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VIE_INIT





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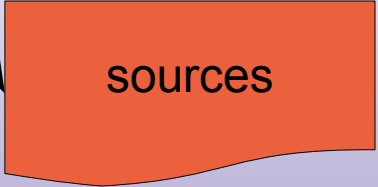
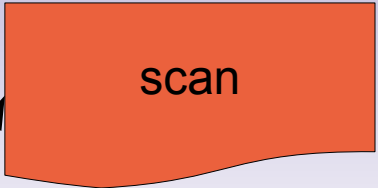
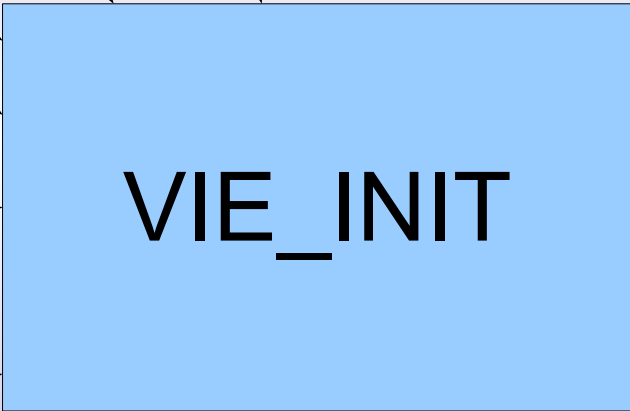
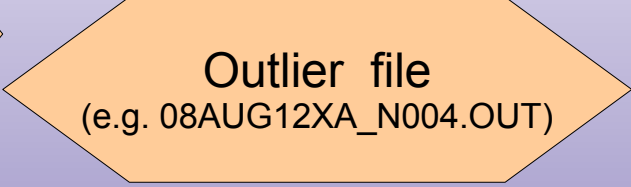
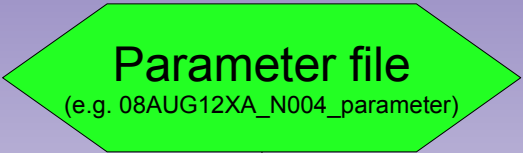
GFZ German Research Centre for Geosciences
Potsdam, Germany

VieVS User Workshop
9 – 10 September, 2013
Vienna



What does VIE_INIT do?


-  Reads observations from the NGS file
-  Reads station coordinates and velocities from the supstations file
-  Read source coordinates from supersource file
-  Possible to:
 - Remove outliers (specified in an outlier file)
 - Exclude stations, sources, baselines (specified in OPT-file)
 - Introduce an elevation cut-off angle



The parameter file

- ❑ Contains the options for VIE_INIT (and the other parts of VieVS)
- ❑ Created by VIE_SETUP
- ❑ The parameter file used in VIE_INIT is stored in the **DATA/LEVEL0** directory

The NGS file

-  An NGS file (version >3 or 4) contain:
- Observed delay (and delay rate). Ambiguities already resolved
 - Ionospheric delay (and rate)
 - Additional measurements, e.g. temperature, pressure, cable wrap, quality code



