyphemus\_output.nc {

dimensions:

time = UNLIMITED; // (24 currently)

z = 14;

**lat = 96;**

**lon = 80;**

variables:

float time(time=24);

:units = "hours since 2012-04-01 0:00:00";

float z(z=14);

:long\_name = "height";

:units = "meters";

float lat(lat=96);

:long\_name = "latitudes";

:units = "degrees\_north";

float lon(lon=80);

:long\_name = "longitudes";

:units = "degrees\_east";

float O3(time=24, z=14, lat=96, lon=80);

:long\_name = "Ozone concentration";

:standard\_name = "mass\_concentration\_of\_ozone\_in\_air";

:unit = "microgram/m3";

:missing\_value = NaN; // double

float NO2(time=24, z=14, lat=96, lon=80);

:long\_name = "NO2 concentration";

:standard\_name = "mass\_concentration\_of\_nitrogen\_dioxide\_in\_air";

:unit = "microgram/m3";

:missing\_value = NaN; // double

### Notes:

*Regular lon/lat grid with equidistant time.*

**Z values are not equally spaced:**

z = {10.0, 35.0, 75.0, 125.0, 175.0, 250.0, 350.0, 450.0, 550.0, 700.0, 900.0, 1250.0, 1750.0, 2500.0}

## GOME2 Products

We have various GOME2 products, both for Near Real Time (NRT) as well as for daily time series. The number of pixels is not that bad ( $2048^2$ ) and therefore the size isn't too small (these are floats, hence 4 bytes each): having external overviews might help.

### dlr/nrt/LATEST.GOME2.NO2.PGL.nc {

dimensions:

**lon = 2048;**

**lat = 1024;**

variables:

double lon(lon=2048);

:long\_name = "longitude";

:units = "degrees\_east";

:actual\_range = -180.0, 180.0; // double

double lat(lat=1024);

:long\_name = "latitude";

:units = "degrees\_north";

:actual\_range = -90.0, 90.0; // double

float z(lat=1024, lon=2048);

:long\_name = "z";

:\_FillValue = -999.0f; // float

:actual\_range = 0.003590000094845891, 18.204158782958984; // double

**:Conventions = "COARDS/CF-1.0";**

:title = "\_tmp\_save\_netcdf\_20111204.GOME2.NO2.PGL\_NO2.nn";

:history = "/local/upas/inst-gmt/bin/grdreformat \_tmp\_save\_netcdf\_20111204.GOME2.NO2.PGL\_NO2.grd  
20111204.GOME2.NO2.PGL.nc=nf/1/0/-999";

:GMT\_version = "4.5.5 [64-bit]";

:node\_offset = 1; // int

}

### Notes:

*Regular lon/lat grid*

*Same for similar datasets:*

LATEST.GOME2.NO2.PGL.nc

LATEST.GOME2.NO2Tropo.PGL.nc

LATEST.GOME2.O3.PGL.nc

PREVIOUS.GOME2.NO2.PGL.nc

PREVIOUS.GOME2.NO2Tropo.PGL.nc

PREVIOUS.GOME2.O3.PGL.nc

**dlr/eumetsat/W\_XX-EUMETSAT-  
Darmstadt,SURFACE+SATELLITE,METOPA+ASCAT\_C\_EUMP\_20110620020000\_24  
214\_eps\_o\_125\_I1.nc {**

dimensions:

numRows = 3259;  
numCells = 82;  
numSigma = 3;

variables:

int time(numRows=3259);  
  :\_FillValue = "-2147483647";  
  :valid\_min = "0";  
  :valid\_max = "2147483647";  
  :standard\_name = "time";  
  :long\_name = "time";  
  :units = "seconds since 2000-01-01 00:00:00";  
  :scale\_factor = 1.0f; // float

short cell\_index(numRows=3259, numCells=82);  
  :\_FillValue = "-32767";  
  :valid\_min = "1";  
  :valid\_max = "42";  
  :standard\_name = "cell index";  
  :long\_name = "across track cell index";  
  :units = "1";  
  :coordinates = "lat lon";

byte swath\_index(numRows=3259, numCells=82);  
  :\_FillValue = "127";  
  :flag\_values = "0b, 1b";  
  :flag\_meaning = "left, right";  
  :standard\_name = "swath index";  
  :long\_name = "left/right swath index";  
  :units = "1";

