# Sentinel-3 Product Notice – STM L2 Marine

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<th>Mission</th>
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<tr>
<td>Issue Date</td>
<td>6 February 2019</td>
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<td>Version</td>
<td>v1I e-signed</td>
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<td>Preparation</td>
<td>This Product Notice was prepared by EUMETSAT with the support of the ESA and S3 Mission Performance Centre experts</td>
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## Summary

This document is the Product Notice for the public release of Sentinel-3A & 3BSurface Topography Mission (STM) Level-2 Near Real Time (NRT), Short Time Critical (STC) and Non-Time Critical (NTC) products generated at the Marine Centre, EUMETSAT.

This Product Notice describes the STM current status, processing baseline, product quality and limitations, and product availability status.
## Processing Information

### Processing Baseline

- **Processing Baseline (PB) (S3A/S3B):** 2.45
  - SRAL L1 IPF (SR-1): version 06.16
  - MWR L1 IPF (MW-1): version 06.09
  - SRAL/MWR L2 IPF (SM-2): version 06.15
  - The list of Static Auxiliary Data Files (ADFs) that are part of the Processing Baseline can be found at the end of this document.
  - Some static Auxiliary Data Files (ADFs), are instrument specific, and hence there are specific files for S3A and S3B. The processor version for S3A and S3B however, remains the same and unchanged.

### Description

#### L2 Marine Products Quality:

The quality of L2 WAT product for the 3 SRAL parameters (range, SWH, and wind speed) is within the mission requirements.

There are some known limitations that are described in the following sections.

The data are within requirements also in terms of completeness and timeliness.

The sea ice processing has been improved with PB 2.45, but is not yet fully optimised. Further improvements to the sea-ice ground processing are foreseen in the near future.

#### Status of the Processing Baselines

The collection of IPF version and static ADFs is known as the Processing Baseline (PB). For S3A and S3B the PB number is 2.45. Currently these numbers are internal to the PDGS; with only the IPF version and ADFs names/versions available to the end-users in the products.

The installation date of **PB 2.45** is **2019-02-14** for S3A and S3B. All data generated from that date onwards was produced with this new PB. The installation dates and contents of the previous PBs are also detailed in the following figure.

Details on how and where to obtain the data can be found in the section “Product Availability”.

<table>
<thead>
<tr>
<th>Installation Date</th>
<th>IPF</th>
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<td></td>
<td>MW-1</td>
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New in PB 2.45 w.r.t. to PB 2.33/1.13

- Improvement of sea-ice retrievals, including freeboard;
- Improved SWH, to better match with ECMWF’s model. This is due to an updated SR_2_LUTSAX ADF specific for S3;
- Finer distance to coast field, useful for coastal studies. The ADF SR_2_SHD_AX was updated.
- Other minor anomalies and run-time errors fixed (see below)

Previous PBs Change affecting the current available dataset

New in PB 1.13 (impacting S3B only) w.r.t. to PB 2.33

- Correction of issues noted during S3B commissioning:
  - Bias is sigma0 w.r.t. to S3A in Ku and C bands:
    - This generated incorrect wind speed retrieval and incorrect flagging of rain
  - Fine tuning of the MWR brightness temperatures in order to align it to S3A:
    - It was visible in the radiometer wet tropospheric correction as a few millimeters difference that has now been corrected for.

Note that the commissioning data is currently only available to the commissioning team and S3VT users, a future reprocessing is planned with a release of a full coherent dataset for S3B to all users.

New in PB 2.33 w.r.t. to PB 2.27 (used in “Spring 2018” reprocessing)

The L2 IPF updates are related to anomaly corrections and to some evolutions detailed below:

- Correction of a processing error that resulted in a 5 mm bias between the modelled dry tropospheric correction at zero-altitude (mod_dry_tropo_zero_altitude_01) and modelled dry tropospheric correction at the measurement altitude (mod_dry_tropo_meas_altitude_01)
- C Band Corrected Longitude (lon_cor_20_ku) and C Band Corrected Latitude (lat_cor_20_ku) are now defined everywhere as in Ku Band over Greenland and Antarctica surfaces. They are computed and filled with the uncorrected longitude and latitude over other surfaces.
- Several fixes for LRM mode (important during S3B commissioning) in the following variables: ssha_20_ku, elevation_ocog_20_ku, elevation_ice_sheet_20_ku, sea_ice_concentration_20_ku, snow_depth_20_ku, snow_density_20_ku. SAR mode data are not affected.
- Ascending Node Crossing (ANX) information in the manifests is more accurately computed.
- Run time anomalies have been fixed.