The NGS file



DATA IN NGS FORMAT FROM DATABASE 09AUG22XK_V003

Observed delays and rates in card #2, modified errors in card #9

TSUKUB32 -3957408.75200 3310229.36700 3737494.78900 AZEL .00000

WETTZELL 4075539.88300 931735.26100 4801629.37100 AZEL .00000

\$END

0955+476 9 58 19.671641 47 25 7.842440

1128+385 11 30 53.282613 38 15 18.546970

\$END

.8212990000000D+04 GR PH

\$END

TSUKUB32 WETTZELL 0955+476 2009 08 22 07 58 6.0000000000 101

-7231560.78088789 .02291 -1338669.4166866930 .07389 0 I 102

.00054 .00000 .00000 .00000 -2.778901538421864 0. 103

.00 .0 .00 .0 .00 .0 .00 .0 104

-.00010 .00146 .00000 .00000 .00000 .00000 105

28.390 14.600 999.751 951.200 86.511 97.900 0 0 106

-.1289037990 .09754 .0165501479 .01593 0 108

-7231560.78088789 .07573 -1338669.4166866930 .37717 0 I 109

TSUKUB32 WETTZELL 1128+385 2009 08 22 07 59 42.0000000000 201

1087121.30123478 .00796 -1583101.4780455410 .01725 0 I 202

.00127 .00000 .00000 .00000 .165474166106772 0. 203

.00 .0 .00 .0 .00 .0 .00 .0 204

-.00068 .00029 .00000 .00000 .00000 .00000 205


28.345 14.600 999.800 951.200 86.489 97.900 0 0 206

.0427781143 .10365 -.0570984871 .01060 0 208

1087121.30123478 .07262 -1583101.4780455410 .37026 0 I 209

TRF files

- Superstations file
 - Can be created/updated using the GUI
 - Contain station coordinates, velocities, and additional antenna info (mount, axis offset, eccentricity, etc.)
 - Itrf2005, itr2008, vtrf2008, VieTRF10a, vievsTrf
 - If a station is not found in the chosen trf, the coordinates from vievsTrf are used
- .txt files in TRF directory:
 - User defined TRF in ascii format

-  Supersource file:
- Can be created/updated using the GUI
 - ICRF_Ext2, ICRF2, VieCRF10a, and vievsCRF
 - Contain source coordinates
 - If a source is not found in the chosen catalogue, the vievsCrf coordinates are used.

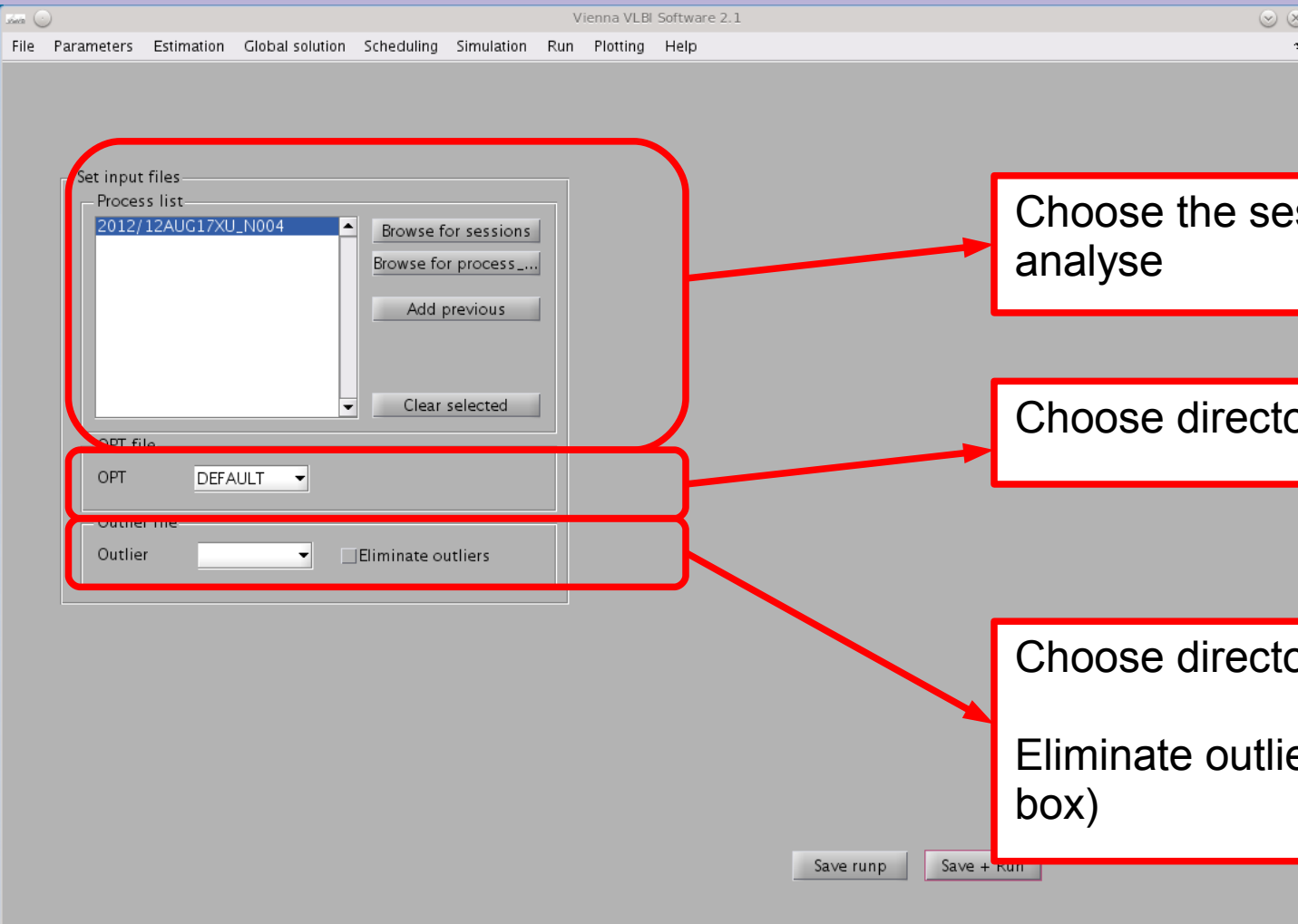
OPT file

- ▣ Contains information of clock breaks (not used in VIE_INIT), stations to be excluded, sources to be excluded etc.
- ▣ See separate presentation

Outlier file

- Contains list of outliers for the session
- Created in VIE_LSM
- Outliers are removed in VIE_INIT. To detect and remove outliers you need to run VieVS twice:
 - In the first run outliers are detected in VIE_LSM and saved it in an outlier file
 - In the second run this file run is used in VIE_INIT for removing the outliers

