



VieVS

Vienna VLBI and Satellite Software

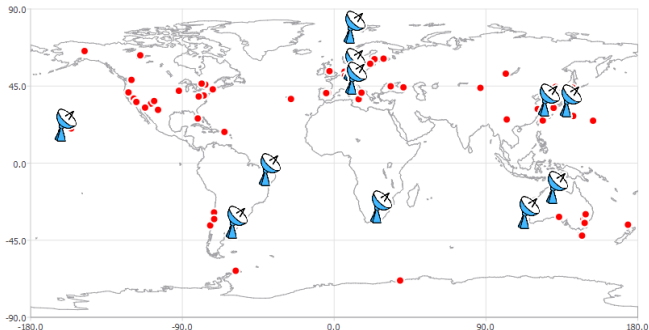
Single Session Analysis using VieVS

Helene Wolf^a

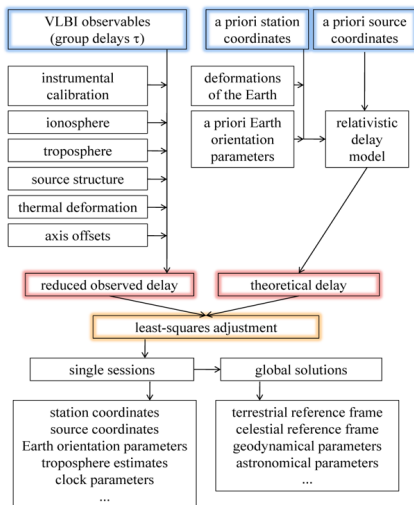
^aTU Wien, Department of Geodesy and Geoinformation

Analyzing R1 session

- IVS-R1891
- start date: 23.April.2019 17:00
- 24 hours
- 11 stations



Least Squares Method



Estimation Least Square Method

- Troposphere
- Clock
- EOP
- Station coordinates
- Source coordinates

Estimation Least Square Method

- Troposphere
- Clock
- EOP
- Station coordinates
- Source coordinates

Continuous Piecewise Linear Offsets (PWLO)

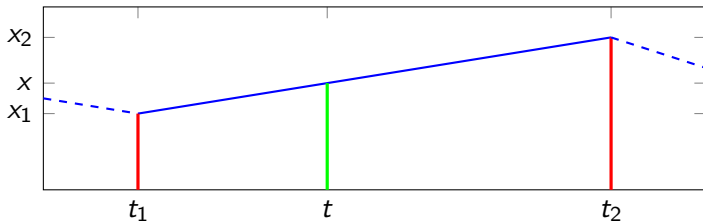
- we estimate parameters every **X** minutes
- linear interpolation in between

Estimation Continuous Piecewise Linear Offsets (PWLO)

Continuous Piecewise Linear Offsets (PWLO)

- we estimate parameters every **X** minutes
- linear interpolation in between

$$x(t) = x_1 + \frac{t - t_1}{t_2 - t_1} (x_2 - x_1)$$

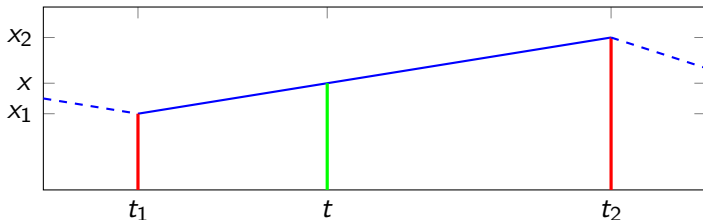


Estimation constraints

To avoid singularities and improvement

constraints

- pseudo observations
- $zwd_{03:00} = zwd_{04:00} \underbrace{\pm 1.5 \text{ [cm]}}_{\text{constraint}}$



Iterative LSM

First solution

- reduced number of parameters
 - clock approximated as only one offset, one rate & one quadratic term
- look at first solution to detect clock breaks!

Main solution

- use results from first solution as new a priori values
- estimate main solution with all parameters as PWLO

Output

- plot estimated parameters using VieVS
- data stored in Matlab structure
 - "x_*" MATLAB structure in *VieVS/VLBI/VLBI/DATA/LEVEL3/...*
 - contains all estimates → further analysis
- SINEX file
 - standardized output format for geodetic parameters
 - used for distribution of products and estimates



VieVS

Vienna VLBI and Satellite Software

Single Session Analysis

Helene Wolf^a, helene.wolf@geo.tuwien.ac.at

^aTU Wien, Department of Geodesy and Geoinformation