

# 1. Overview

| Report Production: | 10-May-2023  |
|--------------------|--|
| Processor Used:    | CryoSat Ocean Processor  |
| Data Used:         | Geophysical Ocean Products (GOP)<br>L1B, L2 & P2P Science Data |

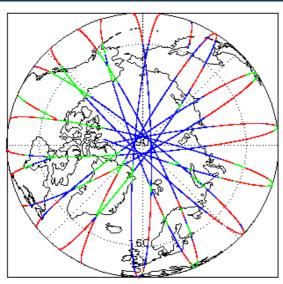
### We would love to hear from you!

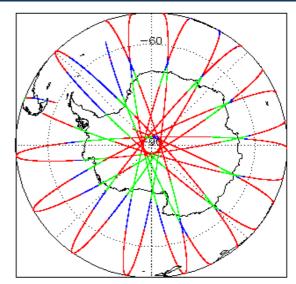
Please let us know your feedback about these daily quality reports: What do you like/ dislike? What quality information do you need? Send your feedback to cs2\_qc\_team@telespazio.com

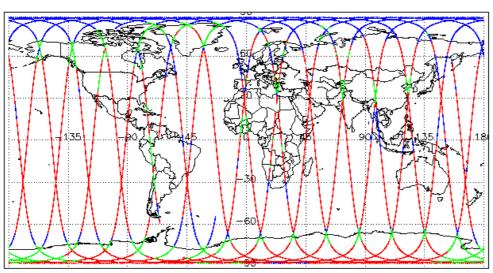
| Check                                      | L1 & L2                 | P2P                          |
|--|-------------------------|------------------------------|
| Server check: science-pds.cryosat.esa.int  | Nominal                 | Nominal                      |
| Server check: calval-pds.cryosat.esa.int   | Nominal                 | Nominal                      |
| Product Software Check                     | Nominal                 | Nominal                      |
| Product Format Check                       | Nominal                 | Nominal                      |
| Product Header Analysis                    | Nominal                 | Nominal                      |
| Auxiliary Data File Usage Check            | Nominal                 | Nominal                      |
| Auxiliary Correction Error Check           | See Section 5.4         | See Section 6.4              |
| Measurement Confidence Data Check          | See Section 4.5, 4.6    | Nominal                      |
| Range, SWH & Backscatter Measurement Check | See Section 5.6         | See Section 6.6              |
| Ocean Retracking Quality Check             | See Section 5.7         | See Section 6.7              |
| QCC Error/ Warning Check                   | See Section 7.1 and 7.2 | See Section 7.1, 7.2 and 7.3 |

| Mis | Mission / Instrument News |                 |  |
|-----|---------------------------|-----------------|--|
| 07  | 7-Apr-2023                | None            |  |
| 30  | 3-Apr-2023                | None            |  |
| 09  | 9-Apr-2023                | Nothing planned |  |

# 2. Global Coverage









# 3. Instrument Configuration

The SIRAL instrument configuration for the day of acquisition is provided below.

SIRAL instrument(s) in use: SIRAL - A

# 4. GOP Level 1B Data Quality Check

## 4.1 L1B Product Format Check

Each product, retrieved and unpacked from the science server, is checked to ensure it consists of both an XML header file (.HDR) and a NetCDF product file (.nc).

#### 4.2 L1B Product Header Analysis

For all products, a series of pre-defined checks are performed on the MPH and SPH in order to identify any inconsistencies and/or errors raised by the ground-segment processing chain.

L1B Processing Quality HR: The I1b\_proc\_flag\_hr flag is currently set all L1B GOPR and GOPN products because the I1b\_processing\_quality\_hr field is not correctly configured in the OSAR and OSARIn chains. A modification is required in the next release.

Number of products with errors:

### 4.3 L1B Auxilary Data File Usage Check

Each product is checked for missing Data Set Descriptors with respect to a pre-determined baseline and also to check the validity of Auxiliary Data Files is correct.

Number of products with errors:

0

### 4.4 L1B Auxiliary Correction Error Check

CryoSat L1B data includes a correction error flag for each measurement record. The bit value of this flag indicates any problems when set.

Number of products with errors:

0

# 4.5 L1B Measurement Confidence Data Check

CryoSat L1B data includes a measurement confidence flag for each measurement record. The bit value of this flag indicates any problems when set.

Attitude Correction Missing: This flag is currently set in error for GOPR products due to a configuration issue. This is being investigated and will be updated in the next SW update.

Number of products with errors:

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### 4.6 L1B Waveform Group Data Check

CryoSat L1B data includes a waveform data flag for each measurement record. The bit value of this flag indicates any problems when set.

Loss of Echo Flag: This flag is currently set for some products over land, but this is to be expected.

Number of products with errors:

| Product   | Test Failed  | Description  |
|---|--------------|--|
| CS_OFFL_SIR_GOPM1B_20230408T015640_20230408T021206_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20230408T021407_20230408T022330_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20230408T103505_20230408T103959_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20230408T134942_20230408T140146_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20230408T142904_20230408T143836_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20230408T232617_20230408T233157_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T024030_20230408T024140_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T032236_20230408T032556_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T041949_20230408T042538_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T055439_20230408T055512_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T065109_20230408T065353_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T074157_20230408T074625_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T090030_20230408T090222_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20230408T140932_20230408T141200_C001 | Loss of Echo | The tracking echo is missing for one or more records |

### 5. GOP Level 2 Data Quality Check

## 5.1 L2 Product Format Check

Each product, retrieved and unpacked from the science server, is checked to ensure it consists of both an XML header file (.HDR) and a NetCDF product file (.nc).