Recent evolutions of the Sentinel-3 ground segment

Some evolutions of the Sentinel-3 ground segment are not specifically linked to new versions of the processors and come from other components or data sources. The following evolutions are relevant to end users:

- Improved orbit quality in STC:
  Since 2018-05-28 the STC orbits have been generated by CNES/SALP using not just DORIS but also GNSS data. This allows for better orbit quality and less differences when comparing to the NTC orbits.
• **Updated standard for CNES orbits (POE-F):**
  Since cycle 38 of S3A (STC and NTC) the orbits solutions generated by CNES/SALP use the new standard POE-F.

• **Improved cut of the pole to pole pass (and pass numbering and ANX crossing time):**
  The information on when to cut to the pole to pole passes (STC and NTC) is derived from several system components that were fixed at different points in time. Since 2018-09-20 the situation was completely fixed for L1 and L2. The reprocessed dataset (up to 2018-01-20) is already correct.

• **Improved data quality at pass transition (STC and NTC):**
  The data present in L1/L2 passes had a degradation at pass transition, due to the fact that adjacent granules were not provided to the processor. This degradation has been corrected since 2018-11-27.

**Known product quality limitations**

The Sentinel-3 STM L2 products have some known processing limitations which are reported in the next pages as «Anomalies» or «Notices». Anomalies are related to issues on the processing baseline (e.g. bugs) whilst Notices are limitations which are planned to be improved in the medium to long term (e.g. algorithm evolution, calibration campaigns, etc.).

**Notices on the products**

• **Notice #1 – MWR calibration is not completed**
  MWR calibration is not completed, so the radiometer measurement values and derived quantities do not have an optimised performance.
  The MWR L1 brightness temperatures exhibit a difference of up to 1 K between ascending and descending tracks for the 23.8 GHz channel. Work is ongoing to understand the source of this difference.
  In the L2 products the radiometer wet tropospheric correction deduced from 5 parameters has not been calibrated yet and should not be used (rad_wet_tropo_cor_sst_gam_01_ku and rad_wet_tropo_cor_sst_gam_01_plrm_ku).
  The composite wet tropospheric correction has not been calibrated yet and should not be used (comp_wet_tropo_cor_01_ku and comp_wet_tropo_cor_01_plrm_ku).

• **Notice #2 - MWR parameters not computed due to MWR calibration over open ocean**
  During MWR calibrations over open ocean, the brightness temperatures for both channels are not computed and set to default values in the product.
  As a consequence, 1 Hz parameters derived from the MWR are set to default values, except for the atmospheric attenuation. This affects the wet tropospheric correction, water vapour content, and cloud liquid water content.
  **Corrected** since 01/03/2018 (sensing time), previous data processed may exhibit the issue.

• **Notice #3 - Mean values of Ku band and C band sigma0**
  The Ku-band sigma0 in all modes (LRM, PLRM and SAR) has been biased to be aligned with the mean value for Envisat (10.8 dB without the atmospheric attenuation).
  Since PB 2.24 (installation 2017-12-13) the sigma0 is corrected for attenuation. Data processed with older versions were **not** corrected for attenuation; just in the case of algorithms like wind speed retrieval, the attenuation was applied prior to the calculations.
The following systematic biases are applied in the processing. It is expected that in the future these static biases will be partially removed due to evolutions/corrections on the on-ground processing.

**For S3A**: A system bias of -18.96 dB was applied to SARM Ku-band and of -2 dB to the LRM and PLRM Ku band. Note that up to processing baseline PB 2.9 (including) this value was set to -25.65 dB.

Note also that the sigma0 derived from ice sheet retrackers exhibits a mean value close to 42 dB.

The C-band sigma0 in all modes (LRM and PLRM) has not been biased and exhibits a mean value around 11 dB which is lower by 4 dB compared to Jason-2.

**For S3B**: A system bias of -19.17 dB was applied to SARM Ku-band and of -2.21 dB to the LRM and PLRM Ku band. Prior to PB 1.13 (installation 2018-12-06) the bias were -18.96 dB and -2.0 dB respectively.

The C-band sigma0 is biased -0.39 dB. Prior to PB 1.13 (installation 2018-12-06) the bias was 0.0 dB.

- **Notice #4 - Noise on the dual frequency ionospheric correction**
  The higher noise of the C band range inherent to the PLRM processing contributes to a high noise in the dual frequency ionospheric correction.

- **Notice #5 – Sea State Bias (SSB) is still not optimized for Sentinel-3**
  The SSB correction has not been tuned for Sentinel-3A/B and contains Jason-2 SSB solution.

- **Notice #6 – Some geophysical flags have not been tuned for Sentinel-3**
  Some geophysical flags were derived from the Envisat mission and have not been tuned for Sentinel-3A. The rain flag is currently based on the Envisat flag and it has not been tuned for Sentinel-3A mission. The ocean/sea ice flag is currently based on the Envisat flag and it has not been tuned for Sentinel-3A mission.

- **Notice #7 - Numerical Overflow for the Waveform Peakiness Parameters**
  (“EUM/Sen3/NCR/3569”)
  The SAR Ku Waveform Peakiness field (peakiness_2_20_ku) is affected by numerical overflow (i.e. padded to _FillValue) when it takes values above 32.767. Same limitation is present in PLRM mode and C Band (peakiness_1_20_plrm_ku, peakiness_1_20_c, peakiness_2_20_c).
  **Corrected** since PB 2.27, previous data processed may exhibit the issue.

- **Notice #8 - Numerical Overflow for the Waveform MQE Parameter**
  (“EUM/Sen3/NCR/3570”)
  The SAR Waveform MQE field (mqe_ocean_20_ku) is affected by numerical overflow (i.e. padded to _FillValue) when it takes values above 3.2767. Same limitation is present in PLRM mode and C Band (mqe_ocean_plrm_ku and mqe_ocean_20_c).
  **Corrected** since PB 2.27, previous data processed may exhibit the issue.

- **Notice #9 – Platform angles invalid during manoeuvres**
  (“EUM/Sen3/NCR/2720”)
  The satellite platform angles were not large enough to accommodate the value of the angles during a manoeuvre. **Corrected** as part of PB 2.24. Previous data processed may exhibit default values for the angles, depending on the manoeuvre.
• **Notice #10 – CNES/CLS 15 MSS is set to default values in certain zones** (“EUM/Sen3/NCR/3484”)  
The MSS CNES-CLS15 is set to the default value over inland waters, the Beaufort Sea, certain Antarctica regions, and over land. This means it cannot be used to provide a global SSHA. In case the user wants to use this MSS instead of the default DTU15, they should be aware of this.

• **Notice #11 – Shortcoming in SWH measurement at low wave height**  
At low wave heights, below 1.5 meter, a significant number (around 4 % of the cases) of SAR 20Hz SWH measurements (swh_ocean_20_ku) are set to a value of 0. This is observed for the case of open ocean and without sea ice. This appears to be related to the fitting mechanism used, and a solution is being investigated. During the averaging to 1 Hz measurements, the 20 Hz values set to 0 are considered valid and included in the 1 Hz averaging, thus lowering the value of the averaged 1 Hz measurements at low wave height.  
A different averaging mechanism can be performed by an interested user starting from the 20Hz SWH, using the association indexes between 1 Hz and 20 Hz measurements and excluding the 20 Hz SWH measurements set to the boundary value of 0.

• **Notice #12 – OCOG retracker to be better tuned for C band**  
(“EUM/Sen3/NCR/3970”)  
The fields OCOG retracker range (range_ocog_20_c) and Sigma Nought in C Band (sig0_ocog_20_c) are set to _FillValue at a higher rate than expected over Open Ocean. Further parameterization of the OCOG retracker is needed and will be done in a future version of the IPF.  
**Corrected** since PB 2.45, previous data processed may exhibit the issue.

• **Notice #13 - Bad Handling of _FillValue for the field amplitude_ocean_20_plrm_ku**  
(“EUM/Sen3/NCR/3972”)  
The SRAL L2 field amplitude_ocean_20_plrm_ku (stored in the enhanced product) is affected by numerical overflow (i.e. padded to _FillValue) when it takes values above 2147.483647  
Affects: L2 SRAL NRT/STC/NTC Enhanced datasets.  
**Corrected** since PB 2.45, previous data processed may exhibit the issue.

• **Notice #14 – Bad handling of _FillValue for the field swh_ocean_20_plrm_ku**  
(“EUM/Sen3/NCR/3971”)  
The field swh_ocean_20_plrm_ku is is affected by numerical overflow (i.e. padded to _FillValue) when it takes values above 32.767

• **Notice #15 - Enlarged KREMS safe zone (Pacific Ocean)**  
(“EUM/Sen3/AR/5239”)  
Since 2019-01-17 the KREMS safe zone for both S3A and S3B has been enlarged to avoid any damaged to the MWR instrument, currently there is a radius of 300 km around this radar facility. In this safe zone the radiometer is disabled and thus there is no wet tropospheric correction available from the radiometer, causing the SSHA to be set to a default value. Users interested in having SSHA in this area are advised to recalculate SSHA with the modelled wet tropo correction (mod_wet_tropo_cor_zero_altitude_01) instead of the radiometer one (rad_wet_tropo_cor_01_ku). A decrease of the safe zone radius is foreseen in the following weeks.
Anomalies

- **Open Anomalies**

  The following anomalies are still open and will be resolved as soon as possible.

  - **Anomaly “EUM/Sen3/AR/5128” – SSHA PLRM computed using SAR SSB**
    When the SSHA PLRM (ssha_01_plrm_ku) is computed, the SSB correction is ssb_01_ku instead of ssb_01_plrm_ku, meaning that it is computed with SAR SWH instead of PLRM SWH.
    **Affects:** L2 SRAL NRT/STC/NTC

  - **Anomaly “EUM/Sen3/NCR/4085” – Incorrect Values of Sea Ice Concentration at transition between land-sea ice**
    At transition between land-sea ice, the values of sea ice concentration field (sea_ice_concentration_20_ku) drop to values around zero (i.e. water without sea ice) whereas it is expected instead to signal the presence of floating sea ice (values around 80-100 %).
    **Affects:** L2 SRAL NRT/STC/NTC

  - **Anomalies “EUM/Sen3/AR/5226” and “EUM/Sen3/NCR/5102” – Pass number anomalies**
    On same cases the same pass number is given to different products.
    The pass number 771 is also attribute in error to a product, limit is 770.
    **Affects:** L2 SRAL STC/NTC

- **Limited product degradation**

  The following anomalies are product degradations clearly delimited in time, it is intended that these will be solved in the next reprocessing.

  - **Anomaly “EUM/Sen3/NCR/2893” – Degradation of model dry and wet tropospheric correction during the day 2017-02-08**
    Due to unavailability of a meteorological correction file (AX___MA2_AX) during the day 2017-02-08, the model dry (mod_dry_tropo_cor) and wet tropospheric correction (mod_dry_tropo_cor) are degraded in that day. Since the dry tropospheric correction is directly used to compute sea level anomaly, the measurement of the sea level anomaly (ssha) is slightly degraded on 2017-02-08. It affected the STC and NTC data with the sensing of 2017-02-08, including reprocessed data.
    **Affects:** L2 SRAL NRT/STC/NTC before 18/12/2017 (fixed with update of new zone database file)

  - **Anomaly “EUM/Sen3/NCR/3403” – Issue in range positioning the SAR waveform at Greenwich Meridian**
    A few 20-Hz geophysical measurements (range, wave height and sigma nought) are systematically padded to _FillValue at Greenwich meridian cross in SAR and PLRM mode. This issue is related to an issue in the OLC on board of S3A. This affects some 20Hz measurements crossing the meridian, but it is not enough to invalidate the 1-Hz data. It affects about 21 seconds of data per cycle.
    **Affects:** L2 SRAL NRT/STC/NTC before 18/12/2017 (fixed)

  - **Anomalies affecting the early mission data for S3A acquired in LRM, available as part of the “Spring Reprocessing 2018” produced with IPF SM-2 version 06.12.**
    - **“EUM/Sen3/NCR/4164” - S3A STM L2 Water:** the field elevation_ocog_20_ku is always set to _FillValue in LRM mode;
• Anomaly “EUM/Sen3/AR/4993” - S3B STC/NTC passes are not properly cut during drift
  During the drift phase, the pass duration in STC and NTC was not properly calculated and this led to slight
  offset in start/stop times of the passes.
  The offset value varies during the drift, up to a 5 seconds difference with the real pole crossing.
  This anomaly will be corrected in a future reprocessing.

