

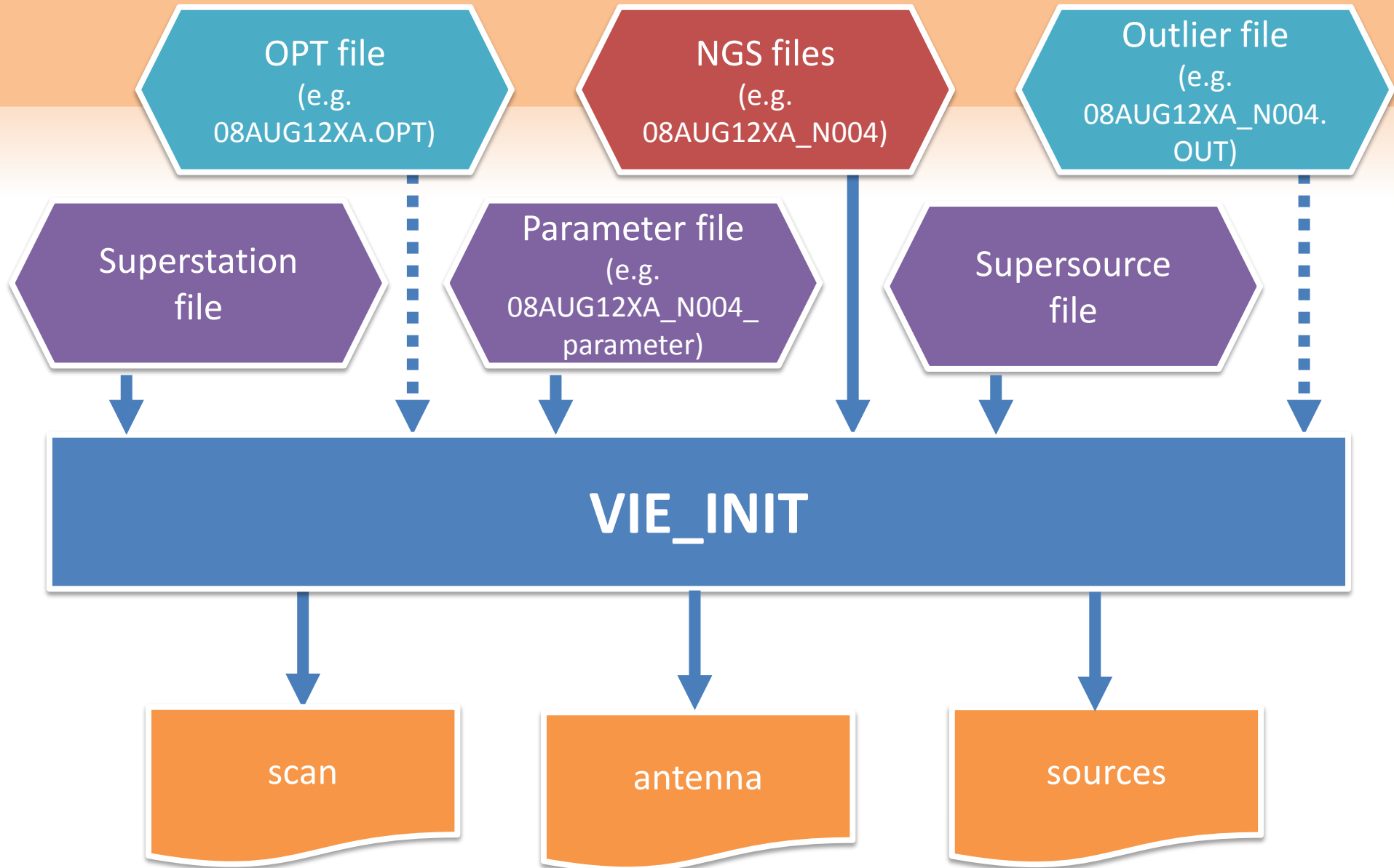
VIE_INIT_V22

Younghee Kwak



VIE_INIT

- Reads basic files
 - Reads observations from the **NGS** file
 - Reads station coordinates and velocities from the ***superstations*** file
 - Read source coordinates from ***supersource*** file
- Sets exceptions
 - Removes outliers (specified in an outlier file)
 - Excludes stations, sources, baselines (specified in OPT-file)
 - Introduces an elevation cut-off angle



Parameter file

DATA/LEVEL0/

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

NGS file

DATA/NGS/

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

NGS file example

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

.8 **Baseline** 0D+0 **Source** GR PH **Time**

\$END

TSUKUB32	WETTZELL	0955+476	2009 08 22 07 58	6.0000000000						101	
-7231560.78088789	.02291	-1338669.4166866930	.07389	0						I	102
.00000		0000	-2.778901538421864								103
.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					0					108
											109
											201
1087121.30123478	.00796	-1583101.4780455410	.01725	0						I	202
.00127	.00000	.00000	.00000	.165474166106772						0.	203
.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

TRF/

- Superstation file (`superstation.mat`)
 - Can be created/updated using the GUI
 - Contain station coordinates, velocities, and additional antenna info (mount, axis offset, eccentricity, etc.)
 - `itr2005`, `itr2008`, `vtrf2008`, `viewsTrf`, ...
 - If a station is not found in the chosen `trf`, the coordinates from `viewsTrf` are used

CRF files

CRF/

- Supersource file (`supersource.mat`)
 - Can be created/updated using the GUI
 - Contain source coordinates
 - `icrf2`, `icrf2nonVCS`, `icrf1Ext2`, `VieCRF10a`, `viewsCrf`, ...
 - If a source is not found in the chosen catalogue, the `viewsCrf` coordinates are used.

