



TECHNISCHE
UNIVERSITÄT
WIEN
Vienna University of Technology



Automated VLBI data analysis with VieVS


Tobias Nilsson

GFZ German Research Centre for Geosciences
Potsdam, Germany

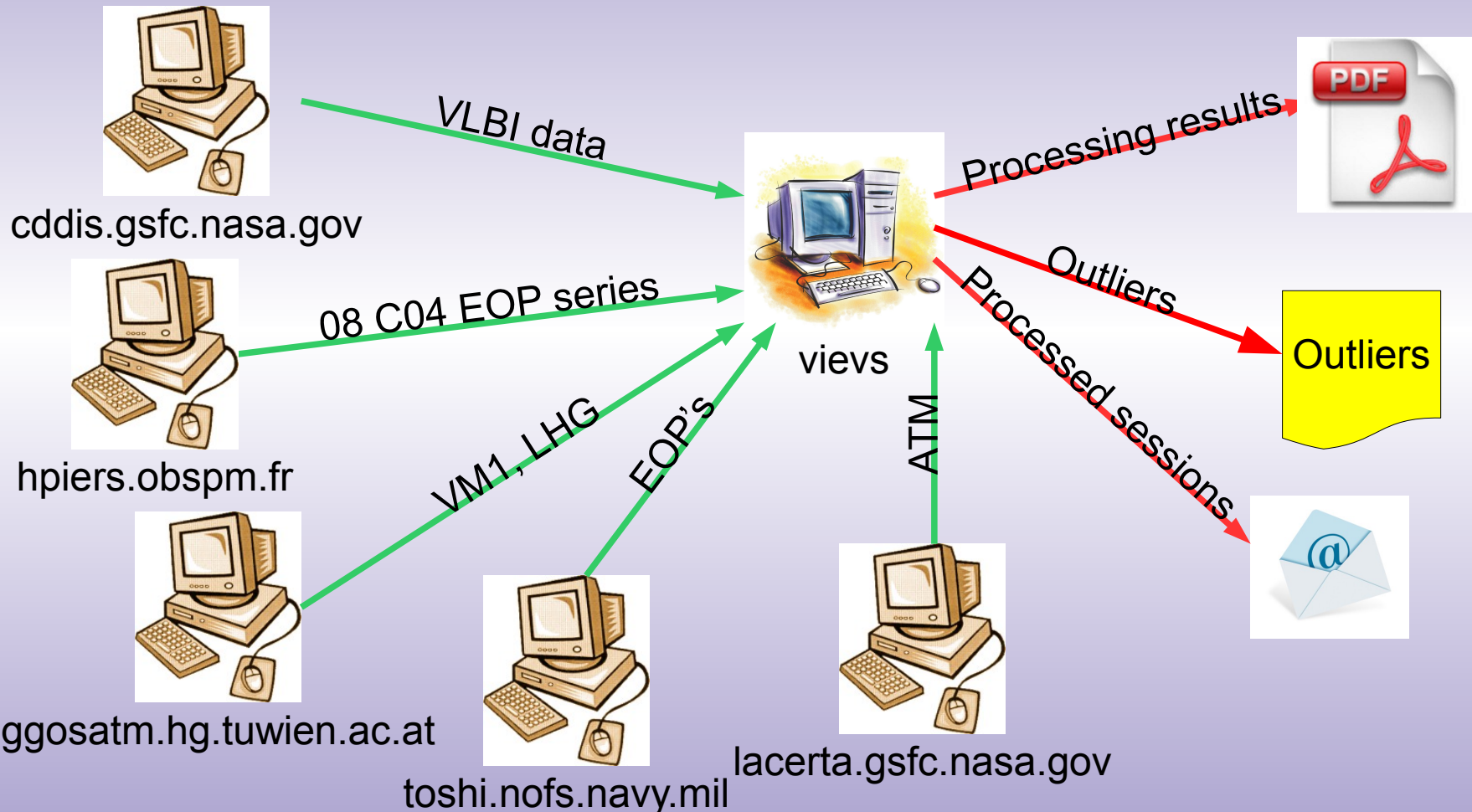
VieVS User Workshop
9 – 10 September, 2013
Vienna