• Closed Anomalies
  The following anomalies were closed by the latest processing baselines but are still present in part of the
  mission dataset available to the users.
  ➢ Anomalies closed in PB 2.45
  • Anomaly “EUM/Sen3/NCR/4145” - S3 STM L2 WAT: Errors in the some NetCDF comments in
    the enhanced measurements
    o the field (enhanced_measurements.nc) tracker_range_20_plrm_ku in the NetCDF comment
      reports that this quantity is corrected for uso_cor_20_plrm_ku but this is wrong because the field
      uso_cor_20_plrm_ku does not exist (it should be uso_cor_20_c);
    o the fields (enhanced_measurements.nc) net_instr_cor_range_20_plrm_ku, net_instr_cor_range_20_ku, and
      net_instr_cor_range_20_c in the NetCDF comment report that
      they are corrected for the Doppler Correction (dop_cor_20_) but this is untrue because from the
      L2 STM DPM specifications, it is clear that they are corrected only for the L2 Doppler Correction
      update (i.e. dop_cor_20 – dop_cor_l1b_20);
    o the fields (enhanced_measurements.nc) net_instr_cor_sig0_20_c, net_instr_cor_sig0_20_ku, and
      net_instr_cor_sig0_20_plrm_ku in the NetCDF comment report that they are corrected for the
      atmospheric attenuation correction (atm_cor_sig0_)
  Affects: L2 SRAL NRT/STC/NTC Enhanced measurements.
  Corrected in PB 2.45
  • Anomaly “EUM/Sen3/AR/4666” - SRAL L2 - netcdf variable (rad_along_track_avg_flag_01)
    does not follow specification
  The comment in the variable rad_along_track_avg_flag_01 does not match the one in the product spec.
  In the product spec the allowed values are (0-3) and in the comment (0-1).
  Affects: L2 SRAL NRT/STC/NTC
  Corrected in PB 2.45
• Anomaly “SIIIMPC-2244, EUM/Sen3/AR/5071” - L2 sea ice freeboard is predominantly negative
The sea ice freeboard (freeboard_20_ku) present in the L2 products is mostly negative, when it is expected to be naturally positive.
Affects: L2 SRAL NRT/STC/NTC
Corrected in PB 2.45

• Anomaly “EUM/Sen3/NCR/4779” - IPF reports spurious gaps
The gaps reported in the SRAL L2 manifest are incorrect in some cases.
The IPF appears to be actually mixing the application of the land sea mask and very small gaps, turning them into very large (spurious) gaps.
Affects: L2 SRAL NRT/STC/NTC
Corrected in PB 2.45

• Anomaly “SIIIMPC-2413, EUM/Sen3/AR/5071” - Wrong values of interpolated sea ice SSHA over ocean
Values of interpolated SSHA (int_sea_ice_ssh_20_ku) show stronger magnitude than the original sea ice SSHA: it is the case in the northern part of Canada where the interpolation process appears to introduce some anomalies
Affects: L2 SRAL NRT/STC/NTC
Corrected in PB 2.45

• Anomaly “EUM/Sen3/NCR/4906” - Variable 'orbit_type_01' not properly filled if orbit used is NAVATT
The variable 'orbit_type_01' should provide the orbit type used in the computation. When the orbit used in TM_0_NAT (NAVATT) the flag is set to default value.
Affects: L2 SRAL NRT/STC/NTC
Corrected in PB 2.45

• Anomaly “EUM/Sen3/AR/4697” - Acquisition station is reported in the manifest but not in the netcdf
The netcdf products (standard_measurement.nc for L2 and measurement.nc for L1B) have the acquisition station set to "" (null).
However, this information is present in the manifests of the product.
Affects: L1 and L2 SRAL NRT/STC/NTC
Corrected in PB 2.45

• Anomaly “SIIIMPC-2412, EUM/Sen3/AR/5071” – Altimeter derived discrimination flag set to ocean over land
In certain cases the flag surf_type_class_20_ku is set to ocean over land surface in L2 products.
Affects: L2 SRAL NRT/STC/NTC
Corrected in PB 2.45

