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VIE_INIT

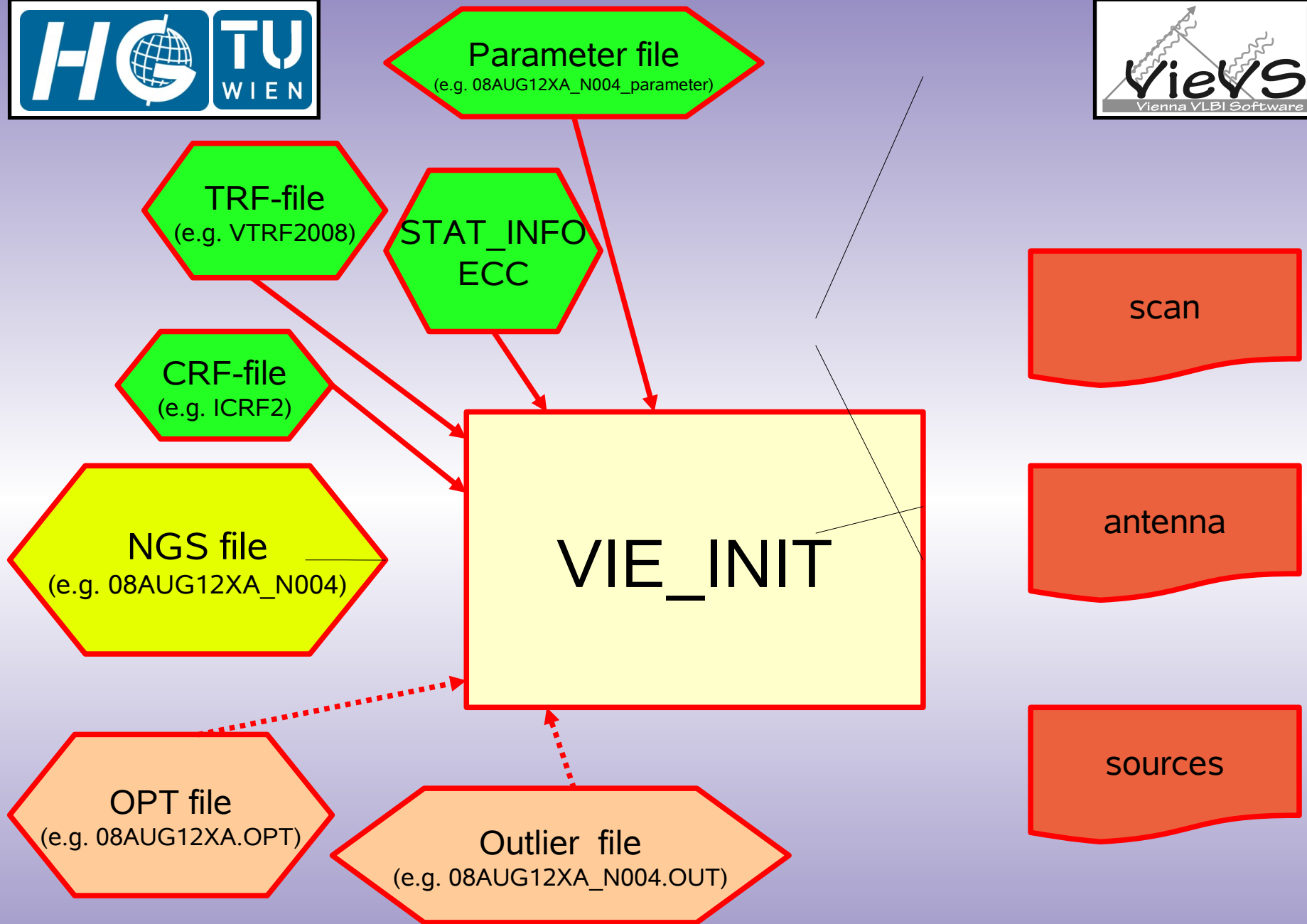
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VieVS User Workshop
7 – 9 September, 2010
Vienna



What does VIE_INIT do?