Automated processing

-  For operational analysis (and in general) it is important that much of the VLBI analysis can be automated
- New sessions automatically downloaded when available
 - A priori files (EOP, mapping functions, etc.) kept up-to-date
 - A first analysis can be made automatically of new sessions
 - Provide outlier files
 - Results helps analyst identify problems, e.g. clock breaks
 - Ideally, it would be nice if problems could be automatically detected and fixed



Automated download at TU Vienna






How to do the download

- ❑ By Matlabs ftp command
 - Only possible to download from ftp servers
 - Not working properly in older Matlab versions
- ❑ Outside Matlab, e.g. by a Linux shell script
 - Many possibilities, e.g. using commands like *wget*, *rsync*, *scp*, etc.
 - Operating system dependent



What needs to be done, step by step

-  Check for new files, and download these
 - From an IVS server via ftp (e.g. *cddis.gsfc.nasa.gov*)
-  Update the EOP files
 - The C04 series, e.g. from *hpiers.obspm.fr*
 - The USNO finals, e.g. from *maia.usno.navy.mil*
 - The files needs to be converte to the correct format, i.e. by adding a % sign to the header of the C04 file



What needs to be done, step by step

-  Check for new files, and download these
 - From an IVS server via ftp (e.g. *cddis.gsfc.nasa.gov*)
-  Update the EOP files
 - The C04 series, e.g. from *hpiers.obspm.fr*
 - The USNO finals, e.g. from *maia.usno.navy.mil*
 - The files needs to be converte to the correct format, i.e. by adding a % sign to the header of the C04 file
-  Vienna mapping functions
 - From *ggosatm.hg.tuwien.ac.at*

What needs to be done, step by step (II)

-  Update the atmospheric loading files
 - *lacerta.gsfc.nasa.gov* (GSFC)
 - *ggosatm.hg.tuwien.ac.at* (VIENNA)
 - Files need to be converted to Matlab mat-files
-  All above files are also available (in correct format) on the VieVS server with some delay. Can be downloaded from there with sftp

What needs to be done, step by step (II)

-  Update the atmospheric loading files
 - *lacerta.gsfc.nasa.gov* (GSFC)
 - *ggosatm.hg.tuwien.ac.at* (VIENNA)
 - Files need to be converted to Matlab mat-files
-  All above files are also available (in correct format) on the VieVS server with some delay. Can be downloaded from there with sftp

What needs to be done, step by step (III)



Analyse the new sessions

- Start Matlab
- Create a process list with the new sessions and save it as **process_list.mat**
- For each session, create a parameter file and save it in **VieVS/DATA/LEVEL0/**
 - Simply copy an already prepared file
- Prepare the **runp.mat** file
- Run VieVS in batch mode
 - `views('batch')`
- Ev. use a some script to create e.g. an analysis report

Example: bash script for automated analysis


```
#!/bin/bash


KEY=/home/kg/nilsson/.ssh/id_rsa
cd /dsk/vbi1/vievs/

rsync -av -e "ssh -i $KEY" users@vievs.hg.tuwien.ac.at:VieVS/DATA/NGS/ DATA/NGS/
    | grep '.../.....X_N...' > WORK/newfile.txt # update NGS archive
rsync -av -e "ssh -i $KEY" users@vievs.hg.tuwien.ac.at:VieVS/ATM/GSFC/ ATM/GSFC/ # ATM . bading
rsync -av -e "ssh -i $KEY" users@vievs.hg.tuwien.ac.at:VieVS/VM1/*m at VM1/ # VMF1
rsync -av -e "ssh -i $KEY" users@vievs.hg.tuwien.ac.at:VieVS/EOP/ EOP/ # a priori EOP

cd WORK
# Run Matlab
matlab << EOF
    bad PARAMETERS/my_parameters.m at %bad desired parameter file
    F=importdata('newfile.txt'); % bad list of new sessions
    for a=1:length(F)
        process_list(a,:)=F{a}; % set up process list
        save(['./DATA/LEVEL0/' F{a}(6:end) '_parameter'],parameter); % save parameter file for the session
    end
    save process_list process_list
    copyfile('runp0.m at','runp.m at') % use the desired runp
    vievs('batch') % run VieVS in batch mode
EOF
```

