

Memo

To: Record
From: John Gipson
Date: January 26, 1999
Re: How to Use EOP_KAL

This memo describes the use of the GSFC Kalman filter program *eop_kal*.

Overview

Eop_kal 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.

The current source for *eop_kal* is:

leo://users/jmg/utils/eop_kal.

Usage

Type

`eop_kal<ret>`

The program will ask you for an input file. This is an "eopjmg" file produced by *snoop*. 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 *eop_kal* asks, and suggests appropriate answers.

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.
2. Double file name: Enter in the name of the file which contains a list of simultaneous EOP measurements.
3. Make LOD file: If you answer yes, then you have the following additional options:
 - A. LOD file name: Name of file to contain LOD data.
 - B. Make Plot file: If you answer yes, it will create a pgplot control file.
4. Monitor progress: If you answer yes, it will keep you posted of its progress.
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.
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.
7. Rescale formal errors by how much? It is known that the formal error solves reports are too 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.
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.
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.
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 UT1R.
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 difference. 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.
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.