OPT file

DATA/OPT/

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

Outlier file

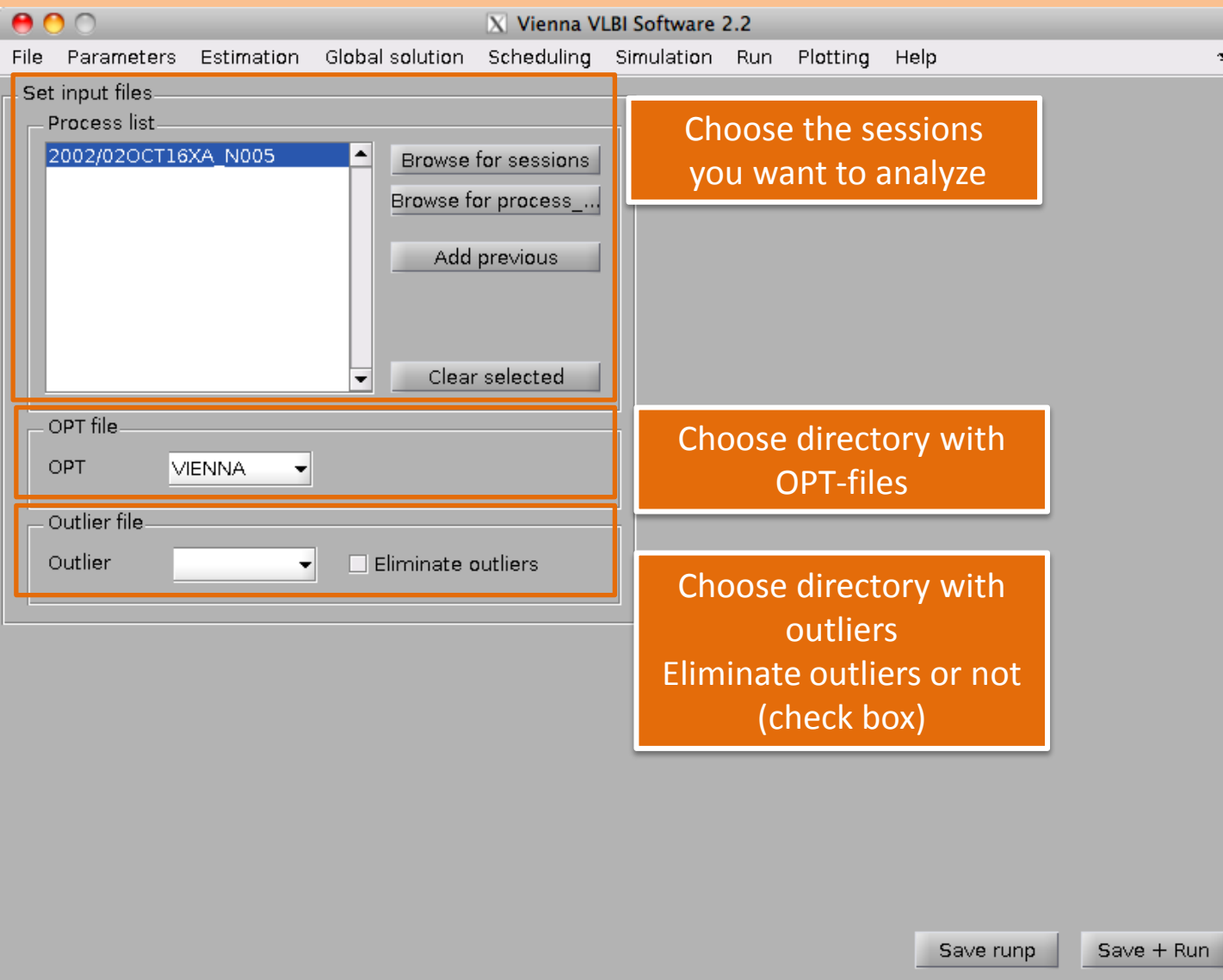
DATA/OUTLIER/

- 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



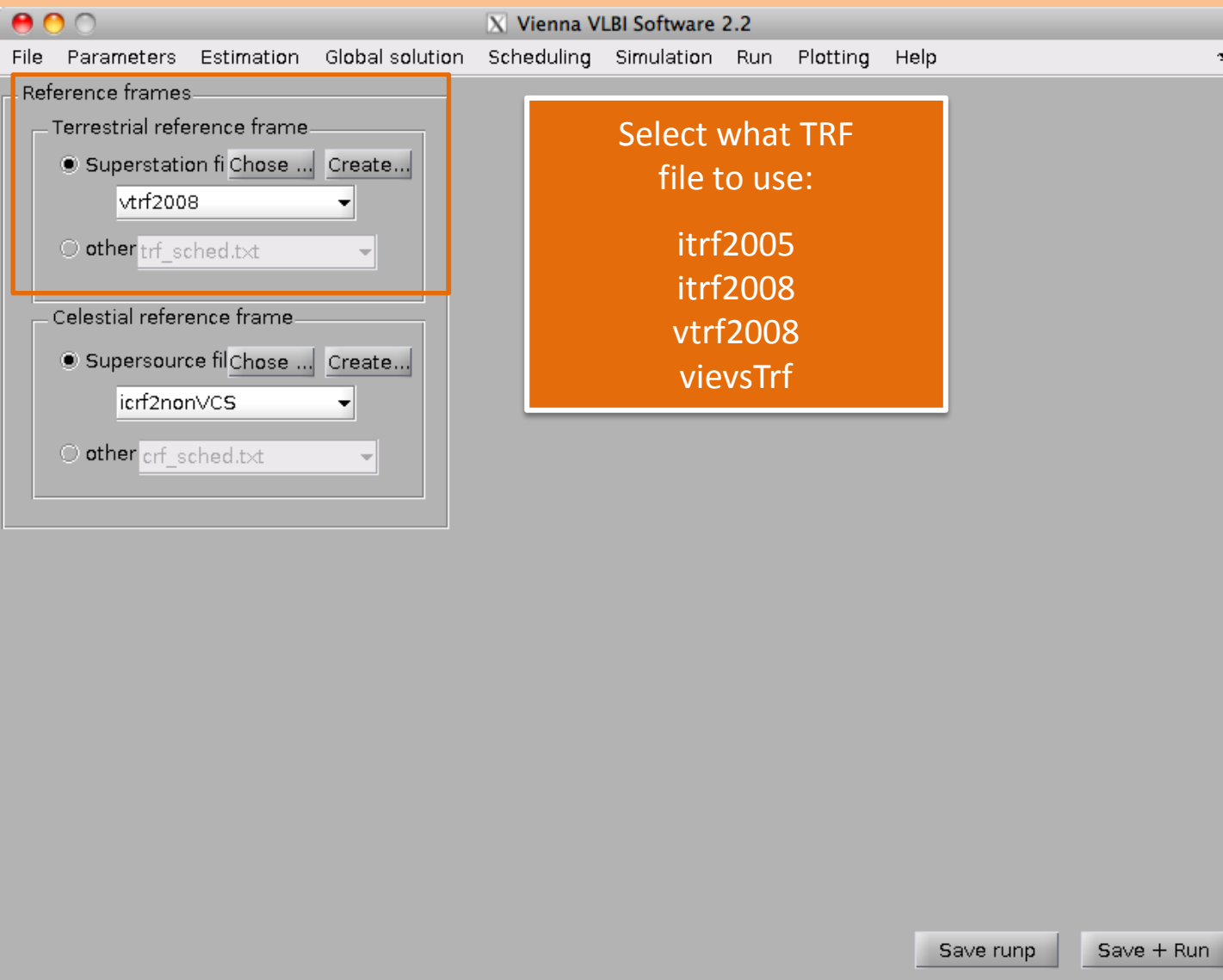
File > Set input files

Choose the sessions
you want to analyze

Choose directory with
OPT-files

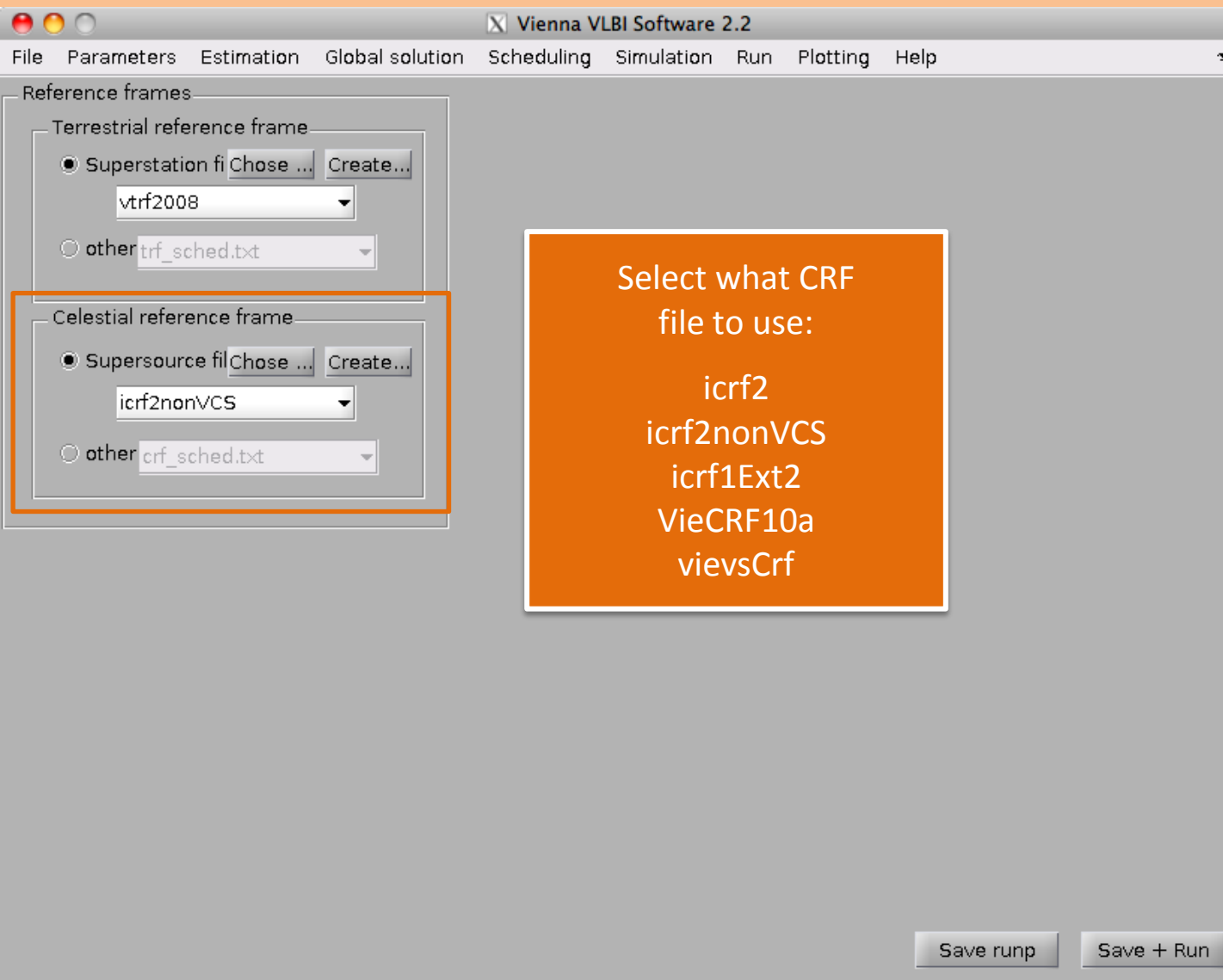
Choose directory with
outliers
Eliminate outliers or not
(check box)

VIE_INIT options



Parameters >
Reference frames

VIE_INIT options



Parameters >
Reference frames

Select what CRF
file to use:

icrf2
icrf2nonVCS
icrf1Ext2
VieCRF10a
viewsCrf

VIE_INIT options

The screenshot shows the 'Vienna VLBI Software 2.2' window. The 'Parameters' menu is open, and the 'Observation restrictions' sub-menu is selected. The 'Quality code limit' is set to 0. An orange box highlights the 'Quality code limit' field and its value '0'. A large orange text box provides details about the quality code limit.

Vienna VLBI Software 2.2

File Parameters Estimation Global solution Scheduling Simulation Run Plotting Help

