

spool2eop utility

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spool2eop will read a spool file and output an eop file in the new eop v3.0 format. Syntax

```
spool2eop control_file
```

Some key features:

1. The program compiles under gfortran.
2. The program uses a control-file to specify inuts. The control file consists of Keyword Value(s) pairs.
3. The directory *example* has a few example control files and output.
4. The directory *data* contains data used in some of the example control files.

spool2eop will read through the spoolfile and extract the eop information. It will look at the control file section of the spool file find information about what EOP parameters were estimated and what the constraints were. It will also read the \$MAPPING section of the control file to determine what a priori models were used. These filenames will be included in the output file.

For example, suppose the \$MAPPING section of the control file included the lines:

SOURCES	/sgpvlbi/projects/jgipson/2021c_csolve_jmg/models/2021c_v1.src
STATIONS	/sgpvlbi/projects/jgipson/2021c_csolve_jmg/models/2021c_v2_mcg.pos
VELOCITIES	/sgpvlbi/projects/jgipson/2021c_csolve_jmg/models/2021c_v2_mcg.vel
EARTH_ORIENTATION	/sgpvlbi/apriori/calc/usno_finals.erp SPL UT1S

Then the eop output file contain lines that look like this:

EOP_APRIORI	/sgpvlbi/apriori/calc/usno_finals.erp
CRF_APRIORI	/sgpvlbi/projects/jgipson/2021c_csolve_jmg/models/2021c_v1.src
TRF_APRIORI	Position= /sgpvlbi/projects/jgipson/2021c_csolve_jmg/models/2021c_v2_mcg.pos
Velocity	=/sgpvlbi/projects/jgipson/2021c_csolve_jmg/models/2021c_v2_mcg.vel

Some information, such as the name of the Analysis Center, or the contact information, is not present in the spoolfile. Spool2eop gets this information from the control-file.

In addition, information in the control file will override information from the spool file. For example, you might want to use a different description then that in the control file, or you may want to replace the a priori files by a description instead of a file. (e.g., 2021c_source for the source position).

The following page gives a complete list of keywords.

Comments/questions/suggestions are welcome.

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The following tables lists all of the current keywords and gives a description of their function.

Required Keywords	
These keywords formation required.	
ANALYSIS_CENTER	Institute responsible for producing this file.
CONTACT	Who to contact with questions
LEAP_SECOND_FILE	Path to leap second file.
EOP_FILE	Output file
MASTER_DIR	Directory where all masterfiles are store, e.g. master79.txt, etc.
NSCODES_FILE	Path to of ns-codes file.
NUTATION_TYPE	One EQUINOX_BASED or CIO_BASED. This keyword is not strictly required. If absent assume CIO_BASED Note that EQUINOX based is with respect to Wahr.
SPOOL_FILE	Spool file to process

Override Keywords	
Spool2eop tries to extract some information from the spool file. If these keywords are present then these values are overridden.	
AGENCY	Three letter code
DESCRIPTION	Description of solution. If absent, pulled from control file.
CRF_APRIORI	If absent, uses path to source mod-file.
TRF_APRIORI	If absent, uses path to position and velocity mode file.

The following tables lists all of the current keywords and gives a description of their function.

Sigma Threshold Keywords	
If any of the sigmas is larger than the corresponding value then all eop values are ignored for the session. All values are in micro-arcseconds OR micro-time-seconds	
XWOB_SIG_MAX XPOLE_SIG_MAX	Maximum sigma for x-pole
YWOB_SIG_MAX YPOLE_SIG_MAX	Maximum sigma for y-pole
UT1_SIG_MAX	Maximum sigma for UT1
NUT_DPSI_SIG_MAX NUT_DX_SIG_MAX	Maximum sigma for nutation Psi or DX
NUT_DEPS_SIG_MAX NUT_DY_SIG_MAX	Maximum sigma for nutation Eps or DY

Example Control File 1

```
!This is an example control file for spool 2 eop.
!
! Comment line start with "!" and are ignored.
! Any values here override what is found in the spoolfile
MASTER_DIR      data/
SPOOLFILE       data/2021c_v3_mcg_bak.spl
NSCODES_FILE    data/ns-codes.txt
LEAP_SECOND_FILE data/utlls.dat
EOP_FILE        example/example1.eop
CONTACT         John.M.Gipson@nasa.gov
ANALYSIS_CENTER NASA Goddard Spaceflight Center
! If below is commented out, take description from spool file
!DESCRIPTION    This is a test
! Specify the type of nutation to extract. The spool file contains both. If none is specified use CIO_BASED
NUTATION_TYPE   CIO_BASED      !This is default. Alternative is EQUINOX_BASED
!
! Other possible keywords follow.
!TRF_APRIORI    Fantastic
!CRF_APRIORI    Elastic
!EOP_SUBDAILY   Spastic
!AGENCY         FBI             !3-letter agency code
```

Example Control File 2

```
This is an example control file for spool 2 eop.
!
! Comment line start with "!" and are ignored.
! Any values here override what is found in the spoolfile
MASTER_DIR      data/
SPOOLFILE       data/2021c_v3_mcg_bak.spl
NSCODES_FILE    data/ns-codes.txt
LEAP_SECOND_FILE data/utlls.dat
EOP_FILE        example/example2.eop
CONTACT         John.M.Gipson@nasa.gov
ANALYSIS_CENTER NASA Goddard Spaceflight Center
! Use the description below instead of what is in the spool file
DESCRIPTION     This is a test illustrating different keywords.
! Specify the type of nutation to extract. The spool file contains both. If none is specified use CIO_BASED
NUTATION_TYPE   EQUINOX_BASED
!
! Other possible keywords follow.
TRF_APRIORI     Fantastic
CRF_APRIORI     Elastic
EOP_SUBDAILY    Spastic
AGENCY          FBI             !3-letter agency code
! Some keywords that limit the maximum EOP written out. All values are micro-arcseconds or microseconds
! If a session has an eop sigma larger than below, it is not written out.
! If a value is 0, or not specified, then no filtering is done.
UT1_SIG_MAX     4              !
XWOB_SIG_MAX    200            ! Also called XPOL_SIG_MAX
YWOB_SIG_MAX    200            ! Also called YPOL_SIG_MAX
NUT_DPSI_SIG_MAX 500           ! Could also have NUT_DX_SIG_MAX
NUT_DEPS_SIG_MAX 500           ! Could also have NUT_DY_SIG_MAX
```