VIE_INIT options



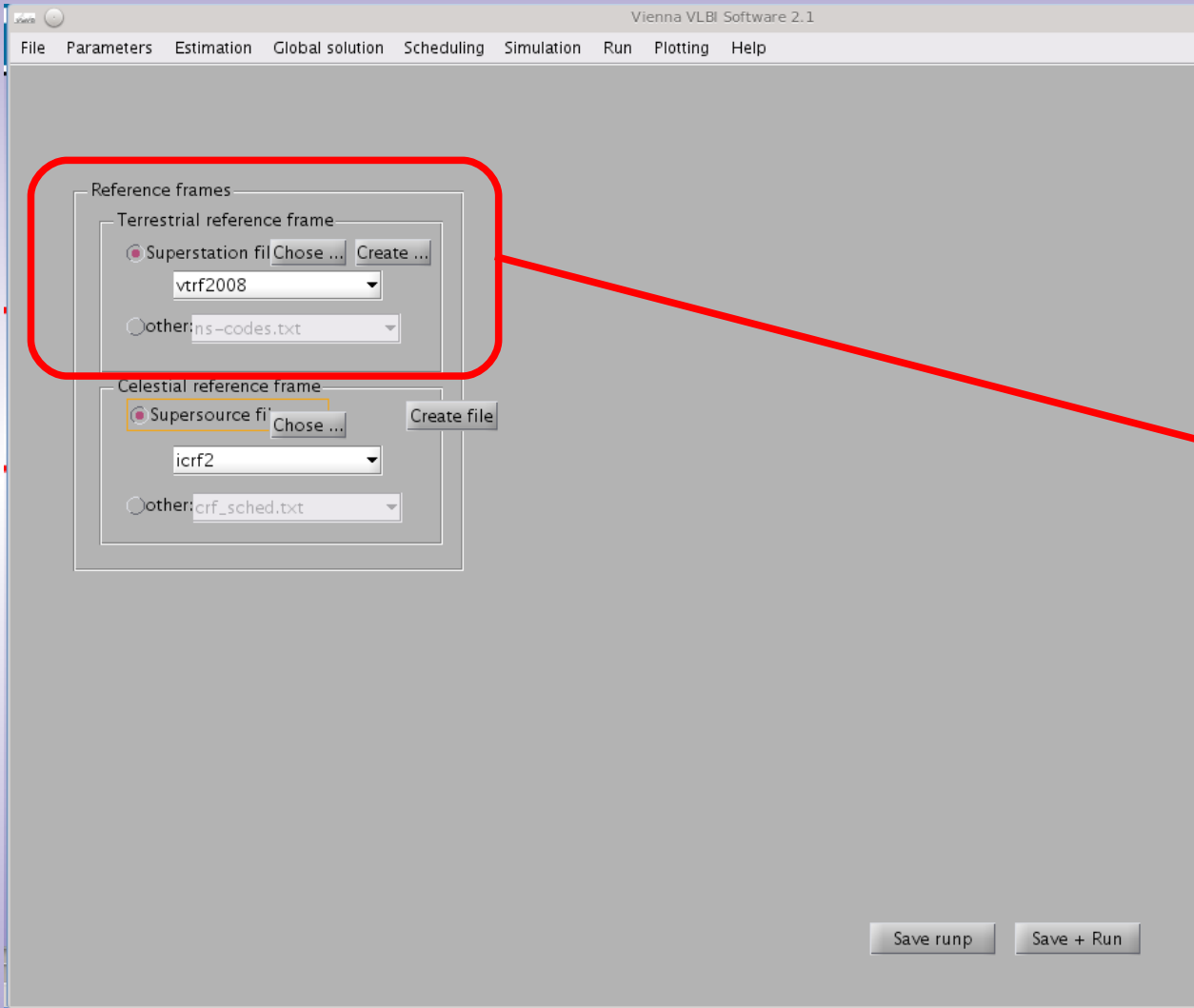
**File/
Set input files**

Choose the sessions you want to analyse

Choose directory with OPT-files

Choose directory with outliers
Eliminate outliers or not (check box)