Observation restrictions

Quality code limit	0
Cut-off elevation	0
Jet angle [none, 0-90]	none

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

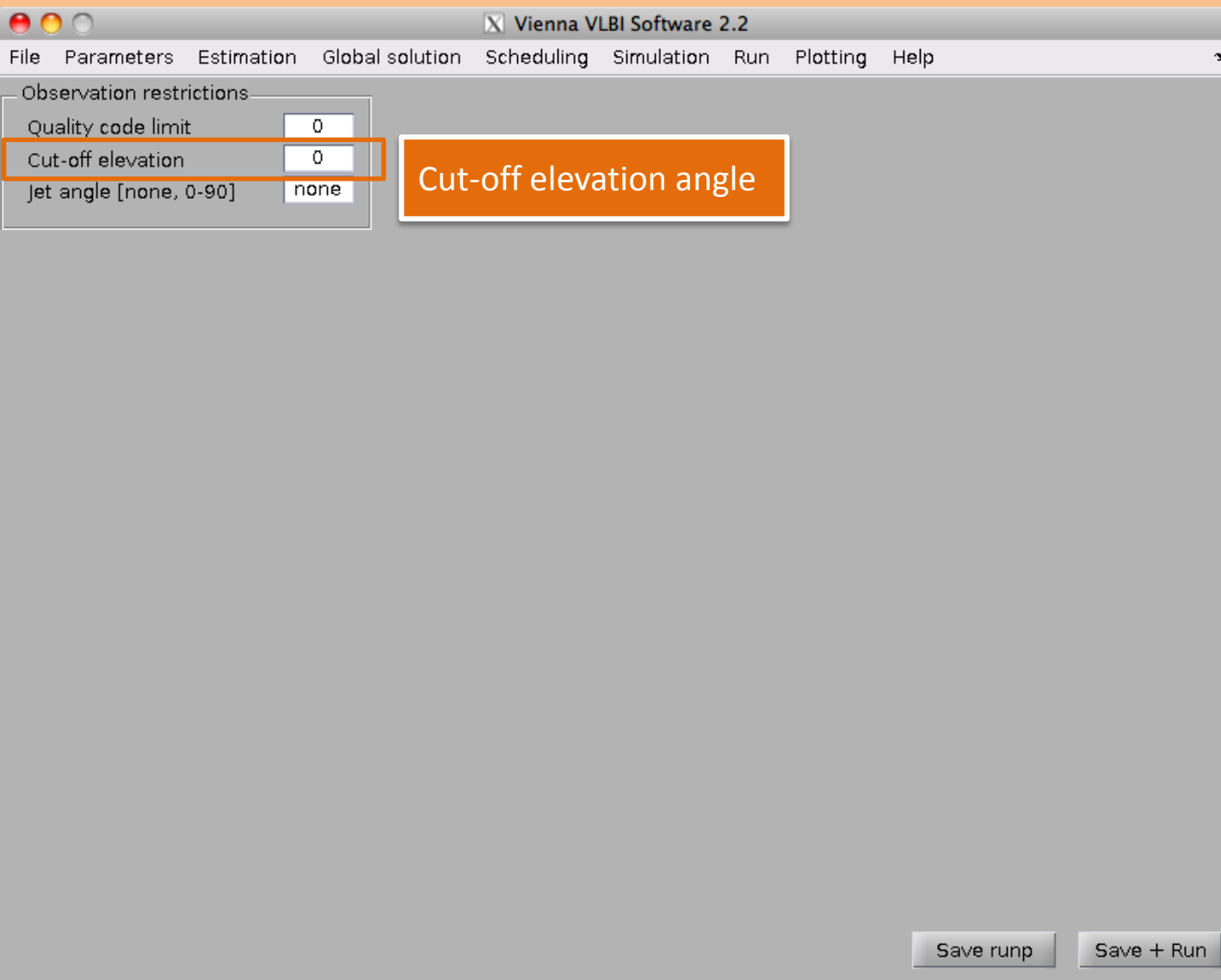
Quality code > 0: bad quality

Normally use quality code limit 0

Save runp Save + Run

Parameters >
Observation
Restrictions

VIE_INIT options



Parameters >
Observation
Restrictions

Processing example

```
Command Window
New to MATLAB? Watch this Video, see Examples, or read Getting Started.
session      1  of      1
Current file: ../DATA/LEVEL0//02OCT16XA_N005
-----
|                               |
|                               |
|                               |
-----

No OPT file was found
Stations to be excluded: 0
Stations to be down-weighted: 0
Sources to be excluded: 0
Baselines to be excluded: 0

Start reading 2002/02OCT16XA_N005
[antenna,sources,scan]=read_ngs(ngsfile,trffile,crffile,ini_opt,pt, tp, trf, crf)
Done reading the file!
A total of 8 stations, 47 sources and 467 scans were found
The following stations were found:
WESTFORD
WETTZELL
ALGOPARK
HARTRAO
GILCREEK
KOKEE
ONSALA60
NYALES20
VIE_INIT finished!!! You can now continue with VIE_MOD
fx >>
```


