

New Station Onboarding for Correlators

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At Haystack

- For a new station that we are onboarding it is a team effort to determine how well the station is performing. We analyze
 - Operational messages
 - Correlation results
 - Post-correlation results
 - VGOSDb results
 - Geodetic analysis
- Performance / data quality in each of the sections above
- Discuss at our regular geodesy meetings
 - Stations performance
 - Whether to include in the VGOSDb
- Just because one can correlate and create a VGOSDb for that station, does not mean it is ready to be part of the core VGOS network

Primary Goals of VGOS Onboarding New Stations

- Stations must demonstrate consistency for operational readiness and data quality
- Correlators are there to help bring a station to that state
 - Everyone understands the political and funding pressures organizations have
 - Always considered
- Note: there is a short time to get a station to correct problems, onboarding is that time
 - If moved into the core VGOS network and not it is not a good performing station, it can take a while to get the required updates

Operational Readiness

- All 4 VGOS bands in both polarizations
- Phase calibration signals are required for a signal chain
- Ready, start and stop messages
 - With appropriate information for their signal chain
- No equipment issues
 - Record all scans that they are scheduled to
- Transfer all scans to correlator
- Note: stations are usually integrated into core network after successfully completing two successive 24-hour observing sessions
 - Stability over the sessions
 - Good data quality
 - Deemed by correlation results

Data Quality

- At the correlator
 - The station has no missing scheduled scans
 - >90% of a scan is at the correlator
- After correlation, review the non-numerical codes for the new station
 - No G codes in calibrator scans
 - Long duration on bright source that every channel should have a signal
 - Of course, understanding RFI impact
 - Phase stability
 - Coherence: RMS phase scatter over scan duration < 1 radian
 - No H codes
 - No D codes

Summary

- Onboarding new stations can be demanding
- Provide feedback to the stations on performance along with
 - The IVS network coordinator
 - The IVS coordination center
 - Other correlators at the Correlation telecon
- We understand the time constraints on producing correlation results (and we are not poster children for this) but an option to consider if a new station is problematic
 - Correlate the core stations
 - Follow with the new station so you can spend time on it
- Provide feedback to the new station on what you found
 - The intention that they can correct the issue at hand

Thank you and questions