int lat(numRows=3259, numCells=82);  
  :\_CoordinateAxisType = "Lat";  
  :standard\_name = "latitude";  
  :long\_name = "latitude";  
  :units = "degree\_north";  
  :valid\_min = "-9000000";  
  :valid\_max = "9000000";  
  :missing\_value = -2147483647; // int  
  :scale\_factor = 1.0E-6f; // float

int lon(numRows=3259, numCells=82);  
  :\_CoordinateAxisType = "Lon";  
  :standard\_name = "longitude";  
  :long\_name = "longitude";  
  :units = "degree\_east";  
  :valid\_min = "0";  
  :valid\_max = "3600000";  
  :missing\_value = -2147483647; // int

```

:scale_factor = 1.0E-6f; // float
short sat_track_azi(numRows=3259);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "36000";
:standard_name = "sat track azi";
:long_name = "satellite track azimuth angle";
:units = "degree";
:scale_factor = 0.01f; // float
short atmospheric_height(numRows=3259, numCells=82);
:_FillValue = "-32767";
:valid_min = "5000";
:valid_max = "20000";
:standard_name = "atmospheric height";
:long_name = "atmospheric height";
:units = "km";
:scale_factor = 0.0010f; // float
:coordinates = "lat lon";
int atmospheric_loss(numRows=3259, numCells=82);
:_FillValue = "-2147483647";
:valid_min = "0";
:valid_max = "30000000";
:standard_name = "atmospheric loss";
:long_name = "atmospheric loss";
:units = "dB km";
:scale_factor = 1.0E-10f; // float
:coordinates = "lat lon";
int nrCS(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-2147483647";
:valid_min = "-10000000";
:valid_max = "10000000";
:standard_name = "sigma0";
:long_name = "normalised radar cross section";
:units = "dB";
:coordinates = "lat lon";
:scale_factor = 1.0E-6f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively";
short kp(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "KP";
:long_name = "NRCS standard error";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 1.0E-4f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively";
short inc_angle(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "2000";

```

```

:valid_max = "8000";
:standard_name = "incidence angle";
:long_name = "across-track incidence angle";
:units = "degree";
:coordinates = "lat lon";
:scale_factor = 0.01f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively";
short azi_angle(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "-180";
:valid_max = "180";
:standard_name = "azimut angle";
:long_name = "beam azimut angle";
:units = "degree";
:coordinates = "lat lon";
:scale_factor = 0.01f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Degrees
clock-wise w.r.t. the North direction)";
byte f_kp(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "127";
:flag_values = "0b, 1b";
:flag_meaning = "kp estimate at nominal quality, kp estimate at non-nominal quality";
:standard_name = "kp flag";
:long_name = "kp flag";
:units = "1";
:coordinates = "lat lon";
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively";
byte f_use(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "127";
:flag_values = "0b, 1b, 2b";
:flag_meaning = "good, usable, bad";
:standard_name = "measurement usability flag";
:long_name = "f_use flag";
:units = "1";
:coordinates = "lat lon";
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively";
short f_f(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "f_f";
:long_name = "f_f flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to the use of synthetic data used in the generation of averaged NRCS value";
short f_v(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";

