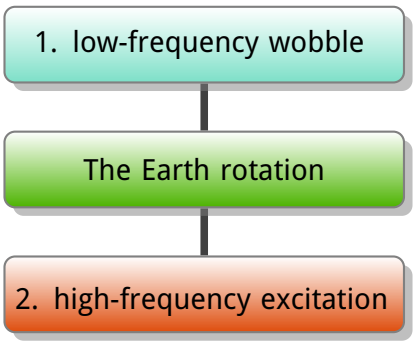
TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

Estimation of hourly ERP

Anastasiia Girdiuk

Estimation of hourly ERP

precession-nutation



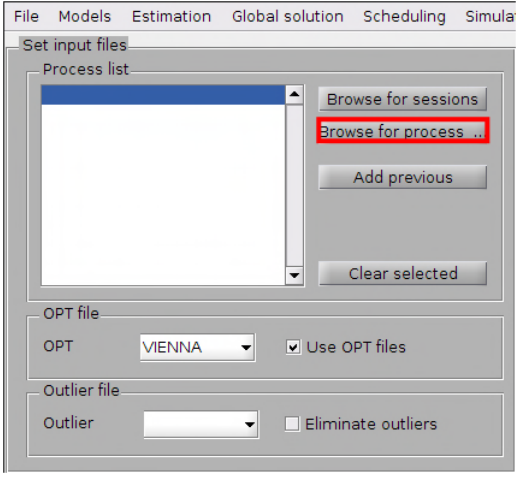
polar motion and dUT1 variations

PM: -1.5 cpsd $>$ frequency in ITRF $>$ -0.5 cpsd
precession-nutation: -0.5 cpsd $<$ frequency in GCRS $<$ 0.5 cpsd

Regular process of single session

—> Processlist Name
(exercise_sesslist.mat)

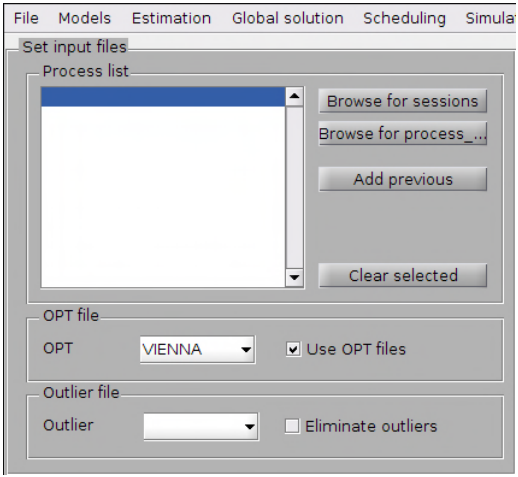
session selection



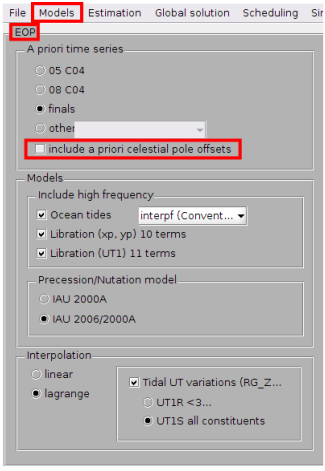
Regular process of single session

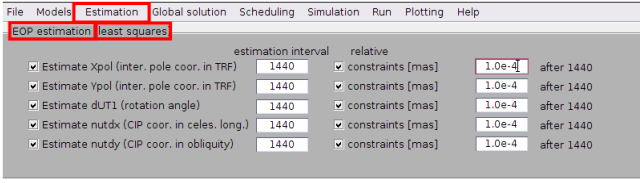
—> Processlist Name
(exercise_sesslist.mat)
—> Load parameters

session selection → parameters selection



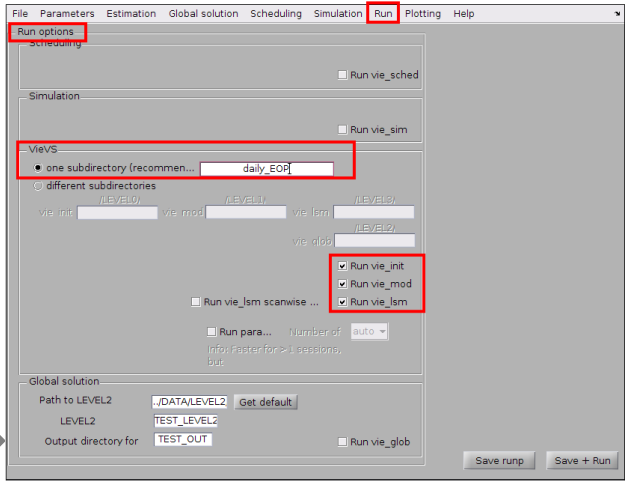
Regular process of single session





Celestial pole offsets estimation!