-  Reads observations from the NGS file
-  Reads station coordinates and velocities from the TRF file
-  Read source coordinates from CRF 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 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

Header:

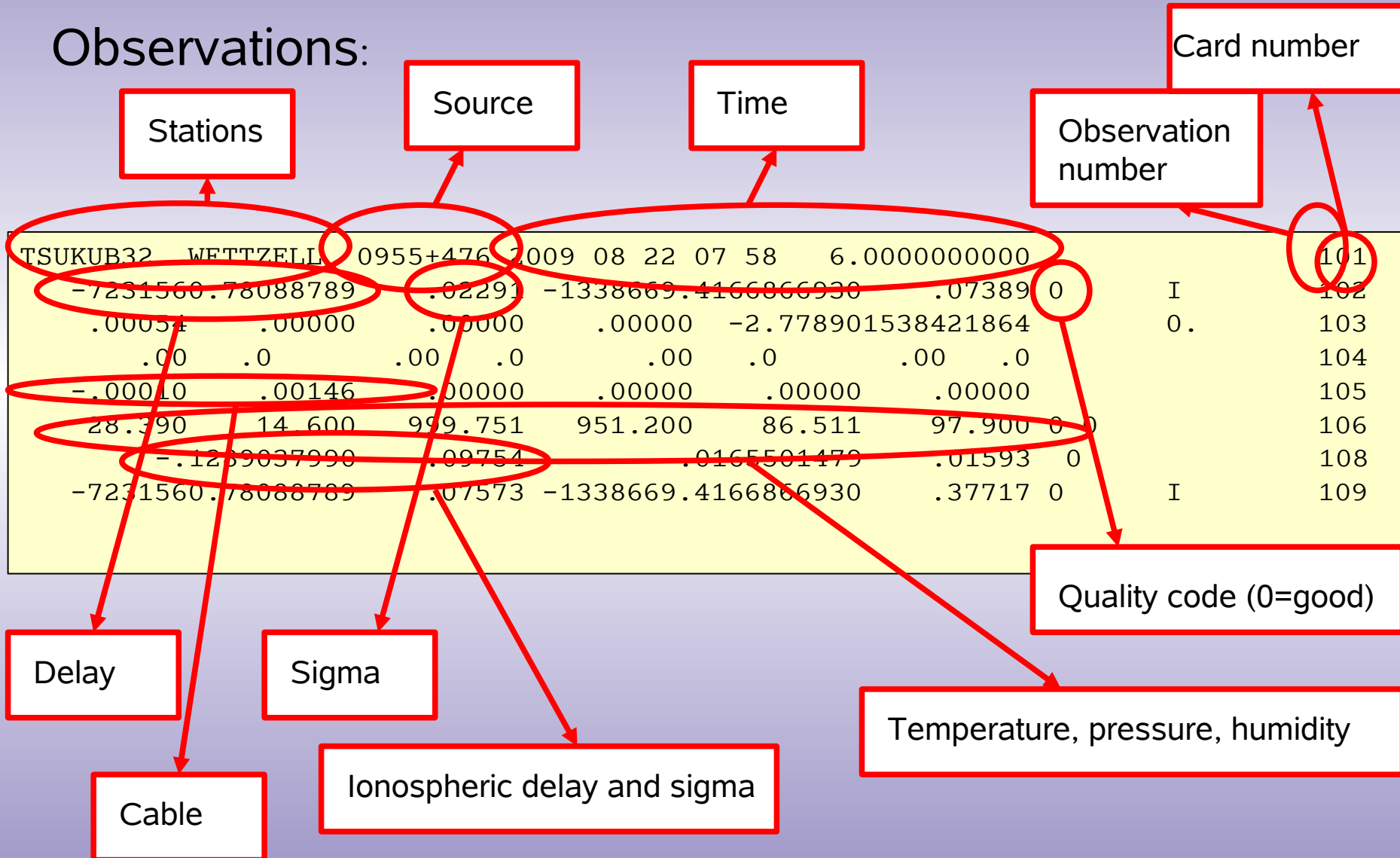
```
DATA IN NGS FORMAT FROM DATABASE 09AUG22YK_V003
Observed delays and rates in card #2, modified errors in card #9
TSUKUB32    -3957408.75200   3310229.36700   3737494.78900  AZEL    .00000
WETTZELL    4075539.88300    931735.26100   4801629.37100  AZEL    .00000
$END
0955+476    9 58      19.671641   47 25      7.842440
1128+385    11 30     53.282613   38 15     18.546970
$END
.8212990000000D+04      GR PH
$END
```