```

```
:valid_max = "10000";
:standard_name = "f_v";
:long_name = "f_v flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to the quality of synthetic data used in the generation of averaged NRCS value";
short f_oa(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "f_oa";
:long_name = "f_oa flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to the orbit/attitude quality of the data used in the generation of averaged NRCS value";
short f_sa(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "f_sa";
:long_name = "f_sa flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to the solar array reflection contamination of the data used in the generation of averaged NRCS value";
short f_tel(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "f_tel";
:long_name = "f_tel flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to instrument telemetry quality contemporary to the data used in the generation of averaged NRCS value";
short f_ext_fil(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "f_ext_fil";
:long_name = "f_ext_fil flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
```



```
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to the presence of extrapolated reference functions in the generation of the data used in the generation of
averaged NRCS value";
short f_land(numRows=3259, numCells=82, numSigma=3);
:_FillValue = "-32767";
:valid_min = "0";
:valid_max = "10000";
:standard_name = "f_land";
:long_name = "f_land flag";
:units = "1";
:coordinates = "lat lon";
:scale_factor = 0.0010f; // float
:comment = "NUMSIGMA = 0,1,2, corresponding to FORE,MID and AFT values, respectively. Flag related
to the presence of land in the data used in the generation of averaged NRCS value";

:creator_name = "EUMETSAT";
:creator_url = "http://www.eumetsat.int";
:creator_email = "ops@eumetsat.int";
:institution = "EUMETSAT";
:license = "CopyRight EUMETSAT 2012";
:Conventions = "CF-1.5";
:Metadata_Conventions = "Unidata Dataset Discovery v1.0";
:title = "NA";
:summary = "NA";
:source = "surface observation";
:references = "http://www.eumetsat.int/Home/Main/DataAccess/Resources/index.htm?l=en";
:comment = "Search for Advanced Scatterometer in the references URL";
:keywords = "EUMETSAT, DATA CENTRE, EPS, ASCAT, NetCDF";
:history = "ASCA_SZR_1B v1.0 CopyRight 2011";
:reference_url = "http://navigator.eumetsat.int/discovery/Query/Detail.do?
fileIdentifier=EO_EUM_DAT_METOP_ASCSZR1B";
:wmo_filename = "W_XX-EUMETSAT-
Darmstadt,SURFACE+SATELLITE,METOPA+ASCAT_C_EUMP_20110620020000_24214_eps_o_125_I1.nc";
:long_name = "ASCAT Level 1B normalised radar cross section values in 12.5km swath grid";
:standard_name = "ASCAT L1B 12.5";
:data_format_type = "NetCDF4 Classic Data Model";
:producer_agency = "EUMETSAT";
:processing_centre = "CGS1";
:platform_type = "spacecraft";
:platform_long_name = "M02";
:instrument_name = "ASCA";
:instrument_model = "1";
:processing_level = "1B";
:product_type = "SZR";
:processing_type = "O";
:processor_major_version = "7";
:product_minor_version = "3";
:instrument_calibration_version = "xxxxx";
:processing_parameters_configuration = "0500 20110620020000588 20110620031159983";
:instrument_parameters_configuration = "0204 20110620020000588 20110620031159983";
```

:format\_major\_version = "11";  
:format\_minor\_version = "0";  
:granule\_name = "ASCA\_SZR\_1B\_M02\_20110620020000Z\_20110620034158Z\_N\_O\_20110620024903Z";  
:parent\_granule\_name  
= "ASCA\_xxx\_1A\_M02\_20110620015959Z\_20110620034158Z\_N\_O\_20110620024838Z";  
:contents = "nracs";  
:native\_paroduct\_size = "25486578";  
:production\_date\_time = "20110620043112Z";  
:start\_sensing\_data\_time = "20110620020000Z";  
:end\_sensing\_data\_time = "20110620034158Z";  
:start\_orbit\_number = "24214";  
:end\_orbit\_number = "24215";  
:orbit\_semi\_major\_axis = "7204548333";  
:orbit\_eccentricity = "1287";  
:orbit\_inclination = "98684";  
:rev\_orbit\_period = "6081.7";  
:equator\_crossing\_longitude = "-6258714644";  
:equator\_crossing\_date\_time = "20110620013013000Z";  
:subsat\_track\_start\_lat = "72017";  
:subsat\_track\_start\_lon = "140110";  
:subsat\_track\_end\_lat = "70119";  
:subsat\_track\_end\_lon = "111547";  
:qa\_duration\_product = "6118000";  
:qa\_percent\_degraded\_data = "0";  
:qa\_percent\_missing\_data = "0";  
:land\_seamask\_file\_pointer  
= "xxxx\_LSM\_xx\_xxx\_20060717000000Z\_XXXXXXXXXXXXXXXXXZ\_20060713000100Z\_xxxx\_XXXXXXXXXXXX  
20110620020000588 20110620034158438";  
:orbit\_prediction\_file\_pointer  
= "xxxx\_OSV\_xx\_M02\_20110619000000Z\_20110622120000Z\_20110619061733Z\_FDFx\_FDORBPREDI  
20110620020000588 20110620034158438";  
:normalisation\_file\_pointer  
= "ASCA\_NTB\_xx\_M02\_20110620013013Z\_XXXXXXXXXXXXXXXXXZ\_20110619025215Z\_CGS1\_XXXXXXXXXXXX  
20110620020000259 20110620031159875";  
:processing\_parameter\_file\_pointer  
= "ASCA\_PRC\_xx\_M02\_20090907000000Z\_XXXXXXXXXXXXXXXXXZ\_20090731000500Z\_xxxx\_FM2xxxxTCE  
20110620020000259 20110620034159499";  
:instrument\_parameter\_file\_pointer  
= "ASCA\_INS\_xx\_M02\_20081202000000Z\_XXXXXXXXXXXXXXXXXZ\_20081029000204Z\_xxxx\_FM2xxxxTCE  
20110620020000259 20110620034159499";  
:instrument\_calibration\_file\_pointer = "NA";  
:sigma0\_granularity = "Averaged and re-sampled to along-track/across-track swath grid";  
:spatial\_filter\_method = "Hamming window";  
:pixel\_size\_on\_horizontal = "12500m";

