Processing of a session with a clock break, creating the OPT file

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VieVS
Vienna VLBI Software
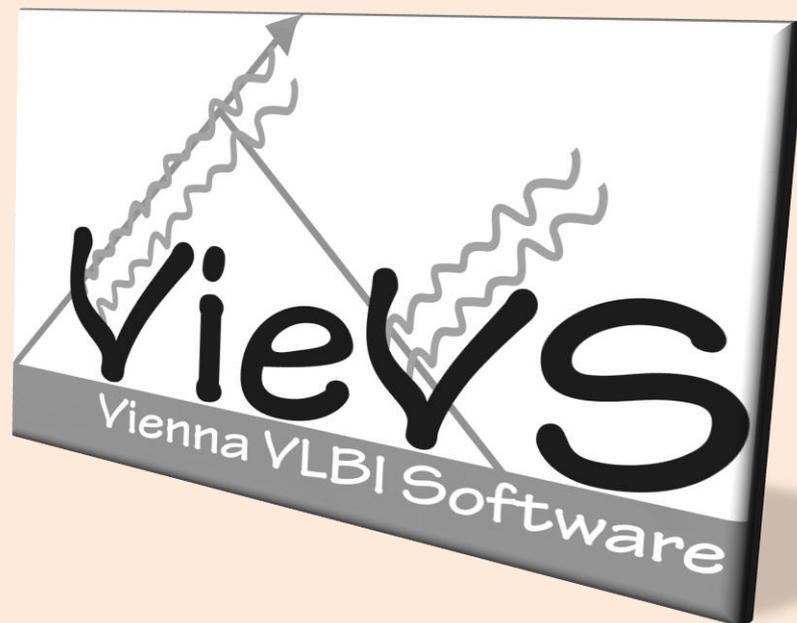
Processing

