

AGENDA

0. Intro message (Axel Nothnagel)
 1. Hello from the analysis centres / software representatives
 - a. CCIVS - Intensives, source combination (Sabine Bachmann)
 2. Transition to VGOS
 3. Current procedures
 - a. Consistency in naming stations & sources (Karine Le Bail)
 - b. Generating analysis reports (Karen Bayer)
 - c. Correlation (Laura La Porte)
 4. ITRF2020 (Zuheir Altamimi)
 5. R1s with higher bit rate
 6. Sources
 - a. Geodetic sources (Karine Le Bail) – not discussed (out of time)
 - b. Source classification (Minghui Xu) - not discussed (out of time)
 7. Phase delay / phase cal
 - a. Phase cal Kokee (Axel Nothnagel) - not discussed (out of time)
 - b. Phase cal AuScope (Lucia McCallum) - not discussed (out of time)
 - c. James Anderson / Minghui Xu – only briefly discussed (out of time)
 8. Analysis guidelines
 9. USNO intensives
-

Minutes of the meeting

*** general comments ***

Attendees: about 40(+)

While I didn't get any topics until one week before the meeting, during the weekend (while I was travelling) as well as during the meeting week more and more topics came in. Overall, the planned 3 hours were too short. I suggest to extend the analysis workshop to at least 5 hours or a full day meeting (possibly in combination with a correlation workshop) in the future.

There was also a comment that the analysis workshop does not appear in the official program of the IVS GM. Apparently this caused some troubles to get travel approval for this last day. Possibly we should watch out for this in the future.

00. Lucia McCallum opens the meeting.
 - a. Introduction of the agenda
0. Axel addresses everybody with a few 'messages from the IVS Chair'
 - a. Acknowledgment of the fact that so many new software packages are implementing VLBI processing.

- b. At the directing board, they intend to discuss sessions starting at 0 UT in order to align with other geodetic techniques
- c. Polar motion should be reported in pwlo rather than offset+rate
- d. Improved feedback loop with stations needed (e.g. bad channel in O'Higgins that resulted in vertical station offset)
- e. Most analysis centres use ITRF2014, rather than possibly VTRF; or introduce NNR/NNT rates
- f. There are 29 (!) registered analysis centres. Though most of them start at the group delay level, which is not good.
- g. More cooperation/communication needed between analysts and fringe fitters/correlation people for investigating effect of station problems on analysis results; e.g. for investigating pcal effects
- h. Short baseline pcal problem needs to be addressed – local BL (Wettzell, Onsala, Hobart, HartRAO) are currently excluded (we are losing valuable data)
- i. Question about the cable delay: “how do we know the sign of the cable delay in the database?” Visible database of cable signs needed. ***
ACTION ITEM ***. Arthur Niell pointed out that the new VGOS cable system will be very different from the legacy system

1. Software reports

- Brief reports were given about NuSolve, Solve, VieVS, Where, C5++, DOGS-RI, NAPEOS, JPL (GipsyX), Geodyn:
 J. Böhm reported that work is being done to implement Fringe or PIMA into VieVS as well as improvements in scheduling tools. C5++ at Onsala is being extended to include VLBI, VLUN(ar), and VSAT(elite)modules, as well as a GNSS modules. A Kalman filter is being implemented.
- CCIVS report (Sabine Bachmann):
 - o source combination: Sabine asks the analysis centres to include all sources, also those with only 1-3 observations in one session. Need for adding number of observations in SINEX format.
 - o Combined Intensives: more input is needed; suggestion is to make a call to all analysis centres for submitting Intensives; for this test latency is not an issue; e.g. submit one month/year of Intensives. (There was a question about whether a priori polar motion components and station positions would have to be reported in the SINEX file.) *** **ACTION ITEM** ***

2. Transition to vgosDB

Dan MacMillan presented the slides prepared by John Gipson. A complete transition should be done by September 30. GSFC offers to work with correlators and analysis centres for a smooth transition. GSFC has tested vgosDB at all stages processing chain and will release the latest version of Calc/Solve with all the latest vgosDB modifications by June 30 after the IVS GM. On the question of multiple version of a database: optimally, only the correlator output should be unique, from there on each analysis centre should be able to produce its own results (and different levels of the database). USNO (David Hall) is capable of doing vgosDB, but prefers to use Mark3. Other groups are working towards full vgosDB implementation (GSI,

Shanghai, Hobart). **Issues concerning data submission, storage, and availability via CDDIS/websites needs to be resolved.**

3. Current procedures

a. Consistency in naming stations & sources (Karine LeBail)

Inconsistent source & station names cause troubles. Often this is due to schedules created with SCHED. Lucia will try to have a final check for the AUSTRAL sessions, if there are wrong source names.

Relevant tables such as source master names, source translation table, ns-codes (station naming table) etc should be put in a more prominent place. *** ACTION ITEM ***

Procedure for new stations, how they get their 8-letter name plus DOMES number should also be published somewhere.