Regular process of single session



Run

Using external function /OUT/eop_out.m

function eop_out

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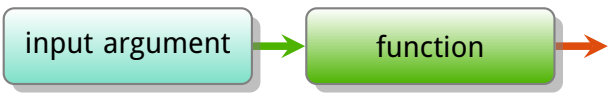
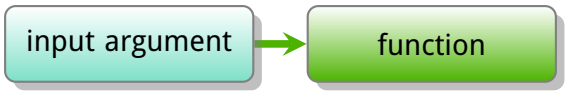
function eop_out



Using external function /OUT/eop_out.m

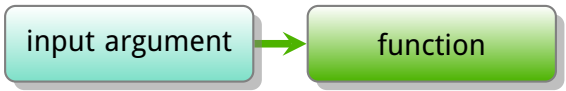
function eop_out

Arguments of /OUT/eop_out.m



Welcome to MATLAB terminal!

Arguments of /OUT/eop_out.m: first



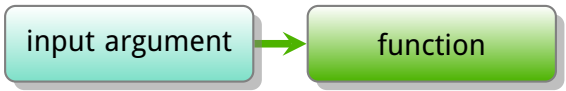
Welcome to MATLAB terminal!

/WORK/PROCESSLIST/ > load('exercise_sesslist.mat');

!*name of appeared variable in WorkSpace must be the first argument for eop_out.m (in the example: process_list) *!

> function eop_out(process_list, subdir, file_name,output_mode);

Arguments of /OUT/eop_out.m: second



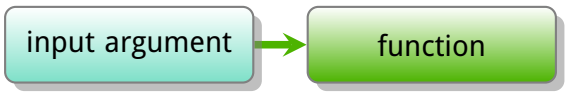
Welcome to MATLAB terminal!

> subdir = 'daily_EOP';

!*name of nonempty directory /DATA/LEVEL3/subdir/ is output directory for regular process of single session (daily EOP resolution) *!

> function eop_out(process_list, subdir, file_name,output_mode);

Arguments of /OUT/eop_out.m: third



Welcome to MATLAB terminal!

> file_name = 'filename.*txt*';
> output_mode = [1,0,0]; (optional argument, default settings)

> function eop_out(process_list, subdir, file_name,output_mode);

Arguments of /OUT/eop_out.m

eop_out(process_list,'daily_ERP','filename.txt',[1,0,0]);

Description: in Matlab

1 = true (= estimate);

0 = false (= not estimate or not include).

output_mode = [first_cell,0,0];

first_cell = 1: detailed EOP file (as before);

```
%************************************************************
% Columns:
%         1      .... mjd
%         2-6    .... total values(x,y,ut,dX,dY)
%         7-11   .... a priori EOP (input in vie_mod)
%         11-16  .... estimated values
%         17-21  .... error of estimation
%         22-24  .... high frequency (subdaily) ERP corrections
%
% all units in mas resp. ms (dut1)
%************************************************************
```

output_mode = [0,second_cell,0];

second_cell = 1: Sorted EOP file (sorted by date,
multiple entries are thrown out);

```
1  %************************************************************
2  % Columns:
3  %          1      .... mjd
4  %          2-6    .... total values(x,y,ut,dX,dY)
5  % all units in mas resp. ms (dut1)
6  %************************************************************
7  % MJD  xpol  ypol  dut1  dX  dY
```

output_mode = [0,0,third_cell];

third_cell = 1: VieVS specific format (internal VieVS format)

```
%*****************************************************************
% Columns:
%          1      .... mjd
%          2-6    .... total values(x,y,ut,dX,dY)
% all units in mas resp. ms (dut1)
%*****************************************************************
% MJD  xpol  ypol  dut1  dX  dY
```

Save results: a priori model in /EOP/

finally, MATLAB terminal:

> eop_out(process_list,'daily_ERP','filename.txt',[1,1,1]);

Save results: a priori model in /EOP/

finally, MATLAB terminal:

```
> eop_out(process_list,'daily_ERP','filename.txt',[1,1,1]);
```

This is saved in /OUT/

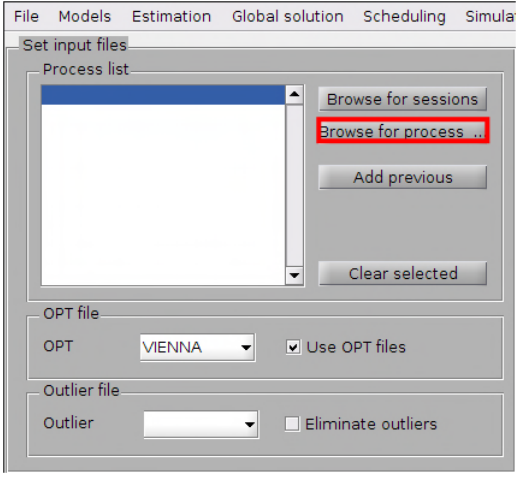
Save results: a priori model in /EOP/

finally, MATLAB terminal:
> eop_out(process_list,'daily_ERP','filename.txt',[1,1,1]);
This is saved in /OUT/
remove it in directory /EOP/
/EOP/ includes all of available EOP data

