

Estimating a TRF using a global VLBI solution

Aim of exercise

In this exercise, we are going to use the first four sessions of the Legacy-1 (suffix XB) network of the CONT17 campaign to calculate a TRF. The background of the combination procedure, also called global solution, is described in a talk accompanying this exercise.

Data

In order to do the combination the normal equation system of each session is needed. VieVS saves these in the *DATA/LEVEL2/* folder. You should already have the normal equation systems saved there in an internal format from the previous exercise.

Processing steps

Find the data

Look if you can locate the data in your LEVEL2 directory and remember the same of the subdirectory where it is saved.

Select the parameterization of the global solution

Follow these steps:

- Go to *Global solution/Select parameters*. Here you can tell VieVS which parameters you want to estimate.
- Make sure that only the "antenna coordinates" radio button is set to estimate. The rest should be either reduced or fixed.
- Go to *Global solution/TRF/CRF parameterization*. Here you can provide special files, which set the datum, introduce breaks and so on. Select the "CONT17.txt" file for the datum definition.
- Go to Run/Run options and make sure that only the "Run vie_glob" check box is pressed.
- On the bottom of this GUI you can see the VIE_GLOB directory settings. Please change the Subdirectory part to the directory you specified in the LEVEL2 directory (this is the directory where the normal equation system of each session is saved). You can also specify an Output directory.
- press "Save + Run"

Investigate results

The output of the global solution is a reference frame with the positions of the sources in the input sessions. It can be found at *OUT/GLOB/TRF/your subdirectory*.

For comparison reasons I wrote a small script, which plots the station coordinate estimates of the single sessions and compares it to the estimates from the global solution. It is named "plot_sessionwise_vs_globalsolution.m" and can be found in the *WORK/* directory. Open this script in your Matlab editor. You need to specify the sub directories used in the single solution and in the global solution, further you need to specify the station of interest. When everything is correctly set, press the green button, which is named "Run" in the editor. You should see this plot:

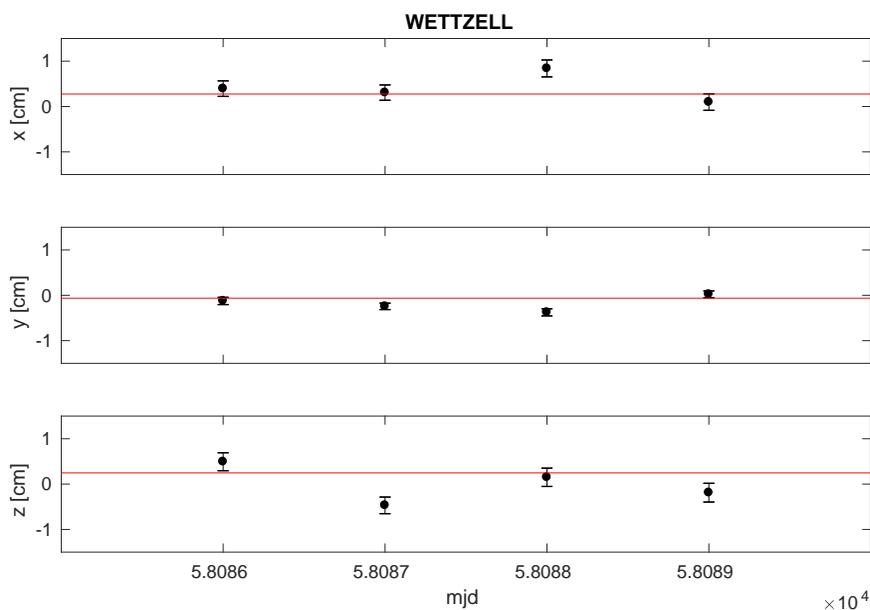


Figure 1: Comparison of coordinates of the station WETTZELL from a global solution and single session solutions