Minutes of the 2ⁿᵈ 2023 ILRS ASC meeting

Thursday, 26.10.2023, online via Zoom, 1 to 4 PM (UTC)

0) Open AIs from last meeting

# AI	NEW ACTIONS — Description	AC/person	
1_apr2023	Large scatter of LOD w.r.t. USNO	GFZ	→ status?
2_apr2023	LARES-2 target signature model	José Rodriguez	→ done; cf. 2)
3_apr2023	Publication on ILRS contribution to ITRF2020	Erricos Pavlis	→ status?
4_apr2023	LARES-PP submission folder and SINEX NEQ example	Mathis Bloßfeld	→ (partly) done
5_apr2023	New strategy for the processing of arcs before 1993	Cinzia Luceri, Mathis Bloßfeld	→ not yet done
6_apr2023	Differences in the WRMS time series between the CCs for BKG, DGFI and GFZ	ASI/JCET/DGFI	→ not yet done

# AI	OLD OPEN ACTIONS — Description	AC	
1_nov2022	Daily&Weekly products from 07-08/2022 to be investigated (3D wrms too high)	DGFI/BKG/GFZ	→ not yet done
4_nov2022	daily&weekly Scale from 09/2022 to be investigated	NGSF	→ status?
6_nov2022	Implement v180 daily operational products	BKG/ESA/GFZ/JCET	→ done
7_nov2022	Implement v80 weekly operational products	BKG/ESA/GFZ/JCET	→ done
8_nov2022	Implement v280 weekly operational products then switch-off v230 (date TBD)!	BKG/DGFI/ESA/GFZ/JCET	→ (partly) done
9_nov2022	Complete Re-Analysis 1993-2022 (SLRF2020, new DHF & IERSEOPC04 20), v85 series	ALL ACs	→ ongoing

Updates on AIs:

1_apr2023: no news from GFZ.

3_apr2023: E. Pavlis will work on this the next weeks; he will provide a draft version of the manuscript to the ASC members.

5_apr2023, **6_apr2023**, **1_now2022**: no news.

4_nov_2022, **9_nov2022**: ongoing.

1) Short reports of ACs/CCs on the status of their new operational products (v180,v80,v280)

Each AC/CC provided a brief overview of the most recent activities. For details, please see the respective slides!

Highlights:

ASI AC/CC report

- DGFI transformation WRMS based on ILRS core sites significantly higher compared to other ACs; after discussion, M. Bloßfeld suggested to review weighting model of observations/stations and satellites in the analysis (**new AI for M. Bloßfeld**); BKG and GFZ transformation WRMS based on all sites also higher compared to other ACs.
- Sometimes dangerous drops in data availability (e.g., Oct 2022 and April 2023).

- Scale issue of BKG and ESA scale parameters in daily solution in October/November 2022.
- Scale time series of NSGF in weekly solutions show spurious signals since Oct. 2020 (until now!).
- Still large scatter of GFZ LOD compared to other ACs (cf. AI **1_apr2023**).
- Etalon orbits of DGI-TUM noisier compared to other ACs (cf. AI **1_oct2023**).
- Operational update of DHF based on weekly combined v230 solutions (SSEM-X project).
- Comparison of current and future operational products show that (i) WRMS problems of DGFI are still visible and (ii) NSGF shows significantly larger difference of LA-1/2 orbits w.r.t. other ACs.

BKG AC report

- Switch to new Bernese version ongoing.
- New operational products not yet completely online.

CNES AC report

- Several s/w and hardware updates finished.
- Ready for ASC benchmark tests (**new AI for ASI CC**).

DGFI AC report

- Implementation of all most recent ITRS realizations finished (and tested).
- New handling of ocean tides implemented in s/w.
- All new operational products already running.

ESA AC report

- Switch to new ITRF2020 (SLRF2020?) successful.
- All new operational products already running.

GFZ AC report

- M. Vei reported that all new operational products will be provided in time (but without guarantee).

GRGS AC report

- No report given.