Some a priori source coordinates
for the sources in the experiment.

Some a priori station coordinates
for the stations in the experiment.
No velocities!

The NGS file

Observations:



- ▶ .mat files in the TRF directory:
 - ▶ ITRF2005, VTRF2005, and VTRF2008
 - ▶ Contain station coordinates and velocities
 - ▶ If a station is not found in the TRF file, the coordinates from the NGS header is used. The velocities are then zero!
- ▶ .txt files in TRF directory:
 - ▶ User defined TRF in ascii format
- ▶ The STAT_INFO.mat file (TRF directory):
 - ▶ Information about the antenna (mount, axis offset etc.)
- ▶ The ECC.mat file (TRF directory) contains eccentricities

- ▶ .mat files in the CRF directory:
 - ▶ ICRF_Ext2 and ICRF2
 - ▶ Contain source coordinates
 - ▶ If a source is not found in the CRF file, the coordinates from the NGS header is used.

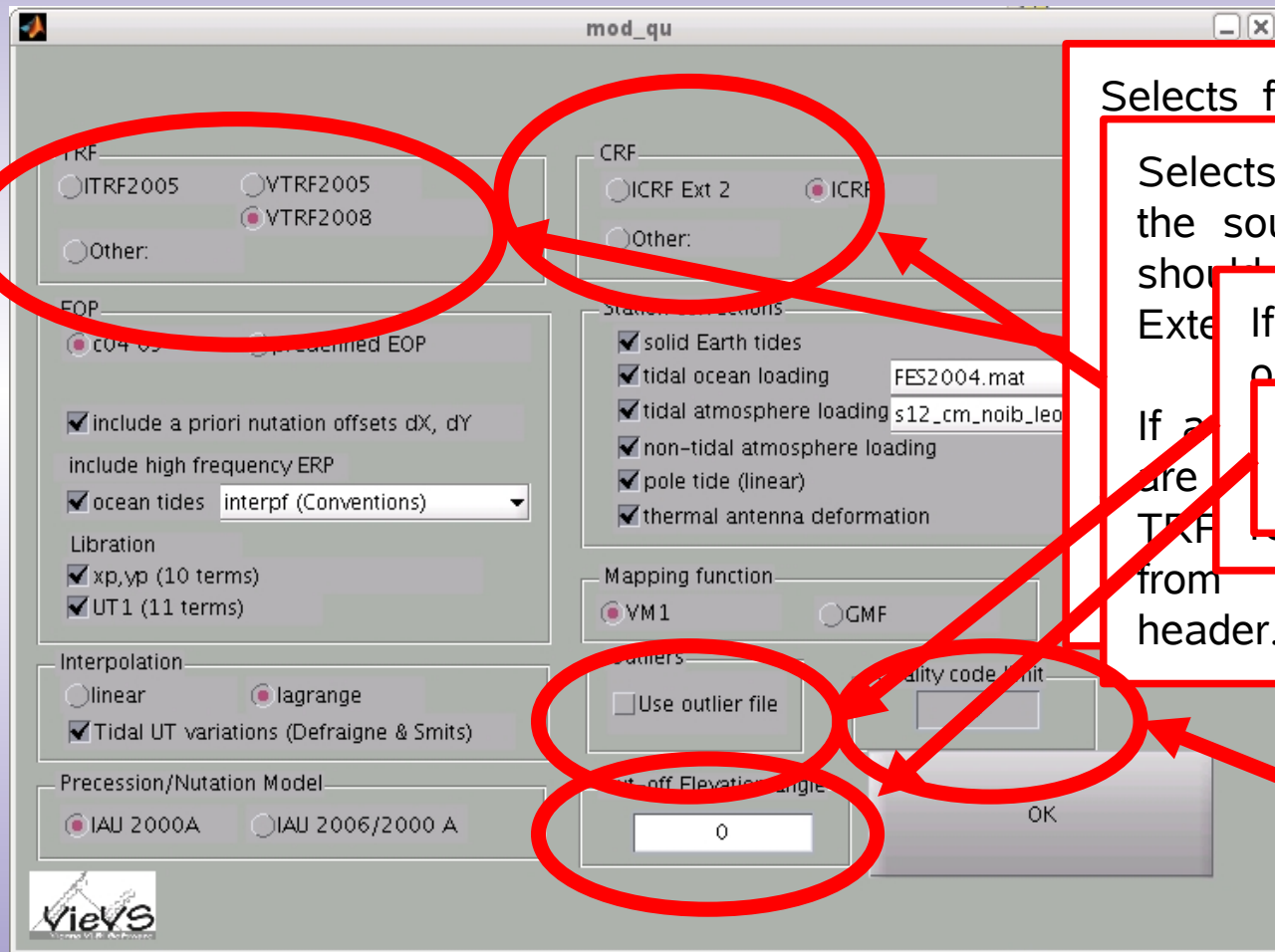
OPT file

- ☛ 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: the first run detect outliers and saves it in a list, which can the be used in VIE_INIT in the second run for removing the outliers

Vie_init options



Selects from which file

Selects from which file the source coordinates should be read (ICRF Ext 1 or ICRF Ext 2)

If checked and an outlier file exists the

If a TRF file is not found from the INGS file header.

