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Superstation
Supersource
Exercise

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Superstation file

- Binary (.mat) file containing all static station-dependent data:
  VLBI/TRF/superstation.mat

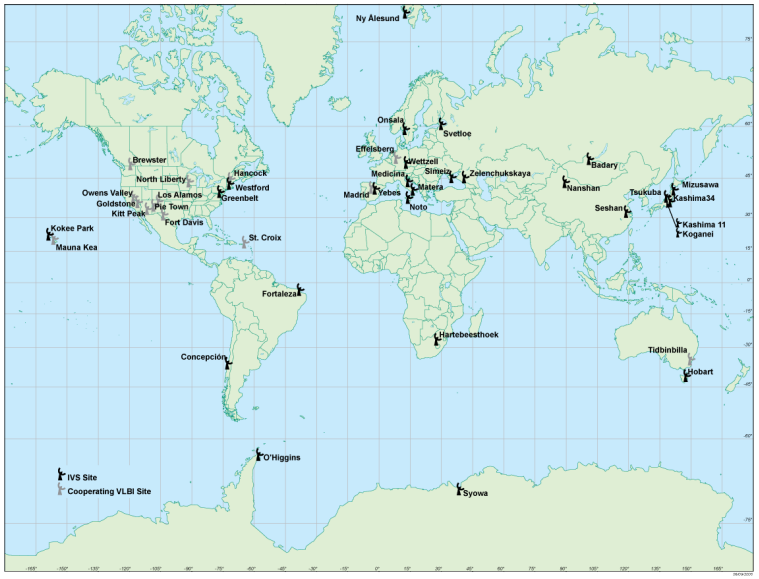
- TRF, time-independent corrections and coefficients of periodic time dependencies
- The input files are stored in:

  VLBI/TRF/create/superstation/neededFiles

  - TRF catalogues
  - antenna information, eccentricities
  - tidal ocean loading parameters (phase + amplitude)
  - tidal atmosphere loading (with cosine and sine components of the deformation)
  - ocean pole tide loading (real and imag. part of the tide coefficients)
- corrections without periodic time dependencies are saved as time series (i.e., not in the superstation file)
  - non-tidal atmosphere loading (VLBI/ATM/)
  - hydrology loading (VLBI/HYDLO/)

Reference frames

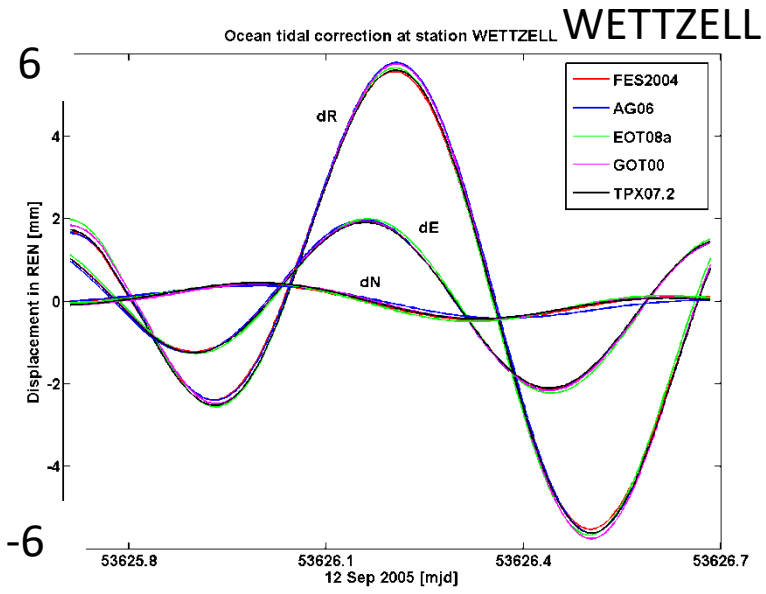
- Following frames can be chosen in VieVS 3.1
  - ITRF2005
  - ITRF2008
  - ITRF2014
  - DTRF2014
  - VTRF2008
  - VTRF2014
  - ivsTrf2014b
  - VieTRF13
  - vievsTrf (= backup)
  - User own TRF



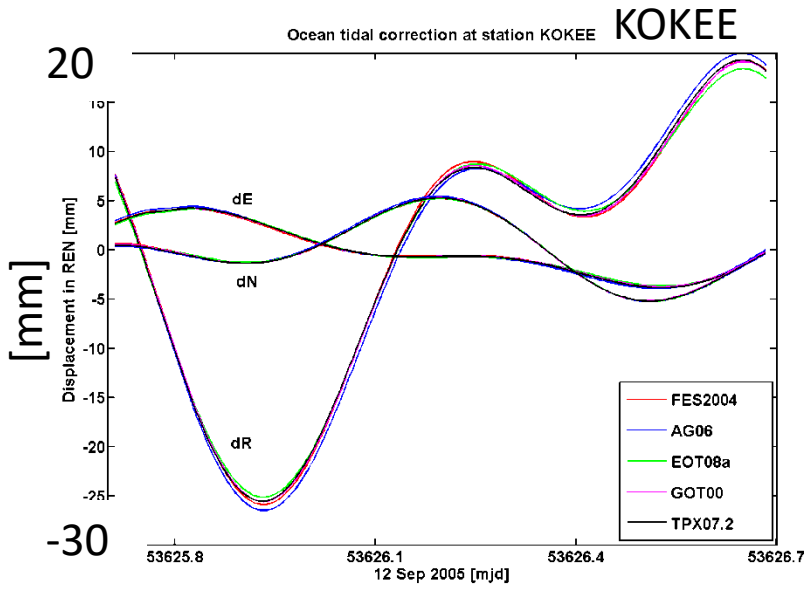
Tidal Ocean Loading (comparison)