Number of products with errors:

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#### 5.2 L2 Product Header Analysis

For all products, a series of pre-defined checks are performed on the MPH and SPH in order to identify any inconsistencies and/or errors raised by the ground-segment processing chain.

Number of products with errors:

0

### 5.3 L2 Auxiliary Data File Usage Check

Each product is checked for missing Data Set Descriptors with respect to a pre-determined baseline and also to check the validity of Auxiliary Data Files is correct.

Number of products with errors:

0

#### 5.4 L2 Auxiliary Correction Error Check

For all products, the auxiliary corrections within the Geophysical Group are checked for the default error value (32767).

Currently, there are some common auxiliary correction errors raised in the Level 2 products that are expected, due to surface type. All common flags are summarised in the list below, followed by a table highlighting any additional issues that may arise from this test.

- > ECMWF Meteo Corrections: Currently the following corrections are not computed over CONTINENTAL ICE: Dry Tropospheric Correction, Wet Tropospheric Correction, Inverse Barometric Correction and the U-Wind and V-Wind components of the ECMWF model wind vector. This is a known anomaly (CRYO-COP-3) and will be resolved in a future IPF update. The affected products are not reported in the table below.
- > Sea State Bias & Sea State Bias PLRM: The error value is currently set for products over sea ice, but this is to be expected.
- > Altimetric Wind Speed Error: The error value is currently set for products over land and sea ice, but this is to be expected

Number of products with errors:

17

| Product   | Test Failed                 | Description   |
|---|-----------------------------|---|
| CS_OFFL_SIR_GOPM_2_20230408T061243_20230408T064024_C001 | Mean Dynamic Topography (1) | There is an error with the Mean Dynamic Topography (solution 1) for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T142904_20230408T143836_C001 | Mean Dynamic Topography (1) | There is an error with the Mean Dynamic Topography (solution 1) for one or more records |

| COUNTLINES OFFINE 2 202040700000 202040700000 COID  TOURNESS OFFINE 2 2020407000000 COID  TOURNESS OFFINE 2 202040700000 COID  TOURNESS OFFINE 2 202040700000 COID  TOURNESS OFFINE 2 2020407000000 COID  TOURNESS OFFINE 2 2020407000000000000000000000000000000  | CS_OFFL_SIR_GOPN_2_20230408T000551_20230408T000834_C001 | Mean Sea Surface (1), Mean Dynamic  | There is an error with the MSS height (solution 1) and the Mean Dynamic   |
|--|---|---|---|
| COUPLE BY COME 2 2000-000716-01 2000-000717-01 2000 |   |   |   |
| The GOT ACT AND THE ACT AND TH | GS_OFFL_SIR_GOFN_2_202304061001036_202304061001605_C001 | Mean Sea Surface (1), Mean Dynamic  |   |
| Trappopular (1) Proposular free that colored in for own an own excession.  Obj. Child. Jan. (2004). 2, 2000-0001704-010, | CS_OFFL_SIR_GOPN_2_20230408T010127_20230408T010559_C001 | Tide (GOT)  | height (solution 1: GOT) for one or more records  |
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| TROUGHE, SEQUIPORTIES SEQUIPORT | CS_OFFL_SIR_GOPN_2_20230408T015449_20230408T015628_C001 | Mean Dynamic Topography (1)   | ,   |
| Co. OFFL. SIR. GOPN. 2. 20230887100032, 202308871000032, 2023088710000032, 2023088710000032, 202308871000032, 202308871000032, 202308871000032, 202308871000032,  | CS_OFFL_SIR_GOPN_2_20230408T024030_20230408T024140_C001 |   |   |
| to come cooks  Co OFE, SRI GOPN 2 2020906019802 20209060198030 0001  Man Star Starter (), Man Dynamic Topography () or row excells  Co OFE, SRI GOPN 2 2020906019802 20209060198030 0001  Man Starter (), Man Dynamic Topography () or row excells the MSS beging coulser () and he Man Dynamic Topography () or row excells ( | CS_OFFL_SIR_GOPN_2_20230408T024255_20230408T024440_C001 | Total Geocentric Ocean Tide (GOT)   |   |
| Topography (1)  Topography (1) | CS_OFFL_SIR_GOPN_2_20230408T032236_20230408T032556_C001 | Mean Dynamic Topography (1)   |   |
| Sec. GFFL_SR_GOPN_2_2020446T10921_202046T109302_0001  Also Sea Surface (1), Mean Dynamic Topography (1)  Also Sea Surface (1), Mean Dynamic Topography (1)  There is an enert with the MSS height (soution 1) and the Mean Dynamic Topography (1)  Also Sea Surface (1), Mean Dynamic Topography (1)  Also Sea Surface ( | CS_OFFL_SIR_GOPN_2_20230408T041949_20230408T042538_C001 |   |   |
| Topography (1) Topography (2) Topography (3) Topography (4) Topogr | CS_OFFL_SIR_GOPN_2_20230408T050238_20230408T050427_C001 | Mean Dynamic Topography (1)   |   |
| CS_OFFL_SIR_COPFL_2_20230498110313_2023049811045S_CODI  Mean Sea Surface (1), Mean Dynamic Topography (apticulation 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography (apticulation 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography (1) in one or more records  Mean Sea Surface (1), Mean Dynamic Topography (1) in one or more records  Mean Sea Surface (1), Mean Dynamic Topography (1) in one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Sea Surface (1), Mean Dynamic Topography (2) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into one or more records  Mean Dynamic Topography (1) into | CS_OFFL_SIR_GOPN_2_20230408T051241_20230408T051503_C001 |   |   |
| CS_OFFL_SIR_GOPN_2_22200408T10103_2020408T10130_C001  Mean Sea Surface (1), Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography (1)  There is an error with the MSS height (soution 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Me | CS_OFFL_SIR_GOPN_2_20230408T082214_20230408T082548_C001 | Mean Sea Surface (1), Mean Dynamic  |   |
| CS_OFFL_SIR_GOPN_2_2020408T10105_2020408T105382_C001  Mean Dynamic Topography (1)  Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography (2)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (2)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (3)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (4)  There is an error with the Mean Dynamic Topography (5)  There is an error with the Mean Dynamic Topography (5)  There is an error with the Mean Dynamic Topography (5)  There is an error with the Mean Dynamic Topography (6)  There is an error with the Mean Dynamic Topography (6)  There is an error with the Mean Dynamic Topography (6)  There is an error with the Mean Dyn | CS_OFFL_SIR_GOPN_2_20230408T100133_20230408T100453_C001 | Mean Sea Surface (1), Mean Dynamic  | There is an error with the MSS height (solution 1) and the Mean Dynamic   |
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| Mean Sea Surface (1), Mean Dynamic Topography (2)  CS_OFFL_SIR_GOPN_2_20230408T132612_20230408T132803_0001  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (3)  Mean Sea Surface (1), Mean Dynamic Topography (4)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (3)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (3)  Mean Sea Surface (1), Mean Dynamic Topography (6)  Mean Sea Surface (1), Mean Dynamic Topography (8)  Mean Sea Surface (1), Mean Dynamic Topography (9)  Mean Dynamic Topography (1)  Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography (9)  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography (6)  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  There is an error with the MSS height (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (6)  There is an error with the MSS height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) and the Mean Dynam | CS_OFFL_SIR_GOPN_2_20230408T114909_20230408T115017_C001 |   | There is an error with the Mean Dynamic Topography (solution 1) for one   |
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| CS_OFFL_SIR_GOPN_2_20230408T163556_20230408T172506_CO01  Mean Dynamic Topography (1)  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1), the Mean Dynamic Topography (1), Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide (for one or more records  Mean Dynamic Topography (1)  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  Mean Dynamic Topography (1)  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography (solution 1) for one or more records  There is an error with the Mean Dynamic Topography height (solution 1 | CS OFFI SIR GOPN 2 20230408T140032 20230408T141200 C001 | Mean Sea Surface (1), Mean Dynamic  | There is an error with the MSS height (solution 1) and the Mean Dynamic   |
| wear Dynamic Topography (1)  CS_OFFL_SIR_GOPN_2_20230408T172519_20230408T172906_C001  Mean Dynamic Topography (1) Total Geocentric Ocean Tide (FGO)T, Total Geocentric Ocean T |   |   | ,   |
| Topography (1) Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide | CS_OFFL_SIR_GOPN_2_20230408T163556_20230408T163804_C001 | , , , , ,   | or more records   |
| CS_OFFL_SIR_GOPN_2_20230408T191514_20230408T191608_C001  Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dy | CS_OFFL_SIR_GOPN_2_20230408T172519_20230408T172906_C001 | Topography (1), Total Geocentric Ocean<br>Tide (GOT), Total Geocentric Ocean<br>Tide (FES), Non-Equilibrium Long Period | Topography height (solution 1), the Total Geocentric Ocean Tide (solution 1: GOT and solution 2: FES) and the Non-Equilibrium Long Period Ocean |
| CS_OFFL_SIR_GOPN_2_20230408T231406_20230408T214412_C001  Mean Sea Surface (1), Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1), the Topography height (solution 1),  | CS_OFFL_SIR_GOPN_2_20230408T190031_20230408T190559_C001 | Mean Dynamic Topography (1)   |   |
| Topography (1) Topography (22030408T231406_20230408T231655_C001 Topography (1) Topography (1) Topography (1) Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1) There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide (G | CS_OFFL_SIR_GOPN_2_20230408T191514_20230408T191608_C001 | Mean Dynamic Topography (1)   |   |
| Topography (1)  Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1), the Total Geocentric Ocean Tide (GOT), Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1), the Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  Ther | CS_OFFL_SIR_GOPN_2_20230408T214106_20230408T214412_C001 |   |   |
| Topography (1)  Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide for one or more records  CS_OFFL_SIR_GOPR_2_20230408T041327_20230408T041949_C001  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records                    | CS_OFFL_SIR_GOPN_2_20230408T231406_20230408T231655_C001 |   |   |
| Topography (1)  Topography (1)  Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  Topography (1)  Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  Topography (1)  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide for one or more records  There is an error with the MSS height (solution 1), the Total Geocentric Ocean Tide (solution 1) and the Mean Dynamic Topography height (solution 2: FES) and the Non-Equilibrium Long Period Ocean Tide for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  | CS_OFFL_SIR_GOPN_2_20230408T232006_20230408T232342_C001 |   |   |
| Topography (1)  Topography (1)  Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide for one or more records  CS_OFFL_SIR_GOPR_2_20230408T041327_20230408T041949_C001  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) ind the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solu | CS_OFFL_SIR_GOPR_2_20230408T005558_20230408T010016_C001 |   |   |
| Topography (1)  Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) for one or more records  There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide for one or more records  CS_OFFL_SIR_GOPR_2_20230408T041327_20230408T041949_C001  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 2) and a solution 2: FES one of the Mean Dynamic Topography height (solution 3) and the Mea | CS_OFFL_SIR_GOPR_2_20230408T010016_20230408T010127_C001 |   |   |
| Topography (1)  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide (solution 1): GOT and solution 2: FES) and the Non-Equilibrium Long Period Ocean Tide for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic Topography height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  | CS_OFFL_SIR_GOPR_2_20230408T023353_20230408T023739_C001 |   |   |
| CS_OFFL_SIR_GOPR_2_20230408T024440_20230408T024856_C001  Topography (1), Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES), Non-Equilibrium Long Period Ocean Tide for one or more records  CS_OFFL_SIR_GOPR_2_20230408T041327_20230408T041949_C001  Topography (1), Total Geocentric Ocean Tide (solution 1), the Total Geocentric Ocean Tide (solution 1), the Total Geocentric Ocean Tide (solution 2: FES) and the Non-Equilibrium Long Period Ocean Tide for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography (1)  Topography (1), Total Geocentric Ocean Tide (solution 1), the Total Geocentric Ocean Tide (solution 1). the Total Geocentric Ocean Tide (solution 2: FES) and the Non-Equilibrium Long Period Ocean Tide for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height ( | CS_OFFL_SIR_GOPR_2_20230408T023739_20230408T024030_C001 |   |   |
| Topography (1)  Topography height (solution 1) for one or more records  Mean Sea Surface (1), Mean Dynamic  There is an error with the MSS height (solution 1) and the Mean Dynamic  | CS_OFFL_SIR_GOPR_2_20230408T024440_20230408T024856_C001 | Topography (1), Total Geocentric Ocean<br>Tide (GOT), Total Geocentric Ocean<br>Tide (FES), Non-Equilibrium Long Period | Topography height (solution 1), the Total Geocentric Ocean Tide (solution 1: GOT and solution 2: FES) and the Non-Equilibrium Long Period Ocean |
|  | CS_OFFL_SIR_GOPR_2_20230408T041327_20230408T041949_C001 |   |   |
|  | CS_OFFL_SIR_GOPR_2_20230408T055512_20230408T055956_C001 |   |   |

