

9th VieVS User Workshop, Vienna, September 11 – 12, 2018

Introduction to

VieVS 3.1

Sigrid Böhm



VieVS

Vienna VLBI and Satellite Software



What is VieVS?

- VieVS = **Vienna VLBI** and **Satellite Software**
- Since 2018 umbrella for all(!) software developments at Higher Geodesy
- VieVS VLBI Module: State of the art, geodetic VLBI data analysis software package
- Written in Matlab
- Since 2008 it is developed at the Department of Geodesy and Geoinformation (Research Group Higher Geodesy), Technische Universität Wien
- Close cooperation with former colleagues
- Current reference:
J. Böhm, S. Böhm, J. Boisits, A. Girdiuk, J. Gruber, A. Hellerschmied, H. Krasna, D. Landskron, M. Madzak, D. Mayer, J. McCallum, L. McCallum, M. Schartner, K. Teke: *Vienna VLBI and Satellite Software (VieVS) for Geodesy and Astrometry*, Publications of the Astronomical Society of the Pacific, Vol. 130(986), 044503 (2018). <http://iopscience.iop.org/article/10.1088/1538-3873/aaa22b/meta>

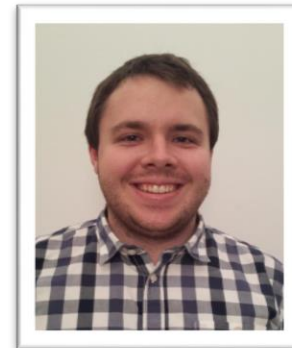
Why did we develop VieVS?

- Important that there exist several different types of VLBI analysis software
- Different software packages can validate each other. Helps identifying bugs etc.
- Analysts have a choice of what to use
- VLBI2010 / VGOS put new demands and challenges on the VLBI analysis software

- We want to have a VLBI software package which is easy to use:
 - BSc, MSc, and PhD students can easily learn it and use it
 - Should be easy to add new models etc. for special investigations
 - Graphical User Interface (GUI)
 - Should have a clear structure

Who develops VieVS-VLBI?

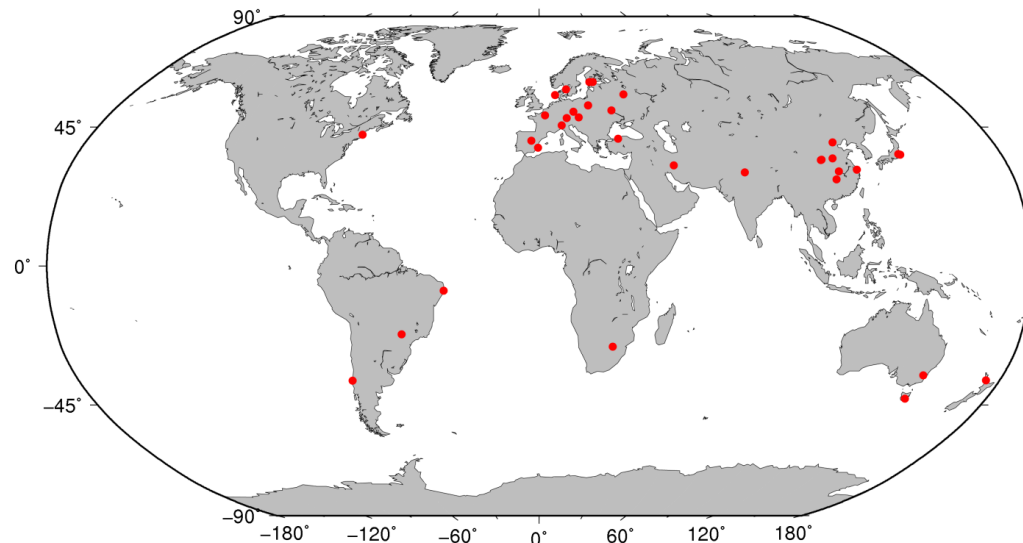
- **current members** of the VieVS group at the Technische Universität Wien:



- **former members** of the VLBI group at the TU Wien
- contributions from **external partners** from international universities worldwide

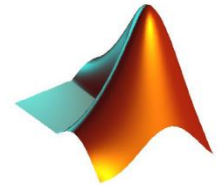
VieVS development

- Development started in 2008
- First version released in the end of 2009 (In the first version many parts were based on OCCAM. Now almost every subroutine is written from scratch)
- Current Version 3.0 was released in June 2017
- Freely available to registered users: <http://viewswiki.geo.tuwien.ac.at>
- Currently registered (active) users from >30 institutions worldwide



Why Matlab

- Advantages:
 - Easy to use
 - Easy to change source code
 - Good tools for plotting etc.
 - Matlab available on all major operating systems (Windows, Linux/UNIX, Mac OS)
- Disadvantages:
 - Matlab is an expensive commercial software
 - Slower than C++ or Fortran. Not a major problem.



System Requirements

- Recent Matlab Version (Release R2014b or later)
- About 80 GB of disk space, including all data files
 - vgosDB files 1979-now: ~54 GB, (NGS files ~11 GB)
 - source code: <15 MB
- Should work with any operating system able to run Matlab (tested on Windows and Linux)

Policy

- VieVS is freely available to registered users:
 - Easier to get feedback
 - Easy to spread information about new updates, bugs, etc.
 - Nice to know how many and who are using the software
- For information, see VieVS homepage <http://viewswiki.geo.tuwien.ac.at>
- We are open for cooperation:
 - Modules etc. can be written at other institutions

Downloading and installing VieVS

- Send a letter to Sigrid Böhm (signed by the head of your institution) where you describe for which purposes you would like to have access to VieVS (scientific and non- commercial only)
- VieVS is available via SFTP download on:
ftp.geo.tuwien.ac.at
- We use SSH keys (public key authentication) to control access to the server. Hence, you have to create a key pair and send us the public key after we confirmed your formal registration.
- Log in and download the whole **VieVS directory**.

Updating VieVS

- Regular updates (to be able to analyze the latest sessions):
 - (VLBI/DATA/NGS/)
 - VLBI/DATA/vgosDB/
 - VLBI/ATM/ , VieVS/VM1/
 - VLBI/EOP/
- For a session with a new station or source
 - check for updated **superstation.mat** file in **VieVS/TRF** and/or updated **supersource.mat** file in **VieVS/CRF**
- When a new VieVS version is released:
 - Download preferably the whole VieVS directory.

Modules of VieVS

Vie_SETUP

Vie_SCHED

Vie_INIT

Vie_MOD

Vie_SIM

Vie_LSM

Vie_LSM_scan

Vie_GLOB

Modules of VieVS

Vie_SETUP

Graphical User Interface for all modules;
allows to choose the options and parameterization