JCET AC/CC report

- F. Lemoine will take over from E. Pavlis from 2023-11-01. K. Evans and M. Kuzmicz-Cieslak will continue working at JCET AC/CC.
- The ILRSB combination does not show the increased WRMS values for the DGFI solution (cf. AI **6_apr2023**).
- E. Pavlis is still working on the ITRF2020 paper; updates will follow soon.

NSGF AC report

- All new operational products already running.
- NSGF is investigating the range-dependent Stanford counter systematics. It is planned that G. Appleby provides a table of corrections to be shared with all other ACs. This effect is correlated with the RBs reported in the DHF which means an update of the DHF is needed after the corrections are applied to the observations.

Important for all ACs: the operational series v170, v70 and v230 will be discontinued at the end of the year, i.e. at the end of the first week in 2024 (new AI to all ACs)! The first SINEX files to be provided to EDC/CDDIS will be:

**v180: submitted on 8.1.2024 (arc from Mo. 1.1.24, 0h UTC – 8.1.24, 0h UTC)**

v80, v280, v320: submitted on 16.1.2024 (arc from So. 31.12.23, 0h UTC – 7.1.24, 0h UTC)

The submission of the orbit solutions will be done with the same latency.

2) ITRF2020 update

Z. Altamimi plans to frequently update the ITRF2020 on a yearly basis. The current plan is to update the ITRF2020 in the first half of 2024, meaning that the IAG Services should provide input to the IERS ITRS CCs until February 2024.

At the ASC meeting, the following strategy was discussed:
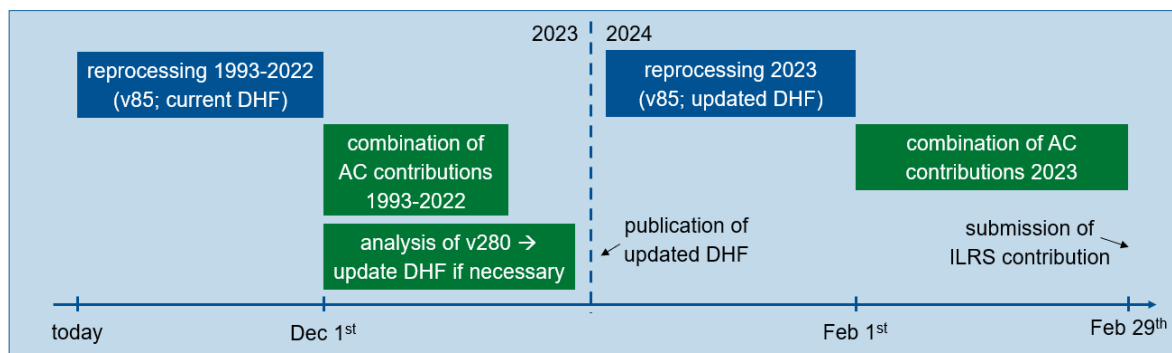
For the ILRS ASC, that means we have to provide three additional years of data (2021-2023). Since we also plan to do a complete reprocessing of the SLR data (1993-2022; v85) based on most recent standards and models, we can extend this reprocessing until the end of 2023 and provide the CCs this data set to be combined and send to the ITRS CCs. This means the extra workload for the ACs is limited! For the CCs, some additional workload is expected.

M. Bloßfeld recommend starting the reprocessing of 1993-2020 asap (cf. AI **9_nov2022**). Before the reprocessing of the most recent three years, ASI has to update the ILRS DHF until the end of 2023 based on the operational products v280. This might be done in December 2023 or January 2024. After the new DHF is available, all ACs can reprocess the last three years (January 2024). The settings to be used for the reprocessing should be the same as for the operational weekly v80 processing.

3) any other business

LARES-2: Jose presented some slides on the new TS models for LARES-2. As he pointed out, the new TS model provide only small corrections to the default value of 174mm. The new TS model will be made available by J. Rodriguez asap and should be used by the ACs for the v320 operational product.

LARES-PP (gravity field estimates): M. Bloßfeld apologized that he was not able to provide the ASC some information on this issue before the meeting! Right before the meeting, an email containing a SINEX file compiled at DGFI-TUM which includes station coordinates, ERP and Stokes coefficients of d/o 2 based on the observations of 10 spherical satellites (inofficial DGFI-TUM product label v00!) was distributed.