Regular process: hourly resolution ERP

Let's come back into /WORK/
and, *secondly*, GUI interface
—> Processlist Name
(exercise_sesslist.mat)

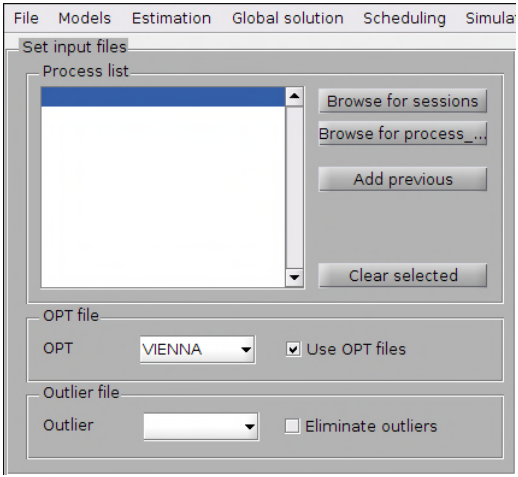
session selection



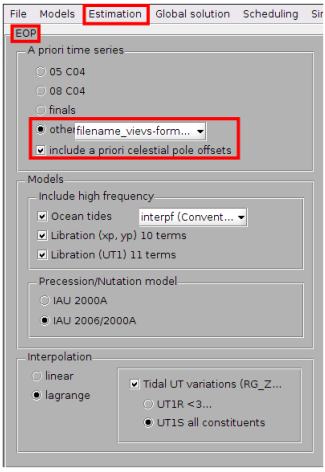
Regular process: hourly resolution ERP

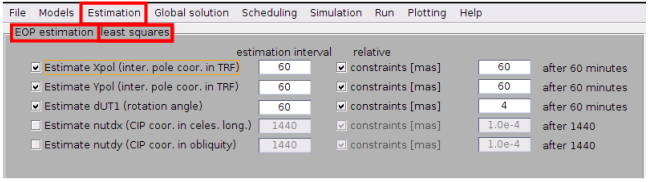
—> Processlist Name
(exercise_sesslist.mat)
—> Load parameters

session selection → parameters selection



Regular process: hourly resolution ERP



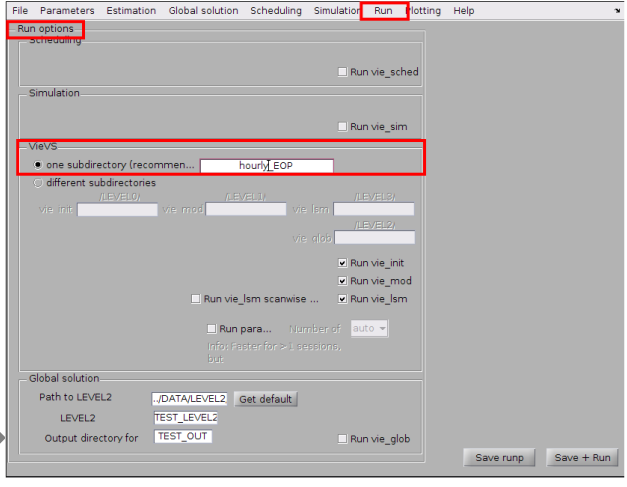


Tips: File—> reload folders

/EOP/filename_vievs-format.txt

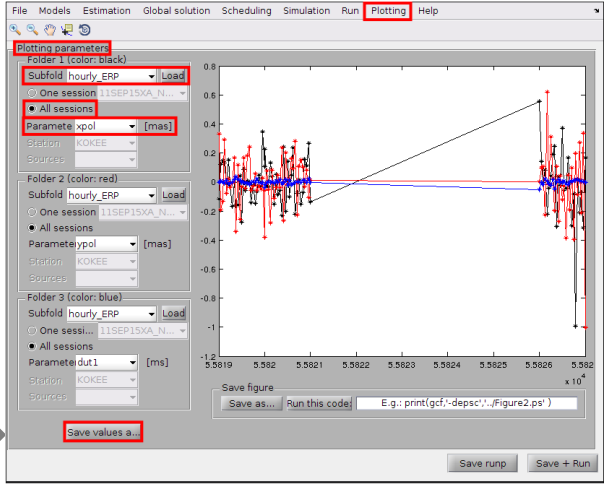
high-frequency ERP estimation!

Regular process: hourly resolution ERP



Run

Regular process: visual interface



Take away

Regular process: find your results

↪ output directory is suggested by VieVS GUI

.txt-file

↪ /DATA/LEVEL3/subfolder

*x*_session_name.mat

Thank your for your attention!

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