In general, contact GSFC for new sources and stations.

b. Generating analysis reports (Karen Baver)

Everyone is encouraged to submit an analysis report. Only USNO and GSFC have been submitting reports. ACs responsible for each session type need to produce reports. There should ideally be more than one for each session. Some format issues will need to be resolved. Issue of Chinese colleagues currently not receiving IVS emails.

Information linked from master schedule is still incomplete. This is in the process of being fixed.

c. Correlation (Laura La Porta)

With more correlators coming up, more coordination amongst them is needed. Do we need a correlation coordinator? Or a dedicated meeting? At some time there used to be weekly telecons. Is there an ivs-correlation email distributor? At least, we should put together some information on 'best practice' (e.g. whether to apply pcal at Kokee, fixing the clock at the beginning or the middle of a session, deleting channel on single baselines, etc.). David Hall as correlator representative will take some action? *** ACTION ITEM *** He suggested that there be bi-monthly meetings.

Laura also discussed correlator clock issues specifically clock stability.

Changes in the correlation does influence the results. Also, analysts should have a look at the analysis reports, since there is information about bad baselines etc. There should be more coordination/communication between analysts and the correlators (and station personnel).

The IVS needs more correlators. Jive (Paco Colomer) would like to be included in the discussion. Interest in comparison between DiFX and SFXC. Quick discussion on previous comparisons.

It somehow became clear, that there are no clear guidelines for the correlation process, which is a bit dangerous for such an important step in the VLBI processing.

Suggestion: correlator comparison campaign.

4. ITRF2020 (Zuheir Altamimi)

- a. First call for participation will be issued by the end of 2018.
- b. Reminder to use site PSD for ITRF2014 positions.
- c. There was some discussion regarding atmospheric loading. The issue again was whether ACs should apply pressure loading and whether the same model should be applied by all ACs. This discussion had to be terminated without conclusion in the interest of time.
- d. Zuheir summarized software issues regarding the IVS contribution to ITRF2020. These were based on what John Gipson sent to him.
- e. Lucia presented the slides provided by John Gipson regarding software modifications that need to be made by at least June 30, 2019 to meet the ITRF2020 schedule. These modifications include: 1) galactic aberration, 2) antenna gravitational deformation (Axel Nothnagel will compile measured results from literature), 3) new HF-EOP model, 4) IERS linear mean pole model, 5) pressure loading option that includes the applied loading correction separately in Sinex files, and 6) including source position and nutation information in Sinex files.

The importance of additional antenna deformation measurements was stressed. Chris Jacobs suggested measuring one VLBA antenna, since a single model can then be transferred to all VLBA antennas. Though the question remains who will do this and whether the VLBA has a significant influence on the TRF.

- f. Zuheir is unhappy that we only had ~30 min to discuss the ITRF2020 since he especially came for this issue. There was not more time available.

5. R1s with higher bit rate

- a. Lucia quickly summarized the issue arising during last year's EVGA: namely, that R1s with higher bit rate do not show improved results compared to the ones with 1-bit sampling.
- b. Lucia further stated that she thinks this could be due to the fact that there are not significantly more observations in the 2-bit sessions than in the 1-bit sessions. There has been some discussion with Cynthia Thomas during the poster session, who agreed to look into it. In particular concerning minimal scan lengths and scheduling in general.
- c. James Anderson reported about a test that was done with Bonn revealing that the 2-bit sampling does not work properly at many stations. This can be seen in the bit statistics, revealing insufficient amplitude calibration so that 2-bit sampling was effectively 1-bit

sampling. Jamie McCallum was surprised, since the 2-bit sampling including improved results works fine for the AUSTRAL sessions. At the AuScope stations, there are a few scripts running during the observations, ensuring the 2-bit sampling works properly. He will distribute these scripts. *** ACTION ITEM ***

6. Sources

- a. Geodetic sources (Karine) – not discussed (out of time) – will have to be discussed via email.
- b. Source classification (Minghui) - not discussed (out of time)

7. Phase delay / phase cal

- a. Phase cal Kokee (Axel) - not discussed (out of time)
- b. Phase cal AuScope (Lucia) - not discussed (out of time)
- c. James / Minghui – only briefly discussed (out of time)

Minghui showed some slides with the closure phase observables and noted that there are often problems indicated by random variation or large offsets (jumps)

8. Analysis guidelines

It was agreed that we should have a location for 'best practice' analysis guidelines. Or even something like a 'cook book'. E.g. that a local baseline should be excluded. We need to find an appropriate place for this. Possibly even a Wiki where registered analysts can contribute? *** ACTION ITEM ***

9. USNO intensives

There is willingness from USNO (Chris Dieck) to distribute their internal Intensive sessions. There are open questions concerning data formats etc. It is suggested that Chris will contact the Coordinating Centre at GSFC to work out appropriate procedures.