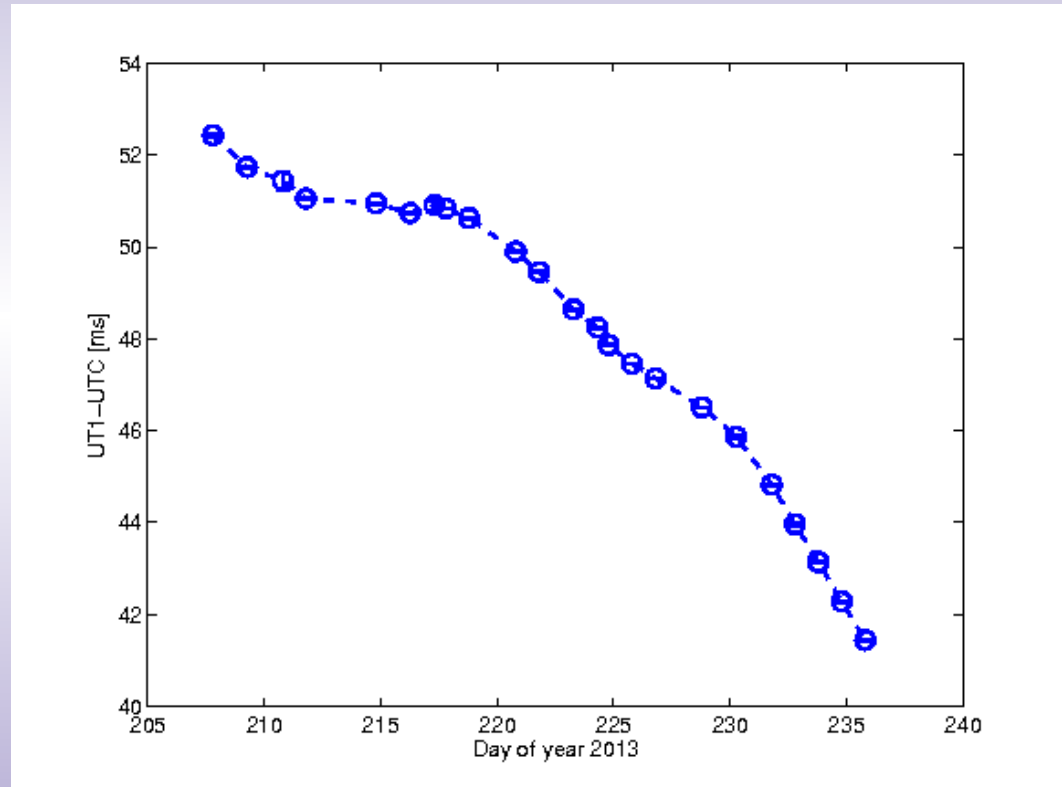
Example: DUT1 from Intensives

 Plot for the last 30 days

 Created by the
automated analysis
at TU Vienna

 Available at:

<http://views.geo.tuwien.ac.at>



Summary

- The Automated download of NGS-files etc. keeps the local inventory up to date
- Outlier files automatically created
- The results of the automatic processing helps detecting which sessions have problems
 - Future plans: develop tools for automated clock break detection etc.
- Provides rapid results