

Database Generation

VGOS Correlation Workshop

MIT Haystack Observatory

May 9, 2019

Outline



Steps for data export:

- Correlator Report
- vgosDbMake
- vgosDbCalc
- vgosDbProcLogs (station logs, hardware cable-cal)
- vgosDbProcLogs (proxy cable-cal)

Input needed



To prepare/generate a vgosDb file for use in geodetic analysis, we need the following:

- Mk4 type-2 fringe files from final pseudo-Stokes-I fringe fitting.
- Station logs.
- Proxy cable-cal (.pcmt) files for stations without hardware cable-cal.
- Correlator report.

Preliminary format¹ follows the same structure as SX correlator reports.

- Header
- Data summary
- Correlator notes
- Station notes
- Channel descriptions
- Clocks
- Q-code summary
- SNR ratios †
- Fourfit control file (Pseudo-Stokes-I)

† SNR ratios are currently still computed based on SX expected source strength, and as such are larger than 1.0 due to the larger bandwidth of the VGOS systems. Typically the SNR-ratios are in the range of 2-4.

¹This may be modified/restructured in future.

Creating the vgosDb export with vgosDbMake



Input:

- Correlator report.
- Experiment directory containing the session data.
This should consist of the folders containing an 'ovex' root file, and the Mk4 type-1,2,3 (corel,fringe,station-data) files for each scan.
- Note: Only the fringe files from the final-pass (pseudo Stokes-I) fringe fitting should be present.

For example, to export the data from experiment #3685, with correlator report vt9063.corr to the database 19MAR04VG, run:

```
vgosDbMake -d 19MAR04VG -t /<full-path>/vt9063.corr /<full-path>/3685
```

- This will create a database directory called 19MAR04VG containing a version-1 wrapper file in the default vgosDbMake output directory.

Insert the delay model with vgosDbCalc



- Use vgosDbCalc to add the delay model data to the vgosDb database.
- This operates on the version-1 wrapper.

Following the last example, we would run:

```
vgosDbCalc /<full-path-to-db>/19MAR04VG/19MAR04VG_V001_iMIT_kall.wrp
```

- This will add a version-2 wrapper when finished.

Append station log data



- Use `vgosDbProcLogs` to append the station field-system (FS) log data.
- Must retrieve FS logs and place them in the session log folder²
- This operates on the version-2 wrapper.

Following the last example, we would run:

```
vgosDbProcLogs -k log /<full-path-to-db>/19MAR04VG/19MAR04VG_V002_iMIT_kall.  
wrp
```

- This will add a version-3 wrapper file when finished.
- Stations with hardware cable-calibration messages in their FS logs will have cable-cal imported at this time.

²The exact location they should be placed in is configured during `vgosDbProcLogs` installation.

Append proxy cable-calibration data



- Use `vgosDbProcLogs` to append `.pcmt` file data.
- Place `.pcmt` files in session log folder.
- Must specify which stations will have proxy cable-cal data inserted.
Use the full site names, e.g. KOKEE12M, WETTZ13S, RAEGYEB, GGAO12M.
- This operates on the version-3 wrapper.

Following the last example, we would run:

```
vgosDbProcLogs -zc -s <station1> ... -s <stationN> -k pcmt \  
/<full-path-to-db>/19MAR04VG/19MAR04VG_V003_iMIT_kall.wrp
```

- This will add a version-4 wrapper file to the database.
- Database is now ready for further interactive editing and/or export to the analysis centers.