Processing example

```
Command Window
New to MATLAB? Watch this Video, see Examples, or read Getting Started.
session      1  of      1
Current file: ../DATA/LEVEL0//02OCT16XA_N005
-----
|                               welcome to VIE_INIT!!!!    |
-----

No OPT file was found
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Stations to be down-weighted: 0
Sources to be excluded: 0
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NYALES20
VIE_INIT finished!!! You can now continue with VIE_MOD
fx >>
```

Number of
stations, sources, and scans

Processing example

```
Command Window
New to MATLAB? Watch this Video, see Examples, or read Getting Started.
session      1  of      1
Current file: ../DATA/LEVEL0//02OCT16XA_N005
-----
|                               Welcome to VIE_INIT!!!!!!                               |
-----

No OPT file was found
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KOKEE
ONSALA60
NYALES20
VIE_INIT finished!!! You can now continue with VIE_MOD
fx >>
```

Names of the stations

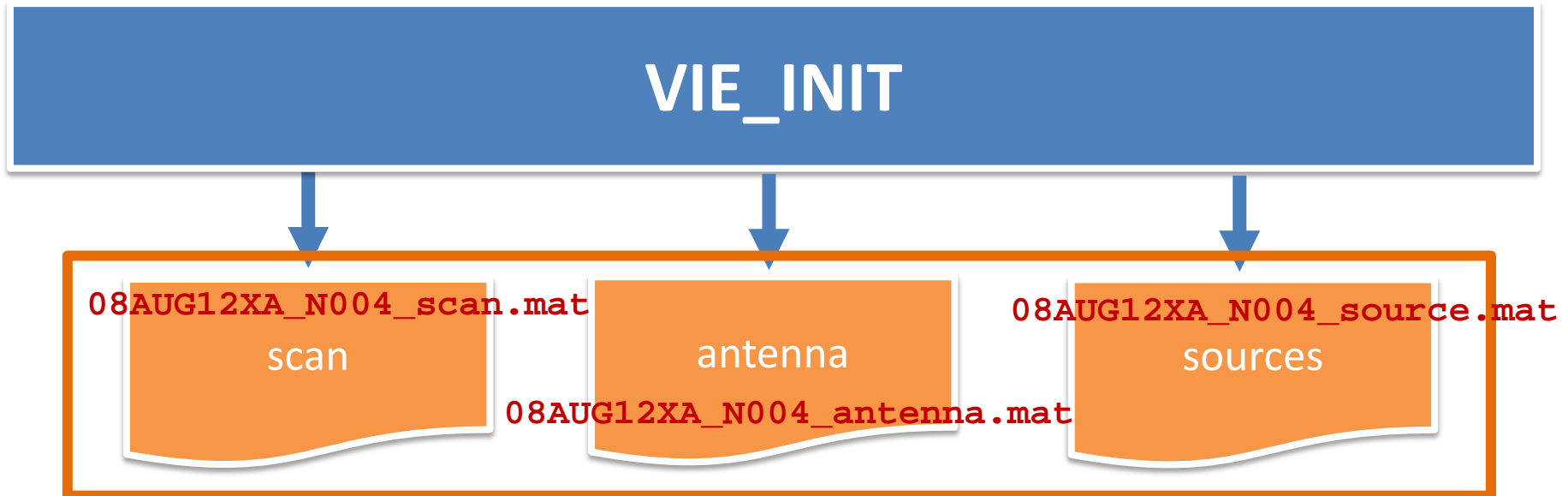
Output form of VIE_INIT

- Matlab structure arrays: scan, antenna and sources
- Saved in DATA/LEVEL0/

file names: *NGSFILENAME_output.mat*

- For detailed description, see

DOC/structures.xls & DOC/VieVS_variables.pdf



The *scan* structure array

Contains the information for all usable 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