Vie_SCHED

Vie_MOD

Vie_LSM

Vie_LSM_scan

Vie_SIM

Vie_GLOB

Modules of VieVS

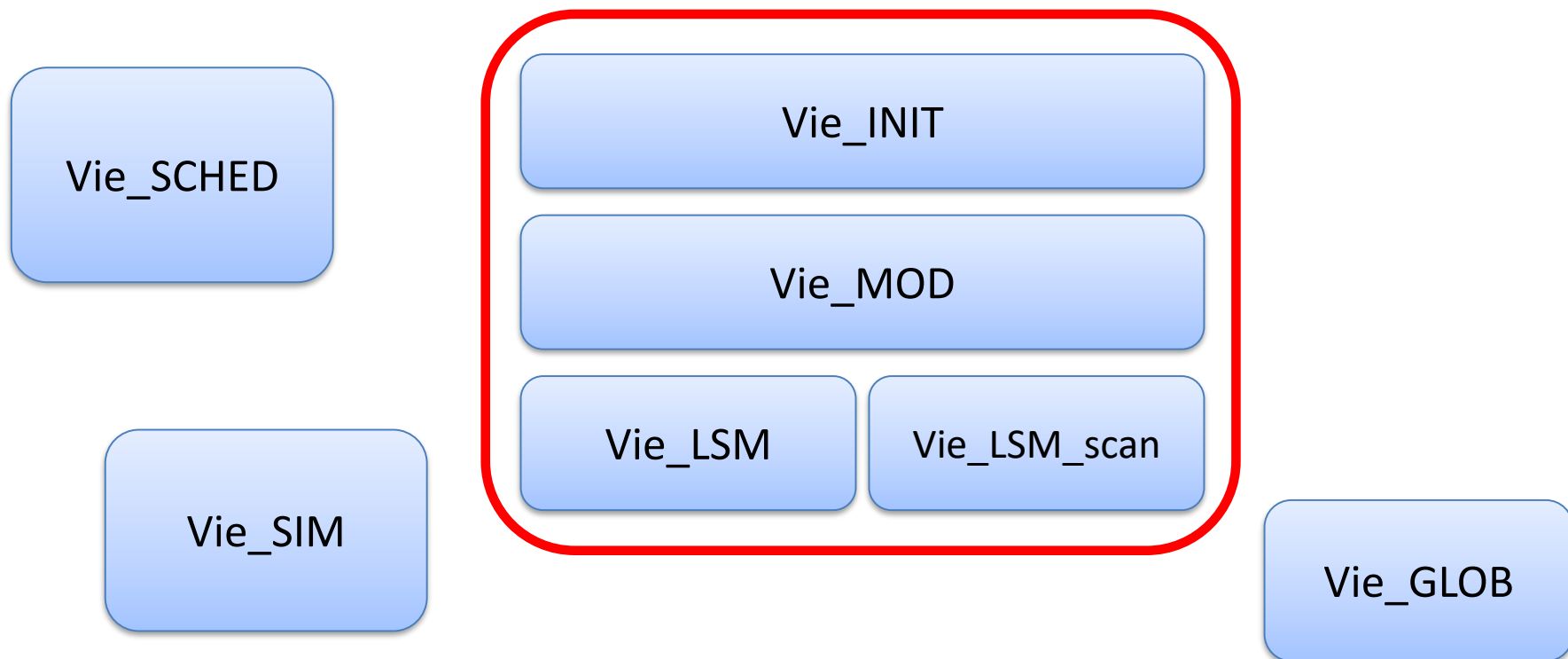
The 3 core modules for a session analysis

