

IDS Recommendations and suggestions for ITRF 2020 reprocessing

Orbits and force modeling

- Quaternions (strongly recommended for Jasons, and if possible, for Cryosat-2 and Sentinels if available),
- Introduce precise SPOT-5 solar panel angle values,
- Use last version of macromodel from IDS documentation (<ftp://ftp.ids-doris.org/pub/ids/satellites/DORISSatelliteModels.pdf>) or/and own improvements
- Adjust Cr/arc determined from POD with separate arc empirical accelerations on TOPEX, and Jason satellites,
- For sun-synchronous, polar-orbiting satellites: adjust mean. Cr over entire time series (suggestion),
- Apply more complex Earth radiation modeling than Knocke (e.g. from CERES) (suggestion),
- New mean pole model (secular model),
- Up to date TVG (e.g. last EIGEN proposed by Jean Michel Lemoine). Be careful about consistency with new mean pole model,
- Desai & Sibois HF (diurnal-subdiurnal) tidal EOP model recommended by IERS
- Ocean tides model (e.g. FES2014b, be careful to use the version with all recent corrections),
- De-aliasing model must be applied since gravity models were determined using this model. It can be CNES-provided or GFZ-RL06 (provided for GRACE Follow-On project). Air Tides need to be separately applied e.g. as described by Dobsław et al. (2017), in the case of GFZ RL06.

Data using, editing/weighting

- Do not use validity indicators from Doppler observation files (Doris2.2 format),
- ACs have to do their own preprocessing,
- Use elevation dependent downweighting, no strong recommendations of which applied function to be used by ACs (CNES weighting function suggested),
- Reasonable elevation cut off (7-10 deg),
- One RINEX/Doppler data format per mission,
- Adjust tropospheric gradients if possible.

South Atlantic Anomaly

The following mix of strategies is proposed:

- Corrected data for Jason-1 and SPOT-5,
- Data corrective model from A. Belli for Jason-2 can be used, if available (Free decision for ACs),
- Suggestion of removing or downweighting of data from SAA stations (Free decision for ACs)
- Using SAA data from the most affected satellites only for POD (recommendation for satellites and set of stations TBD),
- Linear or quadratic frequency adjustment per pass – ACs can apply if they can demonstrate that it is beneficial.

Others

- Alcatel, STAREC-B/C + associated phase laws

IDS reprocessing schedule

- 2020, March 30 th : AC delivery of 1993.0 2002.3 (Until start of Envisat First DORIS 2G receiver)
- 2020, June 30 th : AC delivery of 2002.3 2011.8 (Until start of HY-2A).
- 2020, Sept. 30 th : AC delivery of 2011.8 2020.0.
- 2021, Feb. 10 th : First delivery of the IDS combined solution to the IERS (1993.0 2020.0).
- 2021, Feb. 14th: AC delivery of 2020.
- 2021, Mar. 15 th : Complete delivery to the IERS of the IDS combined solution (1993.0-2021.0)

SINEX Content

In order to facilitate the preprocessing of your weekly SINEX files by the IDS CC, please:

1. Add the list of missions in the FILE/COMMENT block (ex: SATELLITE LIST : CRYOSAT2,HY2A,SARAL,JASON3,SENTINEL3A,SENTINEL3B).
2. Check the consistency of the station 4 characters, DOMES numbers, site names in your SITE/ID block with either the DORIS SINEX master file (<ftp://ftp.ids-doris.org/pub/ids/stations/ids.snx>) or the IGN file (ftp://itrf.ign.fr/incoming/codomes_doris.snx).
3. Check the consistency between the SINEX date, the time interval of the first line of the SINEX and the observation periods of all the stations in the SOLUTION/EPOCHS block.
4. If, as GOP, you deliver in your SINEX files different solutions for the SAA stations with a dedicated renaming, define the renaming convention in the FILE/COMMENT block.
5. Use 'D' (DORIS) for the observation code ('T'). The letter 'C' is only for a multi-technique solution, which is not our case.