| CS_OFFL_SIR_GOPR_2_20230408T073140_20230408T074157_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
|---|--|--|
| CS_OFFL_SIR_GOPR_2_20230408T091304_20230408T092055_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T105333_20230408T110052_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the GPD Wet Tropospheric correction, the MSS height (solution 1) and tidal corrections for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T123245_20230408T124001_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T141201_20230408T141845_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T155043_20230408T155758_C001 |  | There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1) and the Total Geocentric Ocean Tide height (solution 1: GOT) for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T172906_20230408T173750_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T190559_20230408T191338_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T204532_20230408T205156_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T205156_20230408T205501_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T222358_20230408T223056_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20230408T223056_20230408T223236_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1) | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records   |

## 5.5 L2 Measurement Confidence Data Check

CryoSat L2 data includes a measurement confidence flag for each 20 Hz measurement record. The bit value of this flag indicates any problems when set.

Number of products with errors:

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# 5.6 L2 Measurement Quality Flag Check

#### L2 Quality Flags (20 Hz)

CryoSat L2 data includes Quality Flags for each 20 Hz, 20 Hz PLRM and 1 Hz measurement record. The bit value of this flag indicates any problems when set.

Currently, there are several common flags raised in the Level 2 products, which are summarised below. The table provides the full list of products flagged.

- > Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags: These flags are currently set for some records over ocean.
- > OCOG Altimeter Range and Backscatter Quality Flags: These flags are currently set for some records over continental ice.