VIE_INIT options



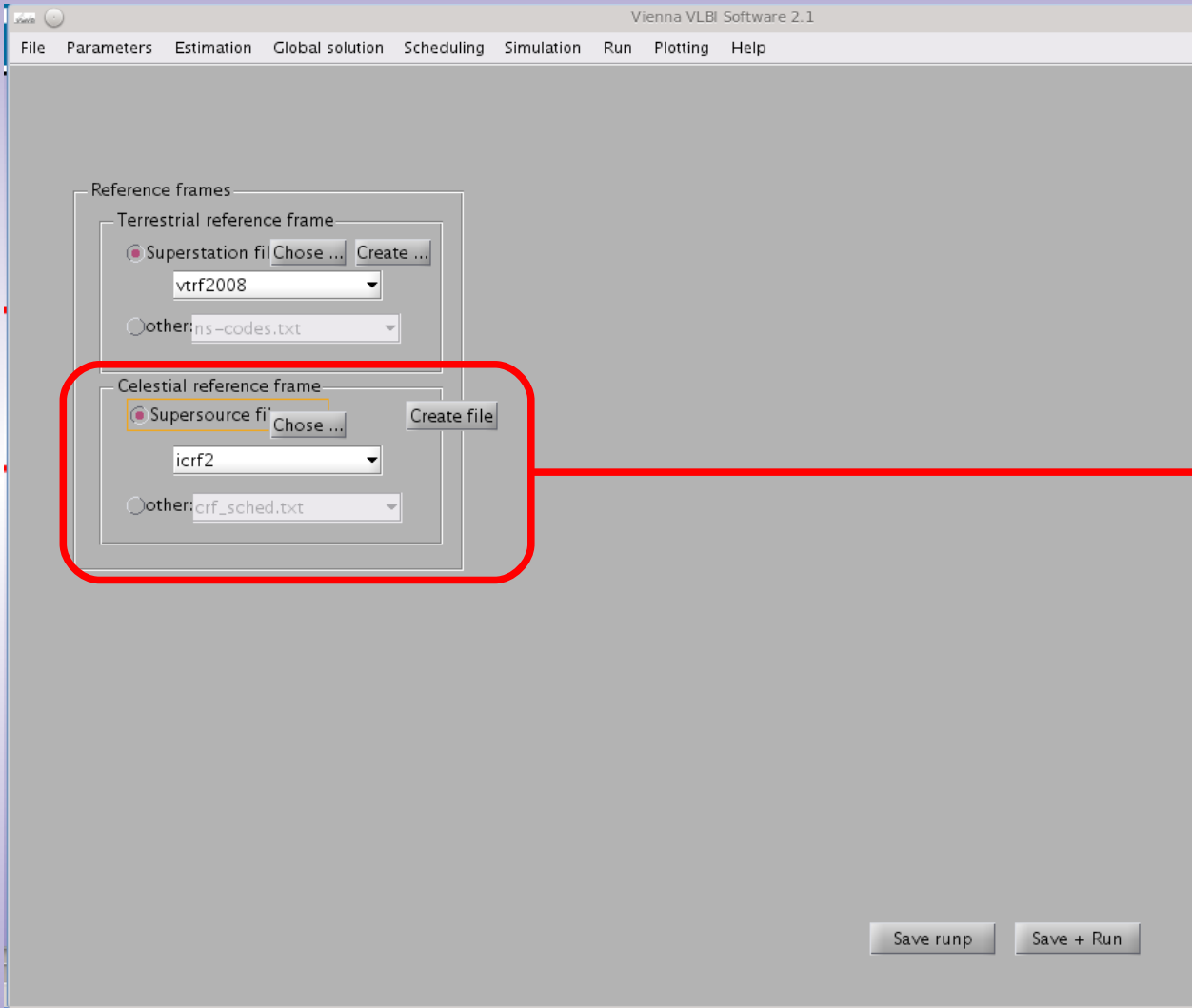
Parameters/ Reference frames

Select what TRF
file to use:

itrf2005
itrf2008
vtrf2008

other: User defined
TRF file (ascii file
in TRF directory)