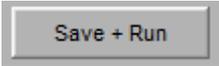Process the session 02OCT25XA_N005 with default options
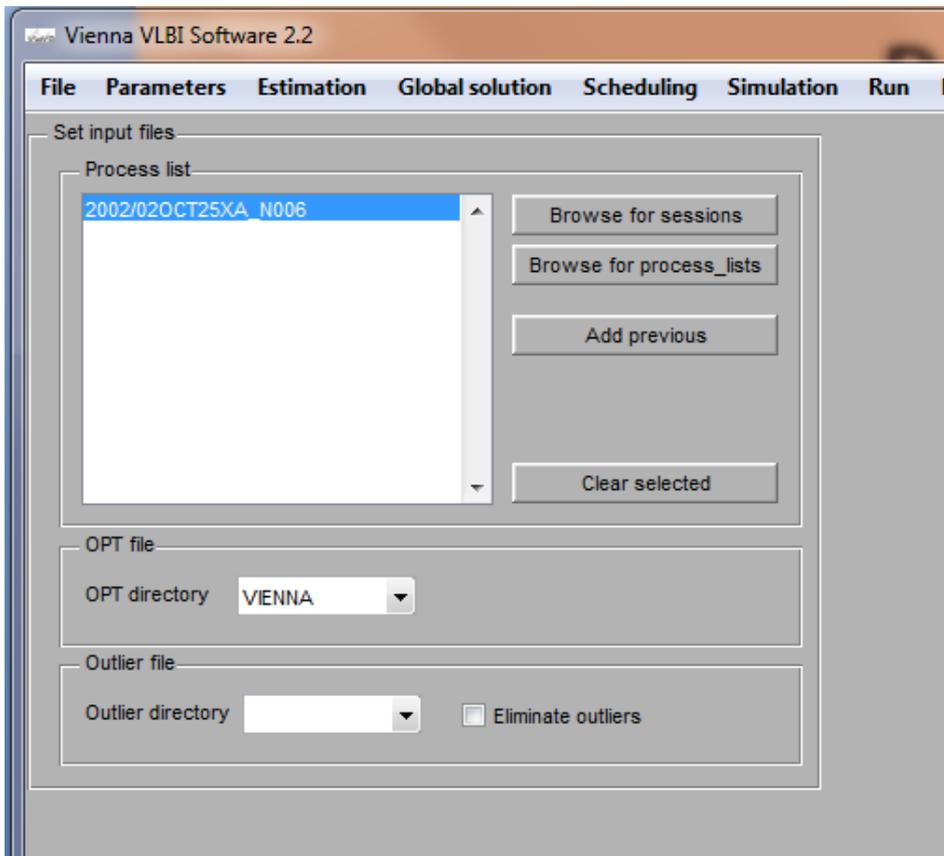
Browse for the session and then right-click on it to watch the corresponding OPT file:

```
CLOCK BREAKS: 0
STATIONS TO BE EXCLUDED: 0
BASELINES TO BE EXCLUDED: 0
SOURCES TO BE EXCLUDED: 0
STATIONS TO BE DOWN-WEIGHTED: 0
NO CABLE CAL: 0
```
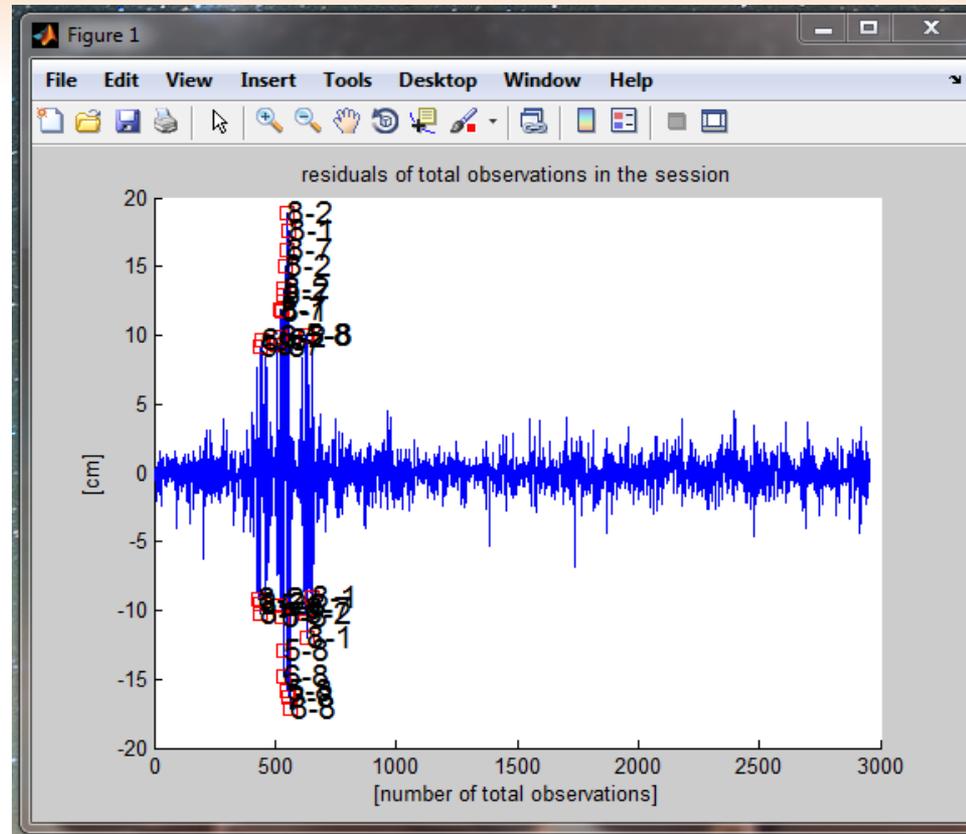
Processing

Choose a subfolder in the Tab Run -> Run Options

Then click [Save + Run] to run the specified session.

Processing

The resulting plot will look like this:

With a rather high χ^2 value (in the command window):

```
chi-squared of main solution vTPv/degOfFreedom: 3.2468
```