Number of products with errors:

\_\_

| Product   | Test Failed  | Description   |
|---|--|---|
| CS_OFFL_SIR_GOPM_2_20230408T000834_20230408T001036_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T001739_20230408T003311_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T003450_20230408T003653_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T003935_20230408T004644_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T010640_20230408T012437_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T012730_20230408T013941_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T015057_20230408T015448_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T015640_20230408T021206_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T021407_20230408T022330_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T025109_20230408T030253_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T031844_20230408T032235_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |

| CS_OFFL_SIR_GOPM_2_20230408T032556_20230408T033351_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
|---|--|---|
| CS_OFFL_SIR_GOPM_2_20230408T033604_20230408T035113_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T040728_20230408T040731_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T042818_20230408T043724_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T043803_20230408T050156_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T050701_20230408T051241_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T051530_20230408T054036_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T061243_20230408T064024_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T064637_20230408T065109_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T065413_20230408T072146_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T074625_20230408T081936_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T082548_20230408T083123_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T083256_20230408T083908_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T091018_20230408T091157_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T092506_20230408T095856_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T100453_20230408T101005_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T101216_20230408T103147_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T110333_20230408T112456_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T112605_20230408T113716_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T114151_20230408T114453_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T115144_20230408T122010_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T122025_20230408T122727_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T122908_20230408T123134_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T124648_20230408T125430_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T125911_20230408T130054_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T130057_20230408T131642_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
|   | ı  |   |

| CS_OFFL_SIR_GOPM_2_20230408T131834_20230408T132353_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
|---|--|---|
| CS_OFFL_SIR_GOPM_2_20230408T133444_20230408T134729_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T134942_20230408T140146_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T142904_20230408T143836_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T144111_20230408T145552_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T145800_20230408T150305_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T150329_20230408T150444_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T152127_20230408T152317_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T152913_20230408T153321_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T153444_20230408T154147_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T160648_20230408T160659_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T161400_20230408T161545_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T161752_20230408T163450_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T163804_20230408T164222_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T164243_20230408T164426_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T164843_20230408T171159_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T174902_20230408T181430_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T181614_20230408T182137_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T182143_20230408T182508_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T182808_20230408T185542_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T185647_20230408T190031_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T192405_20230408T192541_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T192550_20230408T194742_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T194757_20230408T195425_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T195607_20230408T200416_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T200728_20230408T204144_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |

| CS_OFFL_SIR_GOPM_2_20230408T210329_20230408T210404_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
|---|--|---|
| CS_OFFL_SIR_GOPM_2_20230408T212522_20230408T213333_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T213547_20230408T214105_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20230408T214654_20230408T220915_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T221200_20230408T222115_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T223331_20230408T223735_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T225325_20230408T225809_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T225957_20230408T231237_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T232617_20230408T233157_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T233207_20230408T235348_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPM_2_20230408T235500_20230408T235925_C001 | Ocean Altimeter Range, SSHA, SWH and Backscatter Quality, OCOG Altimeter Range and Backscatter Quality       | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPN_2_20230408T041949_20230408T042538_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T083123_20230408T083238_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPN_2_20230408T211444_20230408T211504_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T003354_20230408T003450_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T035113_20230408T035239_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T073140_20230408T074157_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG<br>Altimeter Range and Backscatter Quality | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T083908_20230408T084243_C001 | OCOG Altimeter Range Quality, OCOG<br>Backscatter Quality  | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records  |

# L2 Quality Flags (20 Hz PLRM)

Currently, there are several common flags raised in the Level 2 products, which are summarised below. The table provides the full list of products flagged.

- > Ocean Altimeter Range, SSHA, SWH and Backscatter PLRM Quality Flags: These flags are currently set for occasional records over sea ice.
- > OCOG Altimeter Range and Backscatter PLRM Quality Flags: These flags are currently set for occasional records over continental ice.

Number of products with errors:

| Product   | Test Failed   | Description   |
|---|---|---|
| CS_OFFL_SIR_GOPN_2_20230408T000551_20230408T000834_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPN_2_20230408T001036_20230408T001605_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T010127_20230408T010559_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T014947_20230408T015057_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T032236_20230408T032556_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |

| CS_OFFL_SIR_GOPN_2_20230408T040045_20230408T040438_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality more records   | ter Quality Flags have been set for one or                                       |
|---|--|
| ·   |  |
| CS_OFFL_SIR_GOPN_2_20230408T041949_20230408T042538_C001  Altimeter Range and Backscatter Quality PLRM, OCOG Altimeter Range and Backscatter Quality PLRM  and the OCOG Altimeter Range as set for one or more records | HA, SWH and Backscatter Quality Flags<br>and Backscatter Quality Flags have been |
|   | HA, SWH and Backscatter Quality Flags and Backscatter Quality Flags have been    |
| CS_OFFL_SIR_GOPN_2_20230408T054036_20230408T054150_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T054223_20230408T054429_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T060903_20230408T061206_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T064210_20230408T064350_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T065109_20230408T065353_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
|   | HA, SWH and Backscatter Quality Flags and Backscatter Quality Flags have been    |
| CS_OFFL_SIR_GOPN_2_20230408T082214_20230408T082548_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T084854_20230408T085009_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T090319_20230408T090330_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T090919_20230408T091017_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  | ter Quality Flags have been set for one or                                       |
|   | HA, SWH and Backscatter Quality Flags and Backscatter Quality Flags have been    |
| CS_OFFL_SIR_GOPN_2_20230408T092056_20230408T092235_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T101005_20230408T101130_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T103148_20230408T103505_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T114909_20230408T115017_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T123135_20230408T123245_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  | ter Quality Flags have been set for one or                                       |
|   | HA, SWH and Backscatter Quality Flags and Backscatter Quality Flags have been    |
| CS_OFFL_SIR_GOPN_2_20230408T142527_20230408T142904_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  more records  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T151804_20230408T152127_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T152318_20230408T152857_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  | ter Quality Flags have been set for one or                                       |
|   | HA, SWH and Backscatter Quality Flags and Backscatter Quality Flags have been    |
| CS_OFFL_SIR_GOPN_2_20230408T160711_20230408T161012_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality more records   | ter Quality Flags have been set for one or                                       |
| CS_OFFL_SIR_GOPN_2_20230408T173901_20230408T174023_C001  OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality  The OCOG Range and Backscatter Quality  | ter Quality Flags have been set for one or                                       |