VIE_INIT options



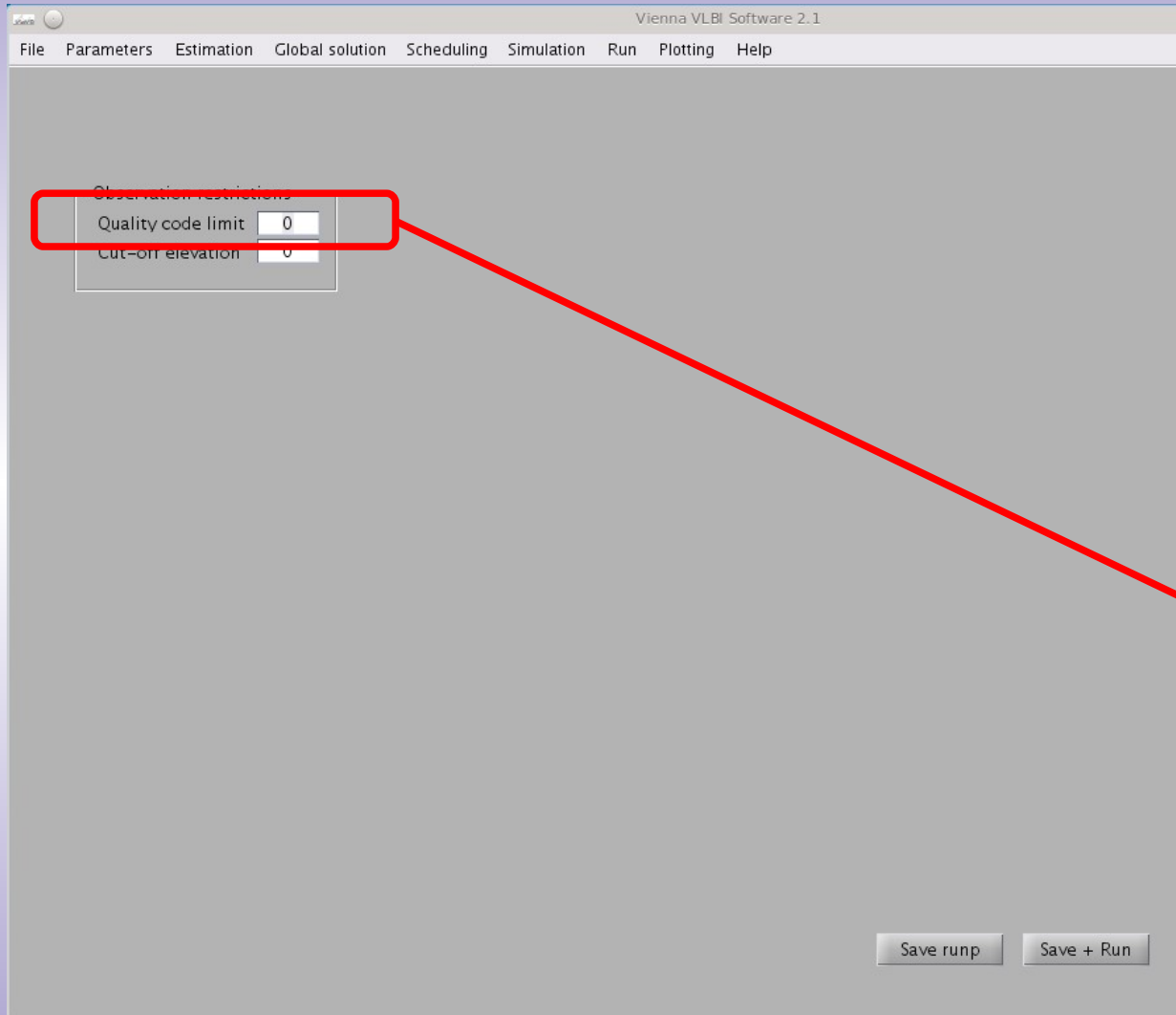
Parameters/ Reference frames

Select what CRF
file to use:

- ICRF Ext 2
- ICRF2
- VieCRF10a
- viewsCrf

Other: Not working
yet

VIE_INIT options



Parameters/ Observation Restrictions

Quality code limit

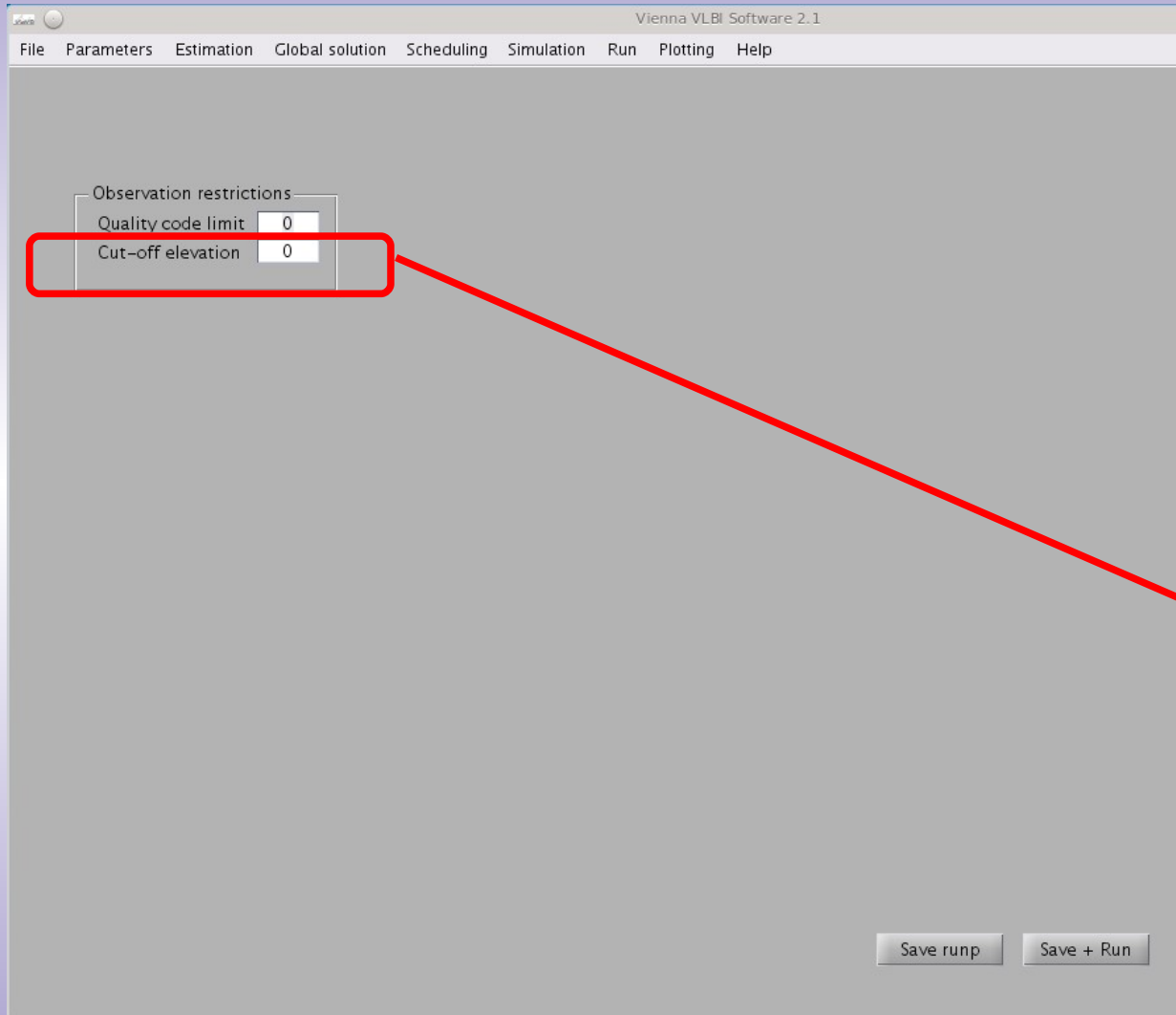
Only observations with a quality flag less or equal to this limit are used