Plot the Residuals

In order to search for possible reasons for the bad result, take a closer look at the processed session in the Tab Plotting -> Residuals:
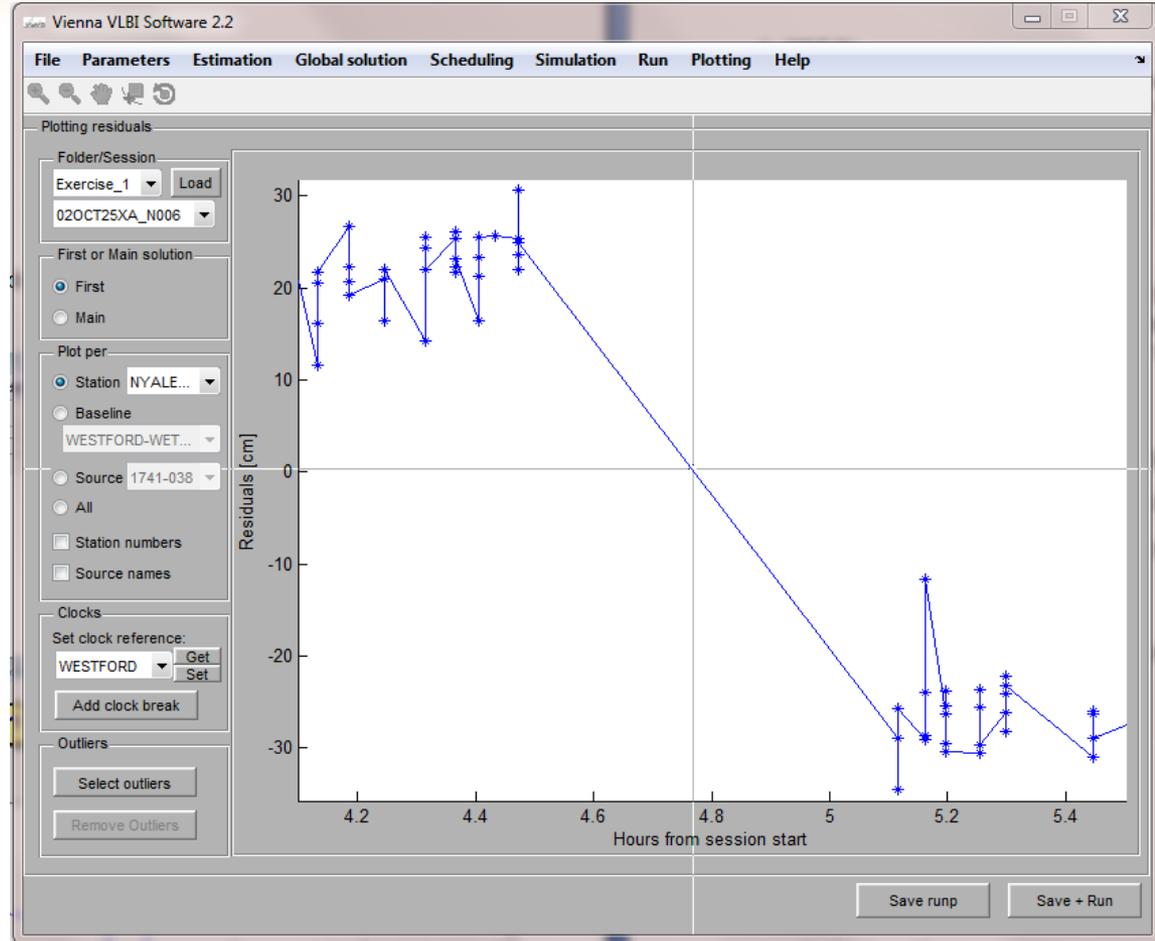
- Load the session by choosing the previously created subdirectory; the plot from before will be shown again
- Choose "First Solution"
- Plot the residuals per station
- At station NYALES20 there is a clear clock break
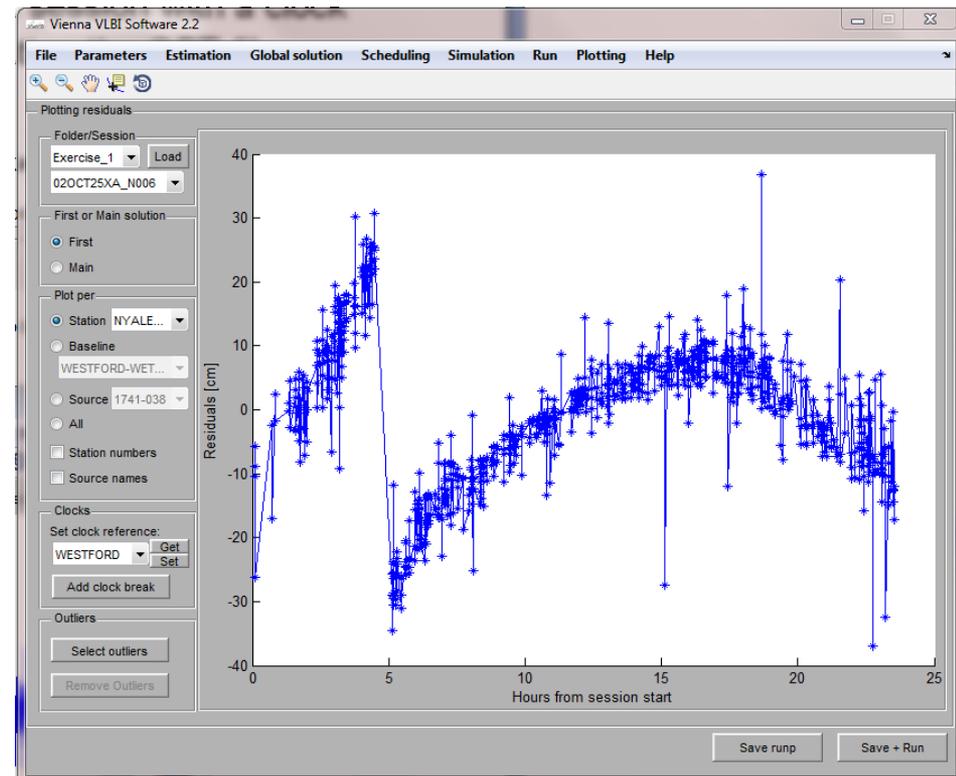
Add Clock Break