***Need to check NetCDF interpolation processing made in the past to do georectification since EUMETSAT datasets deal with lon/lat matrix and sigma levels.***

## **Additional docs and feedbacks**

### **EUMETSAT Background INFO**

<http://oiswww.eumetsat.org/WEBOPS/eps-pg/ASCAT/ASCAT-PG-10L1bSAFormat.htm#mdr-1b-50km>

<http://www.eumetsat.int/Home/Main/DataProducts/Resources/index.htm>

## **ASCAT SZR 1B**

<http://oiswww.eumetsat.org/WEBOPS/eps-pg/ASCAT/ASCAT-PG-10L1bSAFormat.htm#TOC102>

[http://www.eumetsat.int/groups/ops/documents/document/PDF\\_TEN\\_97233-EPS-ASCAT-L1.pdf](http://www.eumetsat.int/groups/ops/documents/document/PDF_TEN_97233-EPS-ASCAT-L1.pdf)

[http://www.eumetsat.int/groups/ops/documents/document/PDF\\_TEN\\_96167-EPS-GPFS.pdf](http://www.eumetsat.int/groups/ops/documents/document/PDF_TEN_96167-EPS-GPFS.pdf)

[http://www.eumetsat.int/groups/ops/documents/document/pdf\\_ascat\\_factsheet.pdf](http://www.eumetsat.int/groups/ops/documents/document/pdf_ascat_factsheet.pdf)

### **Details provided by Torsten:**

Hi Daniele,

Here is a short description and/or links to official documentation:

- eumetsat/\*: The description of the variables inside the files can be found here at <http://oiswww.eumetsat.org/WEBOPS/eps-pg/ASCAT/ASCAT-PG-0TOC.htm> for example section 10.1 under MDR
- dlr/nrt/LATEST\*
  - o Near-Realtime composite of the total column atmospheric constituents for different trace gases (here: NO<sub>2</sub>, tropospheric NO<sub>2</sub> and ozone).
  - o More about the different trace gases, cloud properties and publications can be found under: <http://atmos.caf.dlr.de/gome2/> or in this pdf: [http://atmos.caf.dlr.de/gome2/docs/DLR\\_GOME\\_PUM.pdf](http://atmos.caf.dlr.de/gome2/docs/DLR_GOME_PUM.pdf)
- dlr/nrt/PREVIOUS\*
  - o Same data properties as latest, but this represents the last completed coverage (usually from yesterday)
- dlr/nd/[sample\\_polyphemus\\_output.nc](#): there is no formal documentation of the format, only a short description from the responsible person:
  - o Georeferencing through “lat/lon” dimensions
  - o Height is stored in “z” dimension
  - o Time is stored in “t” dimension
  - o All other variables uses IDUnits-Standard and CF Standard (<http://cf-pcmdi.llnl.gov/>)
- dlr/nd/O3\_Blackforest\_FC1\_Surface\_Hourly.nc: this is an extraction from the [sample\\_polyphemus\\_output.nc](#) of the bottom ozone layer forecast for the blackforest region