Higher quality code → worse quality of observation

Quality code 0: good quality

Quality code > 0: bad quality

Normally use quality code limit 0



**Parameters/
Observation
Restrictions**

Cut-off elevation angle

```
Command Window
New to MATLAB? Watch this Video, see Examples, or read Getting Started.

session      1  of      1
Current file: ../DATA/LEVEL0//13AUG01XE_N004
-----
|                               Welcome to VIE_INIT!!!!                               |
-----

Stations to be excluded: 0
Sources to be excluded: 0
Baselines to be excluded: 0

Start reading 2013/13AUG01XE_N004
[antenna,sources,scan]=read_ngo(ngofile,trffile,crffile,ini_opt,pt, tp, trf, crf)
No vtrf2008 coordinates for YEBES40M in ../TRF/superstation.mat ... get vievsTrf coordinates
No vtrf2008 coordinates for TIGOC0NC in ../TRF/superstation.mat ... get vievsTrf coordinates
Asterisk(s) found in NGS file!!! Value(s) treated as zero!
Done reading the file!
A total of 8 stations, 66 sources and 508 scans were found
The following stations were found:
YEBES40M
ZELENCHK
MEDICINA
TIGOC0NC
BADARY
FORTLEZA
KOKEE
SVETLOE
VIE_INIT finished!!! You can now continue with VIE_MOD

fx >>
```



```
Command Window
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session 1 of 1
Current file: ../DATA/LEVEL0//13AUG01XE_N004

-----
|                               Welcome to VIE_INIT!!!!                               |
-----

Stations to be excluded: 0
Sources to be excluded: 0
Baselines to be excluded: 0

Start reading 2013/13AUG01XE_N004
[antenna,sources,scan] read_ngs(ngsfile,trffile,crffile,ini_opt,pt, tp, trf, crf)
No vtrf2008 coordinates for YEBES40M in ../TRF/superstation.mat ... get vievsTrf coordina
No vtrf2008 coordinates for TIGOC0NC in ../TRF/superstation.mat ... get vievsTrf coordina
Asterisk(*) found in NGS file!!! Value(s) treated as zero!
Done reading the file!
A total of 8 stations, 66 sources and 508 scans were found
The following stations were found:
YEBES40M
ZELENCHK
MEDICINA
TIGOC0NC
BADARY
FORTLEZA
KOKEE
SVETLOE
VIE_INIT finished!!! You can now continue with VIE_MOD

fx >>
```