Vie_INIT- reads in data

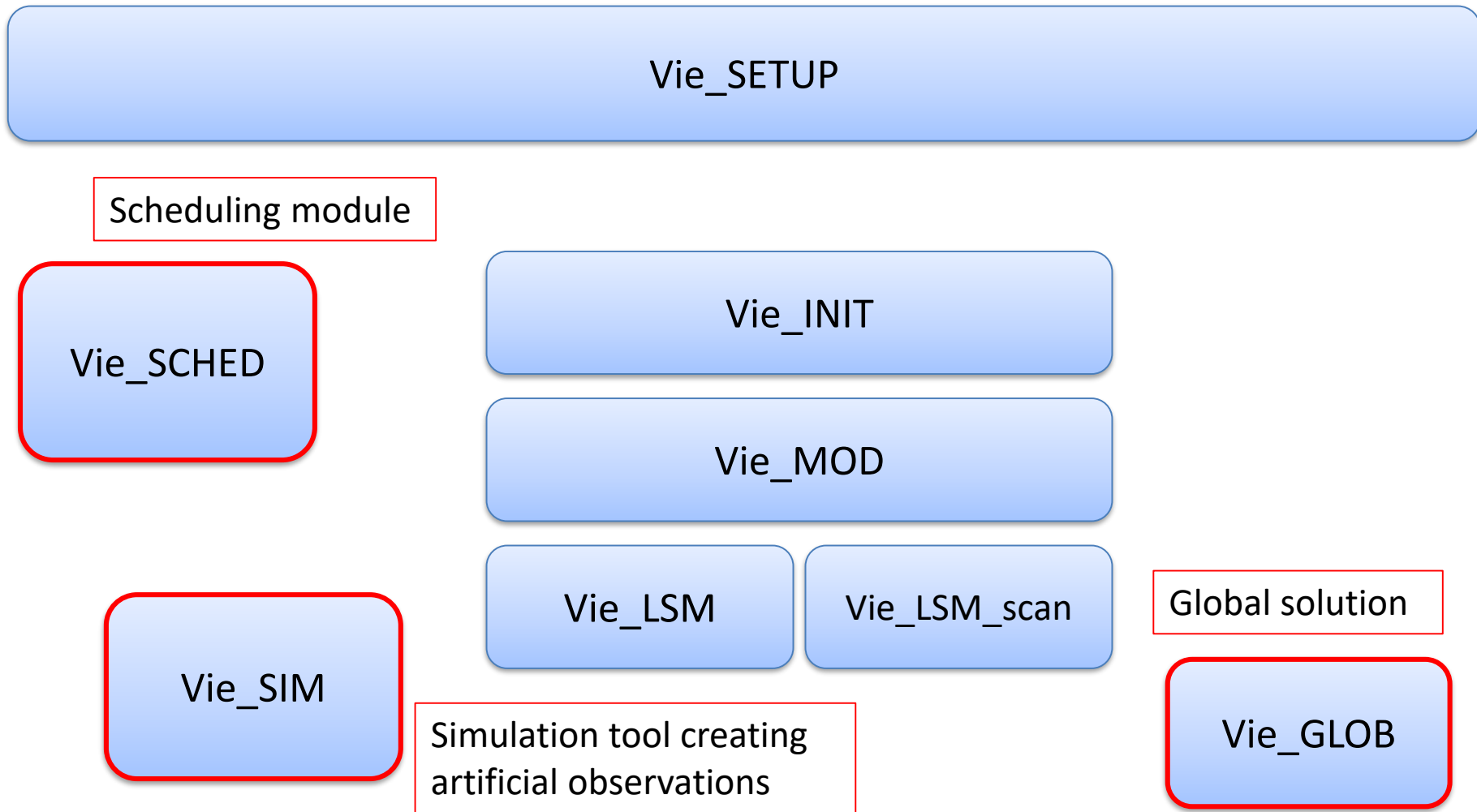
Vie_MOD - calculates the theoretical time delay and builds up the partial derivatives

Vie_LSM – estimates the unknown parameters with the Least Squares Method

Vie_LSM_scan – similar to Vie_LSM but uses a scan-wise update of the A matrix
(useful for large sessions)

