OSTM/Jason-2 Project

Release Note
GDR-F Geophysical Data Record Release

Prepared by:
François Bignalet-Cazalet (CNES),
Nicolas Picot (CNES)
Shailen Desai (JPL)
Remko Scharoo (Eumetsat)
Eric Leuliette (NOAA)

May 28, 2025

OSTM/Jason-2 (July 2008 – October 2019) an altimetry mission, following-on TOPEX/Poseidon and Jason-1 and preceding Jason-3 and Sentinel-6-MF in the reference time series. It was conducted under a cooperation between the French Space Agency, "Centre National d'Etudes Spatiales" (CNES), the United States National Aeronautics and Space Administration (NASA), the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and the National Oceanic and Atmospheric Administration (NOAA).

This release includes the Geophysical Data Record (GDR) reprocessing at **GDR-F standard**. Products are available at this standard for the whole mission, from cycle 0 pass 61 (July, 4th 2008) to cycle 644 pass 165 (October, 1st 2019)

This dataset is released with DOI 10.24400/527896/a01-2025.005

Documents for these release can be found here :

- Release Note
- HandBook
- User Product Description
- Calval Report

The **GDR-F standard** is the latest standard applicable to **Jason-2 GDR products**. The modifications relative to the previous **GDR-D standard** are detailed below.

Access the data

The Jason-2 GDR-F dataset is available at AVISO as follows:

The Jason-2 GDR-F can be accessed on the AVISO web portal and through the CNES AVISO Data Archiving Center's catalog, accessible directly using AVISO credentials.

They can be accessed via FTP/SFTP and a THREDDS Data Server (TDS).

CNES AVISO FTP/SFTP (with AVISO credentials only):

- FTP access: ftp-access.aviso.altimetry.fr:21/
- SFTP access: sftp://ftp-access.aviso.altimetry.fr:2122/

FTP/SFTP Server Directory Main Tree

- /geophysical_data_record/jason-2/*gdr_f

GDR-F Changes Synthesis

The Jason-2 GDR-F standard, follows exactly the Jason-3 GDR-F standard. It includes many improvements compared with the previous GDR-D standard among which:

Geophysical corrections and models:

- Orbit model upgraded from POE-D to POE-F
- Mean Sea Surface upgraded to CNES_CLS_MSS_2015 and DTU_2018
- Ocean and Load Tides:
    - FES tide model upgraded to FES2014b
    - GOT tide model upgraded to GOT4.10c
- Mean Dynamic Topography upgraded to CNES_CLS_MDT_2018
- Geoid upgraded to EGM 2008
- Atmosphere: Model wet tropospheric correction, dry tropospheric correction and atmospheric attenuation correction based on [Lilibridge 2014] & 3D ECMWF analyzed data
- Pole Tide correction upgraded to [Desai 2015] with 2017 IERS linear mean pole
- Add 3-Parameter SSB solutions (SWH, wind and swell) [Tran 2018]
- Add one smoothed ionospheric bifrequency correction
- Add one internal tide solution (Zaron HRET 8.1 model including 4 internal waves = M2, K1, O1,S2)
- Add one Global Slope Correction solution [Sandwell & Smith 2013]
- Add one sst variable coming from NOAA's OISST
- Add one ice concentration variable coming from Eumetsat's OSISAF
- Add swell period & direction coming from MFWAM
- Use the bathymetry SAD file "ACE-2"
- Add the distance to the coast computed with GSHHG 2.3.7 shoreline dataset
- Surface Type: GDR-T 4-states mask upgraded to use 7-states mask

Processing updates :

- Data referenced wrt WGS84
- ssha formula includes substraction of Internal Tides & Non-equilibrium Ocean Tides
- Use of AMR calibration that references the absolute calibration that we expect to receive from Sentinel-6
- Retrackers
    - Add the Adaptive retracker estimates
    - The ice-2 retracking is modified to account for the antenna gain effect.
    - Add TFMRA retracking (=ice3), required by sea-ice users Based on [Davis 1997] and [Helm 2014]

- Corrections
    - Existing Doppler correction applied to all ranges (previously applied only on ocean retracking estimates)
    - Change the Low Pass Filter (CAL2) normalization algorithm
    - waveforms in sensor products are now corrected by the Low Pass Filter (CAL2)
    - Apply the 18 cms bias on all retracking estimates (previously done only for ocean retracking)
    - Upgrades of instrumental Look Up Tables (retracking accounts for the actual altimeter antenna aperture)
- Add a waveform classification based on neural network
- Adjustment on MLE4 Wind-Speed Sig0 bias.
- Correction of an anomaly in the S1S2 pressure wave correction (was inoperative for 3D dry tropo, resulting to a +/2mm error in 3D dry tropo correction)
- Rain & Ice
    - Add a Land Ice flag : Continental ice 14-states flag (type of the ice-sheet snow faces)
    - Add a Sea-Ice flag : Ocean/Sea-ice flag 6-states (flag indicating open water or sea ice pixel type) based on normalized MLE3 Sigma0 and brightness temperatures.
    - Add 6-states rain flag

Format Changes

- **Global attribute source:** Processing Baseline F v1.04
- **Filename change:** D→F

    <v> updates from d to f in the name format:
    SWOT_<O/I/G>P<N/R/S>_2P<v><S/P><ccc>_<ppp>_<yyyymmdd_hhnnss>_<yyymmdd_hhnnss>.nc

- A **large renaming of NetCDF variables**, use of NetCDF groups (reconciliation with S6 format) . **see User Product Description** for details.
- NetCDF-4/HDF5 classic model format with native compression
- Add the HPR (tracker range rate counter) range values in the S-IGDRs products
- The retracker MQE format changed into “integer” in order to allow a better precision

The assessment of the GDR-F changes is presented in the Jason-2 GDR-F reprocessing CalVal report.

Coming GDR-G

The following standard (GDR-G) is already used for Jason-3 on-flow data. Global reprocessing at GDR-G standard for Jason-3 and Jason-2 is planned for 2026

The GDR-G evolutions with respect to GDR-F are detailed in the Jason-3 GDR-G Change Log.