• Anomaly “EUM/Sen3/NCR/4167” - S3A STM L2 Water: the fields range_ocog_20_ku and sig0_ocog_20_ku are often (around 7%) set to _FillValue in LRM mode over open ocean;
Affects: L2 SRAL NRT/STC/NTC in LRM mode
Corrected in PB 2.45
- **Anomaly “EUM/Sen3/NCR/3448” - GIM Iono Correction occasionally set to _FillValue**
  The ionospheric GIM correction (iono_cor_gim_01_ku) can be set to _FillValue on certain products that cross the midnight boundary. The post-midnight period of the product will have the GIM iono correction set to the _FillValue.
  **Affected:** L2 SRAL STC/NTC
  **Corrected since 2018-09-20 (system fix)**

- **S3A Anomalies closed in PB 2.33**
  - **Anomaly “EUM/Sen3/AR/3404” – ANX cross time not accurately computed**
    An error has been detected in the computation of the Ascending Node Crossing (ANX) time that leads to an error of up to 8 seconds in the equator crossing time. This affects L1 and L2. This ANX value is also used internally to generate the start/stop times of the pole to pole passes (STC and NTC), so those too were off by numerous seconds.
    Anomalies affected S3A data processed with previous versions. S3B data were not affected.
  - **Anomaly “EUM/Sen3/AR/3953” - 5 millimeter bias between zero-altitude dry tropo correction (mod_dry_tropo_zero_altitude_01) and measured dry tropo correction (mod_dry_tropo_meas_altitude_01)**
    This is anomalous because the two dry tropo corrections should be unbiased over open ocean (which is indeed around zero-altitude).
    Anomalies affected S3A data processed with previous versions. S3B data were not affected.

- **Anomalies closed in PB 2.27**
  - **Anomaly “EUM/Sen3/NCR/3635” – 1 Hz data without associated 20 Hz measurements**
    On some occasions, related to the application of the land-sea mask, there may be 1-Hz time dimension data without associated 20-Hz data in one of the bands, Ku or C. On the indexes recently added to the product with PB 2.24, it will be possible to see index values with _FillValue. Users need to ensure that the index read is valid integer, as there might be 1 Hz time tags without associated 20 Hz data for one of the bands.
    **Affects:** L2 SRAL NRT/STC/NTC
  - **Anomaly “EUM/Sen3/AR/4029” – Sea-Ice/Ice Noise gate power calculation incorrect**
    The noise gate power calculation was incorrect for the Sea-Ice and Ice retrackers, a sum of the power was being used instead of the average.
    The noise threshold used was too high, now lowered to the proper value (updated SR_2_CON_AX).
    **Affects:** L2 SRAL NRT/STC/NTC before PB 2.27
  - **Anomaly “EUM/Sen3/NCR/3706” and “EUM/Sen3/AR/4035” – Correction _FillValue is not properly handled for Sea Ice SSHA**
    When the corrections are not available the IPF does not properly handle the correction _FillValue and uses it in the computation of the Sea Ice SSHA (sea_ice_ssha_20_ku).
    **Affects:** L2 SRAL NRT/STC/NTC
Anomalies closed in PB 2.24

- **Anomaly “EUM/Sen3/AR/2273” - Duplicated measurements at granule transition**
  Duplicated measurements at 10 minutes granule transition in L2 NRT products.

  There are duplicates of 1 Hz measurements (same 1 Hz time tag) between consecutive granules. At granules transition, the last 1 Hz measurement and the first 1 Hz measurement of the following granule may have the same datation. In some cases, the 1 Hz range values (on either or both granules) might be set to default values because there are not enough 20 Hz observations within the granule to compute the 1 Hz range.

  This generates about 100 seconds of potentially duplicated data per day (in NRT).

  Note that the 20 Hz parameters (range, SWH and Sigma0) are not affected.

  Affects L2 NRT data processed with previous versions.

- **Anomaly “EUM/Sen3/NCR/2587” - Overflow of the Ku band atmospheric attenuation**

  In the L2 products the atmospheric attenuation in Ku band is set to default values in the products when value exceeds 1.27 dB. Note that for these measurements the wind speed is well calculated.

- **Anomaly “EUM/Sen3/NCR/2996” – Mismatch between manifest and global attributes.**

  The information reported in the SRAL manifest is different from the one reported in the NetCDF global attributes. The majority of the auxiliary data files (ADFs) reported in the manifest are not reported in the global attributes.

