

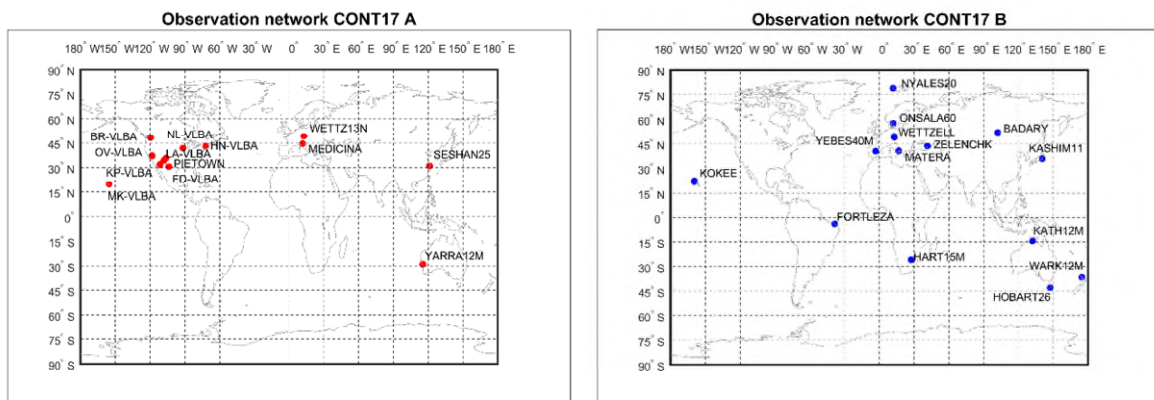
# Exercise: Global solution

## In brief

Run two single session solutions – prepare files for global solution – choose parameters for estimation – set a datum – run the global solution – look at results.

## Data and target parameters

We will use the first three days of the two simultaneously operated networks of CONT17 and calculate hourly polar motion and dUT1 series, stacked at midnights. The OPT files for these sessions are provided within the webinar data.



## Processing steps – first part

1. Process three sessions of CONT17 A as single session solutions (17NOV28-30XA).
2. The default parameterization will be used, except that we will uncheck the estimation of source coordinates in “Estimation > Least squares > Source coordinates” and change the EOP estimation – in “Estimation > Least squares > EOP” deselect *Estimate nutdx and nutdy*, set the estimation interval to 60 min for Xpol, Ypol and dUT1 and the constraints to 2 mas each.
3. To prepare files for global solution we have to store the normal equation matrix and the b-vector: In “Estimation > Global parameters” tick Prepare N\_global and b\_global for global solution.
4. Go to “Run > Run options” define a sub-directory for the results, for example “cont17A”. Click the button “Save + Run”.
5. Do the same for CONT17 B (17NOV28-30XB) – “cont17B”.
6. We will now look at the results in “Plotting > Parameters”.

## Processing steps – second part

1. Prepare the global solution for the XA network. Go to “Global solution > Select parameters”: fix antenna velocities, estimate xpol, ypol and dUT1, fix dX and dY, set max RMS to 5. Go to “Global solution > TRF/CRF parameterization and choose “datum\_cont17A.txt” as datum definition file.
2. Go to “Run > Run options” deselect *Run vie\_init*, *Run vie\_mod* and *Run vie\_lsm* and select *Run vie\_glob*. In the panel VIE\_GLOB directory settings enter “cont17A” as sub-directory and also as Output directory for VIE\_GLOB.
3. Start the global solution, click the button “Save + Run”.
4. Follow step 1-3 for the XB network.

## Investigate results

The results are stored in VLBI/OUT/GLOB/\_ESTIMATES/yoursubfolder as text file and as mat file. Load the mat file for the A network to the Matlab workspace. The saved structure is called “globsol”. Save globsol to the variable A. Do the same for the B network. We can then create figures for xpol, ypol and dUT1 and compare the two solutions.

Text files with the estimated coordinates are stored in VLBI/OUT/GLOB/TRF.

figure

```
errorbar(A.xpol.mjd,A.xpol.val,A.xpol.sigma,'r'); hold on;  
errorbar(B.xpol.mjd,B.xpol.val,B.xpol.sigma,'b');
```

The result should look like this:

