TOW2023 – Correlator Workshop

Location: MIT Haystack Observatory
Dates: May 4–5, 2023

Goals of the workshop:

- Review methods of VGOS correlation & post-processing
- Introduce new tools and updates since the last TOW
- Standardize VGOS post-processing across correlators
- Disseminate knowledge for detecting and handling problems
- Get feedback for improvements to scripts
- Give examples for basic data quality checks, at different stages of the processing
- Close the loop between stations, correlators, and geodetic analysts

Thursday, May 4, 2023:

1:00–1:10pm **Introduction and goals of the workshop (10 min) (Dirk)**

1:10–2:30pm **Review of the current VGOS processing pipeline (80 min) (John)**

- ❖ Summarize information from 2019 workshop
  - Correlation (difx)
  - Sampler delays
  - Manual pc_phases (ffres2pcp)
  - Y-X delays/offsets (fourphase)
  - Tests of the final control file (phase_resid, etc.)
  - Proxy cable cal (pcc_generate)

2:30–3:00pm **Break**

3:00–4:00pm **Updates to the pipeline (60 min) (Dan, Phillip)**

- ❖ New plotting tools (10 min) (Dan)
- ❖ IONEX predictions for dTEC (15 min) (Dan)
- ❖ Proxy cable cal (20 min) (Dan & Arthur)
  - select_bandpols.py
  - Comparison of CDMS/cable with proxy cc
  - Should the CDMS vs proxy cc choice be made by correlators or by analysts?
- ❖ VGOS DB report generation (report.py) and changes to vgosDB scripts (15 min) (Phillip)

4:00–5:00pm **Open Discussion (60 min)**

- What are the current major pain points of VGOS processing?
- What other tools do we need?
- Timeline for processing software versions

Friday, May 5, 2023:

9:00–10:30am **Methods and tools for debugging output (90 min) (Dan organizes slides)**

- Data properties to check at each stage of the processing
- Inspection of post-processing log files and plots
- Inspection of fourfit bands/pols for particular scans
- Using aedit plots and what to check before building the vgosDB
- How to get help

10:30–11:00am **Break**

11:00–12:00pm **Common problems and how to catch them (90 min) (Dan organizes slides)**

- Sampler delay change
- Polarization swap
- Reference station missing/unavailable
- Missing data or no satisfactory data
- Clock breaks, missing data (issues affecting proxy cable cal)
- Example problems from other correlators (USNO/Bonn/Vienna)

12:00–1:00pm **Lunch**

1:00–2:30pm **Overview of mixed-mode processing (90 min) (John, Tiege, USNO/Bonn)**

- Discussion of MHO software alpha release and basic procedure/example (20min, John)
- Experience from AuScope (15min, Tiege)
- Experience from USNO (10min, Sara)
- Experience from Bonn (10min, Simone/Yoon)
- Group discussion (35min)

2:30–3:00pm **Break**

3:00–4:30pm **PolConvert + ER2201 (90 min) (Dan, Frederic)**

- History of VGOS design & pseudo-Stokes vs full-Stokes analysis (20min, Dan)
- ER2201 results from Vienna (20min, Frederic)
- ER2201 results from Haystack (20min, Dan)
- Group discussion (30min)