| CS_OFFL_SIR_GOPN_2_20230408T174458_20230408T174902_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
|---|---|--|
| CS_OFFL_SIR_GOPN_2_20230408T181500_20230408T181614_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags has set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T190031_20230408T190559_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPN_2_20230408T204144_20230408T204318_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPN_2_20230408T204358_20230408T204531_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags hav set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T214106_20230408T214412_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags has set for one or more records  |
| CS_OFFL_SIR_GOPN_2_20230408T224953_20230408T225325_C001 | OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality   | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T004644_20230408T005137_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags has set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T005404_20230408T005527_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags have set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T012437_20230408T012552_C001 | OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality   | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T013942_20230408T014511_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags has set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T023353_20230408T023739_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags hav set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T023739_20230408T024030_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags hav set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T024440_20230408T024856_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags have set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T024933_20230408T025109_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T035242_20230408T035928_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T041327_20230408T041949_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T042538_20230408T042750_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T055115_20230408T055325_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags have set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T072911_20230408T073127_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T073140_20230408T074157_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags hav set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T090549_20230408T090915_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags hav set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T091304_20230408T092055_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags have set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T095856_20230408T100133_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags have set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T104517_20230408T104944_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for more records  |
| CS_OFFL_SIR_GOPR_2_20230408T105000_20230408T105216_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality and the OCOG Altimeter Range and Backscatter Quality Flags hav set for one or more records  |

| CS_OFFL_SIR_GOPR_2_20230408T105333_20230408T110052_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
|--|---|---|
| CS_OFFL_SIR_GOPR_2_20230408T112456_20230408T112605_C001  | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T115017_20230408T115144_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T123245_20230408T124001_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T124247_20230408T124419_C001  | OCOG Altimeter Range Quality PLRM, OCOG Backscatter Quality   | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T134729_20230408T134918_C001  | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T140539_20230408T140932_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T141201_20230408T141845_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T141901_20230408T141903_C001  | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T151319_20230408T151452_C001  | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T154317_20230408T154531_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T155043_20230408T155758_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T172906_20230408T173750_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T190559_20230408T191338_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T191359_20230408T191513_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T200529_20230408T200728_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T204532_20230408T205156_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T205156_20230408T205501_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |
| CS_OFFL_SIR_GOPR_2_20230408T2222115_20230408T222324_C001 | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T222339_20230408T222356_C001  | OCOG Altimeter Range Quality PLRM,<br>OCOG Backscatter Quality  | The OCOG Range and Backscatter Quality Flags have been set for one or more records  |
| CS_OFFL_SIR_GOPR_2_20230408T222358_20230408T223056_C001  | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags and the OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records |

# L2 Quality Flags (1 Hz & 1 Hz PLRM)

 $\label{lem:currently} \textbf{Currently, there are several common flags raised in the Level 2 products, which are summarised below.}$ 

> 1 Hz and 1 Hz Ocean SSHA Quality Flags: These flags are currently set for products over sea ice, which is to be expected.

Number of products with errors:

# 5.8 L2 Ocean Retracking Quality Check

# L2 Retracking Flags (20 Hz)

CryoSat L2 data includes an ocean retracking quality flag for each 20 Hz measurement record. The bit value of this flag indicates any problems when set.

Ocean Retracking Quality Flag: This flag is currently set for products over land and sea ice, but this is to be expected. The number of products with this error flag set is given below.

Number of products with errors:

rrors: 63

### L2 Retracking Flags (20 Hz PLRM)

CryoSat L2 data includes an ocean retracking quality flag for each 20 Hz PLRM measurement record. The bit value of this flag indicates any problems when set.

Ocean Retracking Quality Flag (PLRM): This flag is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.

# 6. GOP L2 Pole-to-Pole Data Quality Check

### 6.1 P2P Product Format Check

Each product, retrieved and unpacked from the science server, is checked to ensure it consists of both an XML header file (.HDR) and a NetCDF product file (.nc).

Number of products with errors:

#### 6.2 P2P Product Header Analysis

For all products, a series of pre-defined checks are performed on the MPH and SPH in order to identify any inconsistencies and/or errors raised by the ground-segment processing chain.

Number of products with errors:

#### 6.3 P2P Auxiliary Data File Usage Check

Each product is checked for missing Data Set Descriptors with respect to a pre-determined baseline and also to check the validity of Auxiliary Data Files is correct.