- Zoom in the plot

- Add the clock break in the middle of the offset

- If necessary, set a different reference clock (not needed for this session)
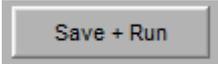
Add Clock Break

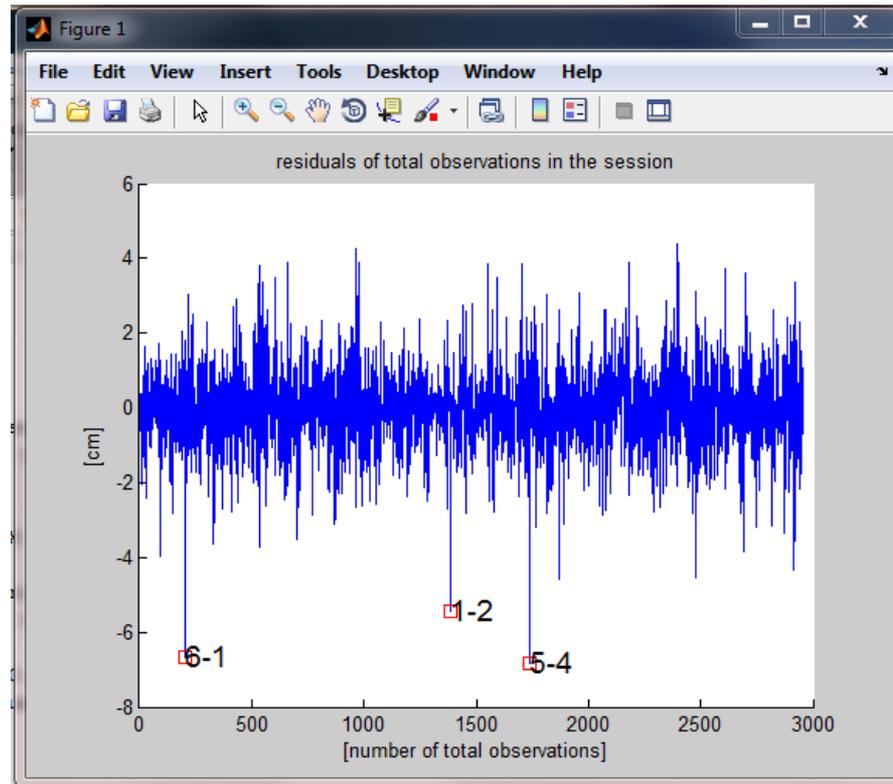Thus, the OPT-File is actualized and now shows the just setted clock break:

```
CLOCK BREAKS: 1
NYALES20  52572.949907
STATIONS TO BE EXCLUDED: 0
BASELINES TO BE EXCLUDED: 0
SOURCES TO BE EXCLUDED: 0
STATIONS TO BE DOWN-WEIGHTED: 0
NO CABLE CAL: 0
```

-> again: Save + Run

Second Processing

Now the residuals and the χ^2 value are much lower :

Further Improvisations

1. Specify in the OPT-File (not needed for this session):

- Exclude a baseline: if one baseline (when plotting residuals per baseline) causes troubles

- Downweight a station: to minimize the influence of a certain station

- Exclude a source, station: all data containing the specified source/stations will be neglegted (as a last resort)

Attention: station names must always be 8 characters long!

2. Apply the automatic outlier rejection: Tickbox in the Tab File -> Set Input Files

```
# STATIONS TO BE EXCLUDED: 1
# MATERA
#
# STATIONS TO BE EXCLUDED: 1
# MATERA  YYMMDDhhmm-YYMMDDhhmm
#
# BASELINES TO BE EXCLUDED: 3
# WETTZELL   ZELENCHK
# SVETLOE    ZELENCHK
# BADARY     ZELENCHK
#
# SOURCES TO BE EXCLUDED: 1
# 1936+095
#
# STATIONS TO BE DOWN-WEIGHTED (NOISE IN [m]): 1
# MATERA   0.040
```