- **Anomaly “EUM/Sen3/NCR/3217” - Atmospheric attenuation issue during MWR calibration**

  The atmospheric attenuation on Ku band and C band is set to default values for sporadic points located in the fringe of the MWR calibration sequences. These isolated 1 Hz values can be found over open ocean.

  As a consequence, wind speed, sea state bias, dual frequency ionospheric correction and ssha parameters are set to default value.

- **Anomaly “EUM/Sen3/NCR/3216” - Bias in Inverse Barometer correction**

  There is a bias of 1 cm over open ocean on the inverse barometer correction when comparing to the ECMWF model.

  The source of the bias is the calculation of the mean pressure that has to be refined for the handling of the ocean and land grid points.

- **Anomaly “EUM/Sen3/AR/3219” - Sea Ice discrimination identifying too many floes**

  A comparison of Arctic sea ice discrimination statistics during October 2016 between Sentinel-3A and CryoSat shows that S3 processing is identifying four times more floes to leads than CryoSat’s discriminator than would be expected during this period. Sentinel-3A discrimination requires further tuning.

- **Anomaly “EUM/Sen3/NCR/3220” - Residual error on SAR sigma0 for strong radial velocities**

  The SAR Ku band SWH from SAMOSA retracker shows an error correlated to SWH, as expected on SAMOSA 2.3 retracker. The maximum magnitude of the error is estimated to 30 cm for the stronger waves.

  The SAR range values show a discrepancy of 0.5% SWH compared to PLRM and Jason-2 observations. This will be corrected in the future by the inclusion of the SAMOSA 2.5 retracker.
- **Anomaly “EUM/Sen3/NCR/3240” - Iono Gim Correction always set to _FillValue in STC Products**
  The ionospheric GIM correction (*iono_cor_gim_01_ku*) is always set to the _FillValue on the L2 STC Products and in the global attributes the attribute *xref_iona_data* (input GIM File) is empty.

- **Anomaly “EUM/Sen3/NCR/3571” – 20 Hz Iono Dual Range Correction frequently set to _FillValue over open ocean**
  The 20 Hz ionospheric dual range corrections in SAR and PLRM mode (*iono_corr_alt_20_ku* and *iono_corr_alt_20_plrm_ku*) are frequently set to _FillValue over open ocean. As consequence of this, the 20 Hz *ssha* in SAR and PLRM mode will be set to _FillValue as well.

- **Anomaly “EUM/Sen3/NCR/3636” – Issue with Quality Flag for Sigma0 (PLRM and SAR)**
  The output of the sigma0 quality flag was not correctly set for PLRM, reporting erroneously the SAR value.

- **Anomaly “EUM/Sen3/NCR/3706” – Wrong value for sea ice range**
  In some cases, the sea ice range would be wrong by kilometers due to the application of corrections with _FillValue, which should have been discarded from the processing.

**Current Processing Baseline – Static ADFs**

The following list is the complete list of static ADF used by the processors. Any change from the previous processing baseline is highlighted in red. A brief description of the role of each ADF in processing is in the product manifest.

**MWR L1**
- **S3A**
  - **S3A_MW_1_SLC_AX_20000101T000000_20991231T235959_20160603T120000**
  - **S3A_MW_STD_AX_20000101T000000_20991231T235959_20151214T120000**
  - **S3A_MW_CHDNAX_20160216T000000_20991231T235959_20170908T120000**
  - **S3A_MW_CHDRAX_20160216T000000_20991231T235959_20170908T120000**
- **S3B**
  - **S3B_MW_1_SLC_AX_20180425T000000_20991231T235959_20180409T120000**
  - **S3B_MW_STD_AX_20180425T000000_20991231T235959_20180409T120000**
  - **S3B_MW_CHDNAX_20180425T000000_20991231T235959_20181116T120000**
  - **S3B_MW_CHDRAX_20180425T000000_20991231T235959_20181116T120000**