model	reference	input	resolution
TPX07.2	Egbert et al. (2002)	inverse hydrodynamic solution from T/P altimetry+GRACE	0.25° x 0.25°
GOT00	Ray (1999)	T/P	0.5° x 0.5°
FES2004	Letellier (2004)	numerical model	0.125° x 0.125° **DEFAULT**
EOT08a	Savcenko et al. (2008)	Multi-mission altimetry	0.125° x 0.125°
AG06	Andersen (2006)	Multi-mission altimetry	0.5° x 0.5°

WETTZELL



KOKEE



Loading

Ocean tidal loading

- FES2004, GOT00, EOT08a, TPXO72, AG06
- User own

manual change of the input .txt files needed

Ocean pole tide loading

- IERS Conventions 2010: Desai (2002)
- User own

Atmosphere tidal loading

- TU Wien
- GSFC Group
- University of Luxembourg (T. Van Dam)
- User own

computed automatically

Let‘s start with the exercise…

We will add the new station AGGO to the superstation file:

- Session with AGGO: 18JUL12XE

1. Start VieVS, browse for the vgosDB and select “2018/18JUL12XE”. Right-click on the entry in the process list window and choose “Analyse netCDF file”.
2. Select “Apriori” in *Folders* and “Station” in *Files*, mark AprioriStationList and AprioriStationXYZ and click “Send selected var(s) to workspace. Go to workspace, display the coordinates of AGGO in the command window:
   ```
   fprintf('%13.4f   %13.4f   %13.4f\n', AprioriStationXYZ(:,1))
   ```
3. Open VLBI\TRF\create\superstation\neededFiles\vievsTrf.txt in a text editor. Add the coordinates for AGGO from the Matlab command window.
4. Go in the GUI to Models – Reference frames – TRF Create file.
5. Click in the new Superstation GUI on "Search for files" and put a path in the lower right corner where the new superstation file should be stored: ..\TRF\superstation_aggo.mat (you are in VIEVS\WORK).

Superstation file - exercise

6. Click on Create
7. Have a look at the Command Window , message 4.1 shows stations which have NO OCEAN TIDE LOADING like AGGO.
8. Go to: http://holt.oso.chalmers.se/loading/ and get the ocean loading parameters for AGGO with the coordinates provided in the Command Window.
9. Skip step 9 as is might take several minutes or longer. Open the .txt file in VIEVS\WORK\OTL_email_FES2004.txt.
10. Copy the block for AGGO to TRF\create\superstation\neededFiles\ **ocean_loading_FES2004.TXT**.
11. Add the station AGGO also to TRF\create\superstation\neededFiles**ns-codes.txt**

*C- Name---- --DOMES-- CDP- Comments/description

Ag AGGO --------- ---- AGGO (formerly TIGO) at La Plata, Argentina

Superstation file - exercise

13. Go to the Superstation GUI: select “Download newest file” for ECCDAT.ecc and blokq.dat, in the other cases the files of the VieVS version are more up-to-date than the ones that are downloadable.
14. Click on „Create“.
15. Process the session with the newly created superstation file.

Supersource file

- Binary (.mat) file containing the source information:
  VLBI/TRF/supersource.mat
- The input files are stored in:

  VLBI/CRF/create/supersource/neededFiles
  - CRF catalogues
  - Name tables (IERS ↔ IVS)

Supersource file - exercise

We will add a new source 1217-558 to the supersource file:

- Session: 17DEC20XA

1. Start VieVS, browse for the vgosDB and select “2017/17DEC20XA”. Go to Models - Reference Frame - Celestial Reference Frame and select supersource_exercise.mat as supersource file.
2. Process the session by clicking “Save+Run”: VieVS will stop with an ERROR, telling you that the source 1217-558 could not be found.
3. We will use the function \CODE\VLBI\MISC\check_sources_in_vgosDB_file.m to read out the source position from the vgosDB.
4. Go to the workspace and type:
   ```
   check_sources_in_vgosDB_file('17DEC20XA','supersource_exercise.mat');
   ```
5. Open “\VLBI\CRF\supersource\neededFiles\vievsCrf.txt” in a text editor and copy the line from the workspace to the end of the source table and save it.

Supersource file - exercise

6. Go to the GUI again to Models - Reference Frame - Celestial Reference Frame, click on “Create file”.
7. Make sure that the paths of the required files are correct and that “vievsCrf.txt” is selected as BACKUP.
8. Specify the directory and name for the supersource file: “../CRF/supersource_new.mat” and click Create.
9. Go to Models - Reference Frame - Celestial Reference Frame and select supersource_new.mat as supersource file. Process the session again by clicking “Save+Run”.

```
… vie_lsm is successfully finished after xx seconds!
```