For the PP, one should include Stokes coefficients up to d/o 6 into the SINEX files based on LA-1/-2, ET-1/-2 and LARES only. Regarding this topic, please take also D. Thallers email from July 24th into account, where she highlighted that the SINEX description document well describe the handling of gravity estimates within the format;-) She also provided an example SINEX file with Stokes coefficients up to d/o 90.

ILRS ASC analysis document website: during the last ASC meeting in Vienna, the ASC agreed that it might be worthwhile to have a website easy to maintain which includes all the analysis information an AC needs (settings, standards, conventions, product label descriptions, etc.). DGFI-TUM installed sth. like this at EDC and at least one person of each AC should register at EDC to get internal access to this page and a restricted-access page (which contains information on the hidden folders at EDC).

New ACs: Up to now, E. Pavlis was unfortunately not yet able to investigate the new AC contributions. Since he will retire very soon the ASC has to organize the validation of their contribution by the ASI CC and M. Bloßfeld (cf. AI **2_oct2023**). E. Pavlis generally explained the process of the benchmark tests:

a) GRGS uploaded so far from 2021 onwards the operational v70 and v170 solutions. A. Basoni (ASI CC) might check some of their SINEX files if the format is OK. Afterwards, ASI requests 1-2 months of daily and weekly v180 and v80 solutions from them and ASI should try a combination with them… both ACs should make sure that their SINEX file COMMENT block contains a detailed description of their processing strategy including settings and standards used as precise as possible. In addition, the SP3c files for LA-1/2and ET-1/2 should be provided together with the weekly solution.

b) Is it correct that CNES have not yet submitted any files? This means they might directly provide one v180 SINEX test file to ASI CC for format checking... after approval, they should also submit 1-2 months of v180 and v80 solutions.

c) After the benchmark is passed, both ACs should provide the v180 and v80 on a solid operational basis and work on providing the v280 and v320 (including LARES-2) on an operational basis as well as providing the v85 reprocessing solutions afterwards. M. Bloßfeld suggests not to include them in the contribution to the ITRF2020 update since the time is too limited to do everything now (in the next 4 months). Anyway, for future ITRF updates and ILRS pilot projects, these ACs will provide a valuable extension to our ASC products.

Update of DSC files

Every AC should update their respective DSC files stored at CDDIS. All DSC files are very old but are mandatory by the ILRS (https://cddis.nasa.gov/archive/slr/products/ac/). This issue will be addressed by M. Bloßfeld in the next ASC meeting (**new AI for M. Bloßfeld**). E. Pavlis mentioned that any updates to the ILRS websites require to contact Claudia Carabajal and Justine Wu.

NEW ACTIONS		
# AI	**Description**	**AC/person**
1_oct2023	Review of weighting model of observations/stations/satellites in the analysis	**M. Bloßfeld**
2_oct2023	Benchmark tests of CNES AC	**ASI CC**
3_oct2023	Update DSC files at ILRS website	**M. Bloßfeld**
4_oct2023	Discontinuation of v170, v70 and v230 products and operational submission of v180, v80, v280 and v320 products	**All ACs**

OLD OPEN ACTIONS		
# AI	**Description**	**AC**
1_apr2023	Large scatter of LOD w.r.t. USNO	**GFZ**
3_apr2023	Publication on ILRS contribution to ITRF2020	**Erricos Pavlis**
5_apr2023	New strategy for the processing of arcs before 1993	**Cinzia Luceri, Mathis Bloßfeld**
6_apr2023	Differences in the WRMS time series between the CCs for BKG, DGFI and GFZ	**ASI/JCET/DGFI**
1_nov2022	Daily&Weekly products from 07-08/2022 to be investigated (3D wrms too high)	**DGFI/BKG/GFZ**
4_nov2022	daily&weekly Scale from 09/2022 to be investigated	**NGSF**
9_nov2022	Complete Re-Analysis 1993-2022 (SLRF2020, new DHF & IERSEOPC04 20), v85 series	**ALL ACs**