These stations have no TRF coordinates

```
Command Window
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session 1 of 1
Current file: ../DATA/LEVEL0//13AUG01XE_N004
-----
|                               Welcome to VIE_INIT!!!!                               |
-----

Stations to be excluded: 0
Sources to be excluded: 0
Baselines to be excluded: 0

Start reading 2013/13AUG01XE_N004
[antenna,sources,scan]=read_ngs(ngsfile,trffile,crffile,ini_opt,pt, tp, trf, crf)
No vtrf2008 coordinates for YEBES40M in ../TRF/superstation.mat ... get vievsTrf coordinates
No vtrf2008 coordinates for TIGOCONC in ../TRF/superstation.mat ... get vievsTrf coordinates
Asterisk(s) found in NGS file!!! Value(s) treated as zero!
Done reading the file!
A total of 8 stations, 66 sources and 508 scans were found
The following stations were found:
YEBES40M
ZELENCHK
MEDICINA
TIGOCONC
BADARY
FORTLEZA
KOKEE
SVETLOE
VIE_INIT finished!!! You can now continue with VIE_MOD
fx >>
```

Number of stations, sources, and scans

```
Command Window
New to MATLAB? Watch this Video, see Examples, or read Getting Started.

session      1  of      1
Current file: ../DATA/LEVEL0//13AUG01XE_N004

-----
|                               Welcome to VIE_INIT!!!!!!                               |
-----

Stations to be excluded: 0
Sources to be excluded: 0
Baselines to be excluded: 0

Start reading 2013/13AUG01XE_N004
[antenna,sources,scan]=read_ngs(ngsfile,trffile,crffile,ini_opt,pt, tp, trf, crf)
No vtrf2008 coordinates for YEBES40M in ../TRF/superstation.mat ... get vievsTrf coordinates
No vtrf2008 coordinates for TIGOC0NC in ../TRF/superstation.mat ... get vievsTrf coordinates
Asterisk(s) found in NGS file!!! Value(s) treated as zero!
Done reading the file!
A total of 8 stations, 66 sources and 508 scans were found
The following stations were found:
YEBES40M
ZELENCHK
MEDICINA
TIGOC0NC
BADARY
FORTLEZA
KOKEE
SVETLOE
VIE_INIT finished!!! You can now continue with VIE_MOD

fx >>
```


Names of the stations

YEBES40M
ZELENCHK
MEDICINA
TIGOC0NC
BADARY
FORTLEZA
KOKEE
SVETLOE

Output form VIE_INIT

- Matlab structure arrays: **scan**, **antenna** and **sources**.
- Saved in **DATA/LEVEL0/** (file names: *NGSFILENAME_structure.mat*, e.g. **10AUG02XA_N004_antenna.mat**).
- For detailed description, see **DOC/structures.xls** and **DOC/VieVS_variables.pdf**



The scan structure array

-  Contains the scans
 - Observed delays (and sigmas), corrected for ionosphere and cable wrap (*scan.obs.obs*)
 - All observations in the NGS file with quality code below or equal to the limit, above minimum elevation angle, not in list of outliers, stations not excluded etc.
 - Also contains additional measurements, like pressure and temperature
 - More quantities added in VIE_MOD



The antenna structure array

- Contains information for all stations which is participating in at least one scan in the scan structure array
 - Station positions and velocities
 - Additional information, e.g. antenna mount, eccentricities, axis offset

The sources structure array

-  Information about the sources. Contains all sources observed in at least one scan in the scan structure array
-  Contains the source positions

Things that can be good to know

-  If station/source n is not in the TRF/CRF, the field:
 $antenna(n).in_trf/sources(n).in_crf$
will be zero (otherwise one)
-  If the pressure and the temperature for station n are missing in the NGS file, this will be calculated from GPT2 (Global Pressure and Temperature model 2).

Now we continue with VIE_MOD