Number of products with errors:

0

## 6.4 P2P Auxiliary Correction Error Check

For all products, the auxiliary corrections within the Geophysical Group are checked for the default error value (32767).

Currently, there are some common auxiliary correction errors raised in the Level 2 products that are expected, due to surface type. All common flags are summarised in the list below, followed by a table highlighting any additional issues that may arise from this test.

- > ECMWF Meteo Corrections: Currently the following corrections are not computed over CONTINENTAL ICE: Dry Tropospheric Corection, Wet Tropospheric Correction, Inverse Barometric Correction and the U-Wind and V-Wind components of the ECMWF model wind vector. This is a known anomaly (CRYO-COP-3) and will be resolved in a future IPF update. The affected products are not reported in the table below.
- > Sea State Bias & Sea State Bias PLRM: The error value is currently set for products over sea ice, but this is to be expected.
- > Altimetric Wind Speed Error: The error value is currently set for products over land and sea ice, but this is to be expected.

| Number of products with errors: 30                     |   |   |
|--|---|---|
| Product  | Test Failed   | Description   |
| CS_OFFL_SIR_GOP_2_20230407T232015_20230408T000954_C002 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T000954_20230408T005930_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T005930_20230408T014909_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1), Total Geocentric Ocean<br>Tide (GOT)  | There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1) and the Total Geocentric Ocean Tide height (solution 1: GOT) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T014909_20230408T023845_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_220230408T023845_20230408T032823_C001  | Mean Sea Surface (1), Mean Dynamic<br>Topography (1), Total Geocentric Ocean<br>Tide (GOT), Total Geocentric Ocean<br>Tide (FES), Non-Equilibrium Long Period<br>Ocean Tide | There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_GOP_2_20230408T032823_20230408T041800_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T041800_20230408T050738_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T050738_20230408T055714_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T055714_20230408T064653_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T064653_20230408T073629_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_220230408T073629_20230408T082608_C001  | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T082608_20230408T091544_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_220230408T091544_20230408T100522_C001  | Mean Sea Surface (1), Mean Dynamic Topography (1)   | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_220230408T100522_20230408T105458_C001  | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T105458_20230408T114437_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T114437_20230408T123413_C001 | Mean Sea Surface (1), Mean Dynamic Topography (1)   | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T123413_20230408T132352_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T132352_20230408T141328_C001 | Mean Sea Surface (1), Mean Dynamic Topography (1)   | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T141328_20230408T150306_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
|  |   |   |

| CS_OFFL_SIR_GOP_2_20230408T150306_20230408T155242_C001 | Mean Sea Surface (1), Mean Dynamic Topography (1)   | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
|--|---|---|
| CS_OFFL_SIR_GOP_2_20230408T155242_20230408T164221_C001 |   | There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1) and the Total Geocentric Ocean Tide height (solution 1: GOT) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T164221_20230408T173157_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1), Total Geocentric Ocean<br>Tide (GOT), Total Geocentric Ocean<br>Tide (FES), Non-Equilibrium Long Period<br>Ocean Tide | There is an error with the MSS height (solution 1), the Mean Dynamic Topography height (solution 1), the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_GOP_2_20230408T173157_20230408T182136_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T182136_20230408T191112_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T191112_20230408T200051_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T200051_20230408T205027_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T205027_20230408T214005_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T214005_20230408T222941_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T222941_20230408T231920_C001 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOP_2_20230408T231920_20230409T000856_C002 | Mean Sea Surface (1), Mean Dynamic<br>Topography (1)  | There is an error with the MSS height (solution 1) and the Mean Dynamic Topography height (solution 1) for one or more records  |

### 6.5 P2P Measurement Confidence Data Check

CryoSat P2P data includes a measurement confidence flag for each 20 Hz measurement record. The bit value of this flag indicates any problems when set.

Number of products with errors:

#### P2P Quality Flags (20 Hz)

CryoSat P2P data includes Quality Flags for each 20 Hz, 20 Hz PLRM and 1 Hz measurement record, copied from the corresponding L2 products.

Since the P2P Quality Flags are copied directly from the L2 Quality Flags, please see Section 5.6 for the full list of products affected.

0

Number of products with errors:

### P2P Quality Flags (20 Hz PLRM)

Since the P2P Quality Flags are copied directly from the L2 Quality Flags, please see Section 5.6 for the full list of products affected.

Number of products with errors:

# P2P Quality Flags (1 Hz & 1 Hz PLRM)

Since the P2P Quality Flags are copied directly from the L2 Quality Flags, please see Section 5.6 for the full list of products affected.

Number of products with errors:

# 6.8 P2P Ocean Retracking Quality Check

## P2P Retracking Flags (20 Hz)

Cryosat P2P data includes an ocean retracking quality flag (field 19) for each 20 Hz measurement record. The bit value of this flag indicates any problems when set.

Ocean Retracking Quality Flag (PLRM): This flag is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.

Number of products with errors:

#### P2P Retracking Flags PLRM

CryoSat L2 data includes an ocean retracking quality flag for each 20 Hz PLRM measurement record. The bit value of this flag indicates any problems when set.

Ocean Retracking Quality Flag (PLRM): This flag is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.

