How to use eopkal

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Abstract:

This memo describes the use of the Goddard Earth orientation parameters Kalman.

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1 Overview

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eopkal reads in an eop file produced by snoop, Kalman filters it, and
produces an eop_mod file. It will also produce a file /tmp/lod.out
which contains lod estimates. It will produce several files containing
debugging information. These includes a file containing EOP doubles,
i.e., simultaneous measurements, an error file containing data which
isn't used, etc.
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2 Usage

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    eopkal [-i <input_file> -o <output_file> -s <status_file>]
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  User should specify either 6 or no parameters. If user specified 6 parameters,
then eopkal runs in batch mode. Otherwise it will ask a user a series of
questions.
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2.1 Batch interface

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  <input_file>  -- name of the input eop file in either eopjmg format
                   (produced by snoop) or in eopb format (produced by getpar)
                   or in IERS format.

  <output_file> -- name of the output eop file.

  <status_file> -- name of the status file. If upon finishing eopkal this
```

file has a line "EOPKAL: finished at <date>" then it
means that eopkal terminated successfully.

Other options are set to default values. Look at the section Options for
learning what the default options.

2.2 Interactive interface

If no parameters were supplied then eopkal will ask you for an input file.
This is an "eopjmg" file produced by snoop or .eob files produced by getpar.
Enter the name of the input file e.g., /tmp/snoop.eopjmg.1102x. It will then
ask for the output file. Typically I call this something like
/data1/solve_files/er1102x.98dec08, where the suffix is the last experiment
in the arc list. The program will ask if you want to use the default settings.
Most of the time the answer to this is yes. If you say yes then it will
produce a file er1102x (or however your snoop.eopjmg was suffixed) in the
temp directory. For details on the run, look at the end of this file.

The next page summarizes the questions eopkal asks, and suggests
appropriate answers.

3 Options

If you answer No to the default options question, then you have a
whole series of questions you need to answer. Here I describe these
one-by-one:

1. Error file name: Enter in the name of the error file. This contains a
   list of experiments which were rejected. Default: /tmp/eop_kal.err

2. Double file name: Enter in the name of the file which contains a list
   of simultaneous EOP measurements. Default: /tmp/eop_kal.dub

3. Make LOD file: If you answer yes, then you have the following
   additional options: (Default yes)

   A. LOD file name: Name of the output file to contain LOD data.
      Default is /tmp/lod.dat

   B. Make Plot file: If you answer yes, it will create a pgplot control
      file. Default is /tmp/eop_kal.plt

4. Monitor progress: If you answer yes, it will keep you posted of
   its progress. Default is Yes.

5. Use only NAVNET, Polaris, IRIS: If you answer yes, then
   it will only use these experiments to estimate EOP. I never use this
   option anymore. Default is NO.

6. Sig1 uncertainty (99 no constraints, 5 is nominal): This is the size
   of the largest component of the EOP. If the EOP error is larger than
   this, then the measurement is not used. Default is 5.0

7. Rescale formal errors by how much? It is known that the formal error
   solves reports are two small. This option allows you to inflate them
   (or for that matter, deflate them.) If you type "Yes" to the default
   options, the formal errors are inflated by a factor 1.5. Default is Yes.

8. Enter in starting date: Enter in the starting date in YY MM DD
   format. If you enter in "0 0 0" it will start at the beginning of the
   data. Default is "0 0 0".

9. Enter in ending date: Enter in the ending date in YY MM DD format. If
   you enter in "0 0 0" it will proceed to the end of the data. Default is
   "0 0 0".

10. Do UT1S pre-smoothing? If you answer yes, it will subtract UT1S from
    the data before doing the Kalman filtering. After doing the filtering,
    UT1 is added back in. The default is to use UT1S.

11. Spacing of Mod file in days: (0.05-1) Just like it sounds. I have
    played around with this, and I have found that it doesn't make much
    different. Note that the modfile only has 2 digits for the decimal,
    so you should enter in 0.25, 0.5, or 0.1, or something that is evenly
    divisible into 1. If you enter in 0.33333 it will only output the first
    2 digits, and since EOP changes so rapidly, your EOP time tags will be
    way off. Default is 1.

12. Use UT1 Rates? (Yes/No). Unless you didn't estimate UT1 rates in the
    solution, you should yes. This gives superior results for the EOP file.
    Default depends on the type of the input file. If the input file is
    in eopb or eopjmg file then default is Yes, otherwise default is No

Status file name for interactive interface is hard-coded: /tmp/eopkal.sts

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Questions and comments about this guide should be sent to:

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