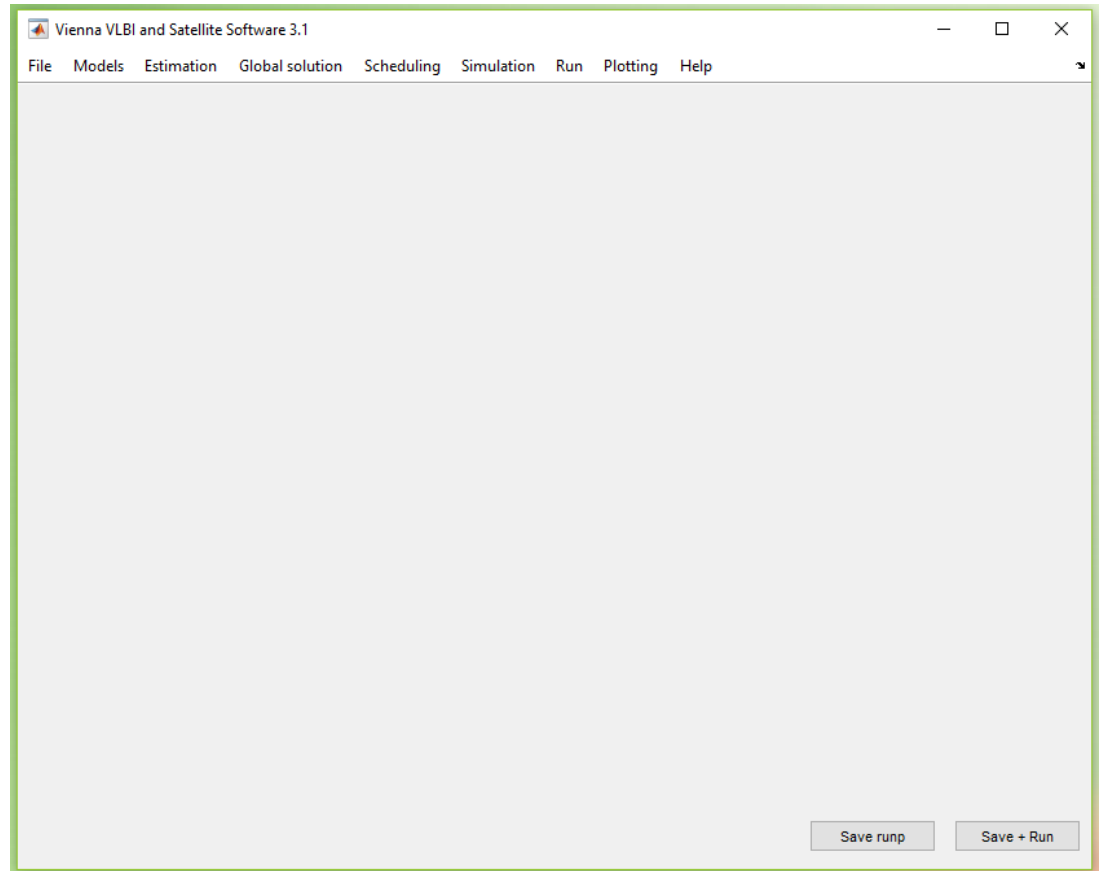


Modules of VieVS



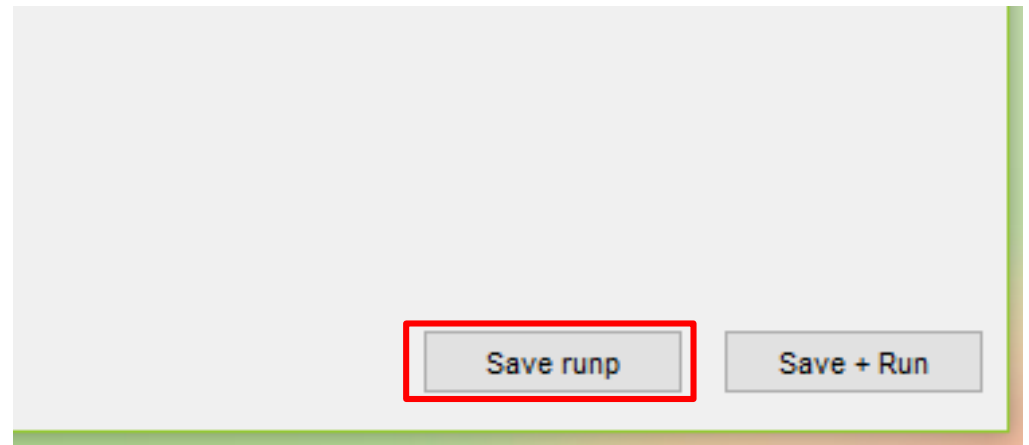
How to start VieVS

- Start MATLAB
- Change directory to **VieVS/WORK/**
- Start VieVS with the command: *views*
- The VieVS GUI appears



Run VieVS in batch mode

- Run: *views('batch')*
- The processing starts directly, GUI is not displayed
- Requires that all option files (process list, parameter files, runp) have already been created (e.g. from a previous run)



Time for a break