**SRAL L1**
- **Common**
  - **S3_AX_CST_AX_20000101T000000_20991231T235959_20151214T120000**
  - **S3_SR_LSM_AX_20000101T000000_20991231T235959_20151214T120000**
- **S3A**
  - **S3A_SR_CHDNAX_20160216T000000_20991231T235959_20181127T120000**
  - **S3A_SR_CHDRAX_20160216T000000_20991231T235959_20181127T120000**
  - **S3A_SR_CONCAX_20160216T000000_20991231T235959_20171130T120000**
  - **S3A_SR_CONMAX_20160216T000000_20991231T235959_20180213T120000**
- **S3B**
  - **S3B_SR_CHDNAX_20180425T000000_20991231T235959_20181127T120000**
  - **S3B_SR_CHDRAX_20180425T000000_20991231T235959_20181127T120000**
  - **S3B_SR_CONCAX_20180425T000000_20991231T235959_20180409T120000**
  - **S3B_SR_CONMAX_20180425T000000_20991231T235959_20180409T120000**
| S3A_SR_2_IC09AX_20160216T000000_20991231T235959_20161010T120000 | MPC_O_AL_002.SEN3 |
| S3A_SR_2_IC10AX_20160216T000000_20991231T235959_20161010T120000 | MPC_O_AL_002.SEN3 |
| S3A_SR_2_SSBLAX_20000101T000000_20991231T235959_20151214T120000 | MPC_O_AL_001.SEN3 |
| S3A_SR_2_SSBSAX_20000101T000000_20991231T235959_20151214T120000 | MPC_O_AL_001.SEN3 |
| S3A_SR__CHDNAX_20160216T000000_20991231T235959_20181127T120000 | MPC_O_AL_004.SEN3 |
| S3A_SR__CHDRAX_20160216T000000_20991231T235959_20181127T120000 | MPC_O_AL_004.SEN3 |
| S3A_SR_2_CON_AX_20160216T000000_20991231T235959_20181127T120000 | MPC_O_AL_004.SEN3 |
| S3B_SR_2.Companion_AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_IC01AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_IC02AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_IC03AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_IC04AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_IC05AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
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| S3B_SR_2_IC10AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_SSBSAX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR__CHDNAX_20180425T000000_20991231T235959_20181116T120000 | MPC_O_AL_002.SEN3 |
| S3B_SR__CHDRAX_20180425T000000_20991231T235959_20181116T120000 | MPC_O_AL_002.SEN3 |

| S3B_SR_2.CCT AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2.IC01AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2.IC02AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
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| S3B_SR_2.IC09AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2.IC10AX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR_2_SSBSAX_20180425T000000_20991231T235959_20180409T120000 | MPC_O_AL_001.SEN3 |
| S3B_SR__CHDNAX_20180425T000000_20991231T235959_20181116T120000 | MPC_O_AL_002.SEN3 |
| S3B_SR__CHDRAX_20180425T000000_20991231T235959_20181116T120000 | MPC_O_AL_002.SEN3 |
| S3B_SR__CHDNAX_20180425T000000_20991231T235959_20181116T120000 | MPC_O_AL_002.SEN3 |
### Products Availability

- Copernicus Online Data Access (https://codarep.eumetsat.int), SRAL L2 NTC Reprocessed Dataset
- Copernicus Online Data Access (https://coda.eumetsat.int), NRT, STC and NTC (see details below)
- EUMETCast (https://eoportal.eumetsat.int), NRT, STC (see details below)
- EUMETSAT Data Centre (https://eoportal.eumetsat.int), NRT, STC and NTC (see details below)
- EUMETSAT Online Data Access (ftp://oda.eumetsat.int), NRT, STC and NTC (see details below)

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* ODA is available only for Copernicus Services and S3VT users
** CODA and CODAREP are available to all users

Please note that data processed with older versions of the Processing Baseline are still available in CODA/Data Centre – it is not recommended to use them.

### Any other useful information

- Note that the SRAL NRT products are 10 minutes length, instead of being dump based as originally specified – this is part of the Product Definition.

### References

- Product Data Format Specification - SRAL and MWR Level 1 products S3IPF.PDS.003.1, Issue 2.11, Date 18/04/2018
- Product Data Format Specification - SRAL/MWR Level 2 Marine products S3IPF.PDS.003.3, Issue: 2.13, Date: 18/04/2018
- Sentinel-3 SRAL Marine User Handbook
- EUM/OPS-SEN3/MAN/17/920901, Issue: v1A, Date 12/12/2017

All documents are available in the EUMTSAT site: [https://www.eumetsat.int/website/home/Satellites/CurrentSatellites/Sentinel3/AltimetryServices/index.html](https://www.eumetsat.int/website/home/Satellites/CurrentSatellites/Sentinel3/AltimetryServices/index.html)

*End of the Product Notice*