Specifies the elevation cut-off angle in degrees.

Specifies limit for quality code of observations. All observations with a quality code larger than this value will be removed. Normally you should use 0.

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

session 1 of 1

fil =
../DATA/LEVEL0//10JUL22XE_N004

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

ans =
''

ans =
''

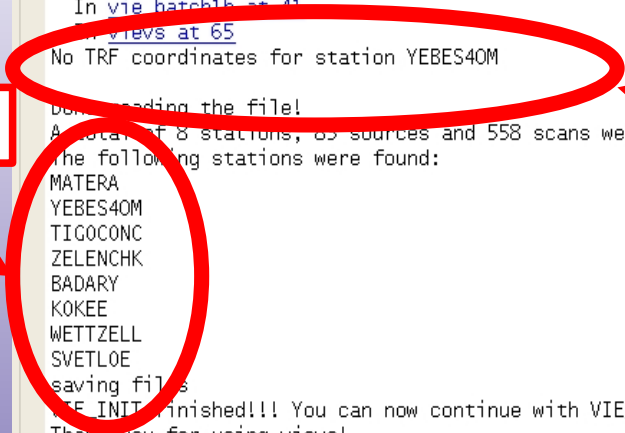
Start reading 2010/10JUL22XE_N004
[antenna,sources,scan]=read_ngs(ngsfile,trffile,infofile,crffile,ini_opt)
Warning: Asterisk(s) found in NGS file!!! Value(s) treated as zero!
> In read\_ngs at 242
   In vie\_init at 140
   In vie\_hatch1b at 41
   In vie\_views at 65
No TRF coordinates for station YEBES40M

Don't loading the file!
A total of 8 stations, 65 sources and 558 scans were found
the following stations were found:
MATERA
YEBES40M
TIGOCONC
ZELENCHK
BADARY
KOKEE
WETTZELL
SVETLOE
saving files
VIE_INIT finished!!! You can now continue with VIE_MOD
Thank you for using vievs!
fx >>
```

NGS file name



Stations found



This stations coordinates were not found in the TRF file (i.e. they are taken from NGS file header.



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 GPT (Global Pressure and Temperature model). The fields *antenna(n).gptpres* and *antenna(n).gpttemp* will then be one

Now we continue with
VIE_MOD