

NAME

makedata.pl – Produces calibrated FGM data using raw data and calibration files. Based on gsepos4cd1s_multi provided by eg. Compressed input files are transparently managed.

SYNOPSIS

makedata.pl [**--year** *year*] **--month** *month* **--days** *days_list* [**--begin** *begin_time*] [**--end** *end_time*] [**--fgmcalfile** *fgmcalfile*] [**--spacecraft** *spacecraft*] [**--coordinates** *coordinate_system*] [**--resolution** *resolution*] [**--outdir** *output_directory*] [**--name** *filename*] [**--ICL**] [**--timeformat** *format*] [**--version** *version*] [**--(no)archived**] [**--help**]

DESCRIPTION

This script produces calibrated FGM data using raw data and calibration files with various resolutions and in various coordinate systems. If daily calibration files for range 7 are found, they are used, otherwise, the default range 7 calibration files are used.

OPTIONS

-y *year*, **--year** *year*

The year. One or two digits. Default is the current year.

-m *month*, **--month** *month*

The month. One or two digits. Mandatory argument.

-s *spacecraft*, **--spacecraft** *spacecraft*

The spacecraft number (1–4) or list of spacecraft e.g **-s** '1 3 4'. Default all spacecraft.

-d *days_list*, **--days** *days_list*

List of days given as a string. Ranges are permitted, e.g **-d** '3 12 15–28 30'. Mandatory argument.

-b *begin_time*, **--begin** *begin_time*

Specify the starting time. Full format is hh:mm:ss.mmm. If only the first part of the format is given, the rest is filled with zeroes. e.g. **-b** 2 is same as **-b** 02:00:00.000 or **-b** 03:45 is same as **-b** 03:45:00.000. Default is 00:00:00.000.

-e *end_time*, **--end** *end_time*

Specify the end time of the interval. Same format as for **--begin** option. Default is 23:59:59.999.

-c *coordinate_system*, **--coordinates** *coordinate_system*

The output coordinate system. Default is GSE. Valid values are:

sr for spin-reference system,

scs for spacecraft-sun system,

gse for geocentric solar ecliptic system,

gsm for geocentric solar magnetospheric system,

sm for solar magnetic system, or

j2k for geocentric equatorial inertial system of epoch J2000.

-r *resolution*, **--resolution** *resolution*

The resolution of output data. It can be given as an integer *n* or as *1/n*. Also *spin* can be used to obtain spin averaged data. If not specified the data is not interpolated and the output will have the actual acquisition rate.

-I, **--ICL**

Use the Imperial College London raw data. Default is to use the ESTEC raw data.

-o *output_directory*, **--outdir** *output_directory*

The destination directory for the output files. Default is *\$FGMROOT/data/output/\$coordposres*.

-n *filename*, **--name** *filename*

The base name of the output file. Output file name will be CN*filename*.dat. Default is CN_YYYYMMDD_hh:mm–hh:mm_coordPosRes.dat

-f fgmcalfile, --fgmcalfile fgmcalfile

Specify the fgmcal calibration file to use. It also sets the \$FGMPATH environment variable to the directory where the calibration file resides.

-t format, --timeformat format

Time information format:

0 : ISO standard time string like '2000-12-02T02:05:15.798Z',

1 : (double) seconds of the day,

2 : (double) hours of the day

Default is the ISO time string.

-v version, --version version

Version of the calibration files. If this option is not given then the environment variable FGMVERSION is used. If FGMVERSION is not set, then the default version is 3. Has no effect if the calibration file is given using the **-fgmcalfile** option.

-a, --(no)archived

Use the archived calibration files. This is the default and sets the \$FGMPATH environment variable to archived calibration files directory, \$FGMROOT/archive/calfiles/fgmcal/YYYY/MM/. If this option is negated with **--noarchived** then the existing \$FGMPATH environment variable is used, or falls back to the default path \$FGMROOT/data/dcal/ if \$FGMPATH is not already set. Has no effect if the calibration file is given using the **--fgmcalfile** option.

-h, -?, --help

Prints a brief help message.

ENVIRONMENT

FGMROOT

Root for the FGM calibration directory structure. Default to /home/FGM/ if not set.

FGMPATH

Path to the fgmcal calibration files. Default to \$FGMROOT/archive/calfiles/fgmcal/YYYY/MM/ or to \$FGMROOT/data/dcal/ if **--noarchived** option is used. The basename of the fgmcal file is used if this it is given via the **-fgmcalfile** option.

SATTPATH

Path to orbit parameters files. Default to \$FGMROOT/log/atorb/ if not set.

ORBITPATH

Path to orbit parameters files. Default to \$FGMROOT/log/atorb/ if not set.

FILES

\$FGMROOT/data/raw/ICL/ – Imperial input path. Raw files are searched recursively in this directory.

\$FGMROOT/data/raw/ESTEC/ – ESTEC (default) input path. Raw files are searched recursively in this directory.

/home/FGM/archive/calfiles/fgmcal/20\$yy/\$mm/ – calibration files path.

CN_YYYYMMDD_Vnn.fgmcal, CN_YYYYMMDDrange7.fgmcal – daily calibration files.

CN_range7.fgmcal – default range 7 calibration files.

\$FGMROOT/data/output/coordPosRes – output directory unless **-o** option is used.

CN_YYYYMMDD_hh:mm-hh:mm_coordPosRes.dat – output file

DEPENDENCES

This script uses the following:

```
ddsmrg,  
ddscut,  
fgmtel,  
fgmcal,  
fgmhrt,  
fgmav,  
fgmpos,  
igmvec.
```

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POD ERRORS

Hey! **The above document had some coding errors, which are explained below:**

Around line 264:

You forgot a '=back' before '=head2'

Around line 266:

'=item' outside of any '=over'