Number of products with errors: 3

# 7. GOP QCC Report Analysis

The Quality Control for CryoSat (QCC) facility performs a primary survey of data products immediately after production by the PDS and LTA processing facilities. A list of the tests which raised errors or warnings is provided below.

| Product type | No. Products | No. QCC Reports | No. Valid | No. Warnings | No. Errors |
|--------------|--------------|-----------------|-----------|--------------|------------|
| SIR_GOPM1B   | 188          | 188             | 3         | 185          | 0          |
| SIR_GOPR1B   | 132          | 132             | 0         | 132          | 0          |
| SIR_GOPN1B   | 102          | 102             | 0         | 102          | 0          |
| SIR_GOPM_2   | 188          | 188             | 132       | 56           | 0          |
| SIR_GOPR_2   | 132          | 132             | 41        | 90           | 1          |
| SIR_GOPN_2   | 102          | 102             | 40        | 62           | 0          |
| SIR GOP P2P  | 29           | 29              | 0         | 28           | 1          |

# 7.1 QCC Errors

Number of QCC reports with errors:

2

| Total number | of occurrences | of | each | error |
|--------------|----------------|----|------|-------|
|              |                |    |      |       |

| Product Type | RLOBOPNCDF | RL | RLOBOPNCDF | RL | - | - | - | - | - | - | - |
|--------------|------------|----|------------|----|---|---|---|---|---|---|---|
| SIR_GOPR_2   | 1          | 1  | 1          | 1  |   |   |   |   |   |   |   |
|              |            |    |            |    |   |   |   |   |   |   |   |
| Product Type | RLOBOPNCDF | RL | RLOBOPNCDF | RL | - | - | - | - | - | - | • |
| SIR_GOP_2_   | 1          | 1  | 1          | 1  |   |   |   |   |   |   |   |

| Test Description Key: |                                 |  |  |  |  |
|-----------------------|---------------------------------|--|--|--|--|
| Abbreviation          | Test name                       | Details                                      |  |  |  |
| RLOBOPNCDF            | RangeLatitudeOrBlankOP_7NetCDF  | Latitude should be between -90E7 and 90E7    |  |  |  |
| RL                    | RangeLatitude_7                 | Latitude should be between -90E7 and 90E7    |  |  |  |
| RLOBOPNCDF            | RangeLongitudeOrBlankOP_7NetCDF | Longitude should be between -180E7 and 180E7 |  |  |  |
| RL                    | RangeLongitude_7                | Longitude should be between -180E7 and 180E7 |  |  |  |

# 7.2 QCC Warnings

| Number of | QCC re | ports w | ith war | nings |
|-----------|--------|---------|---------|-------|
|-----------|--------|---------|---------|-------|

| Product Type | BCSHNCDF | IOHHMOOR | MVIOEPFDNCDF | MVIOEPNCDF | MVIONCDF | RBSZOPOEPFDNCDF | RBSZOPOEPFDPLRMNCD |
|--------------|----------|----------|--------------|------------|----------|-----------------|--------------------|
| SIR_GOPM1B   | 185      | 0        | 0            | 0          | 0        | 0               | 0                  |
| SIR_GOPM_2   | 0        | 0        | 41           | 42         | 0        | 46              | 0                  |
| SIR_GOPN1B   | 102      | 0        | 0            | 0          | 0        | 0               | 0                  |
| SIR_GOPN_2   | 0        | 0        | 8            | 35         | 3        | 28              | 28                 |
| SIR_GOPR1B   | 127      | 0        | 0            | 0          | 0        | 0               | 0                  |
| SIR_GOPR_2   | 0        | 1        | 24           | 39         | 2        | 31              | 30                 |

| ı |              | PROZOBOLENIORE | DNEI BOTONODE | DDEDODEDI DIMIODE | DDEDODEDDI DIACADNO | DDEDODEDDI DMONNOD | DDEDODEDO A DIJODE | DDEDODEDOMNODE  |
|---|--------------|----------------|---------------|-------------------|---------------------|--------------------|--------------------|-----------------|
|   | Product Type | RBSZOPOEPNCDF  | RNELPOTONCDF  | RPEPOPFDLRMNCDF   | RPEPOPFDPLRMSARNCE  | RPEPOPFDPLRMSINNCD | RPEPOPFDSARNCDF    | RPEPOPFDSINNCDF |
|   | SIR_GOPM1B   | 0              | 0             | 0                 | 0                   | 0                  | 0                  | 0               |
|   | SIR_GOPM_2   | 42             | 0             | 37                | 0                   | 0                  | 0                  | 0               |
|   | SIR_GOPN1B   | 0              | 0             | 0                 | 0                   | 0                  | 0                  | 0               |
|   | SIR_GOPN_2   | 16             | 0             | 0                 | 0                   | 18                 | 0                  | 33              |
|   | SIR_GOPR1B   | 0              | 0             | 0                 | 0                   | 0                  | 0                  | 0               |
|   | SIR GOPR 2   | 18             | 1             | 0                 | 42                  | 0                  | 53                 | 0               |

| Product Type | RPEPOPLRMNCDF | RPEPOPSARNCDF | RPEPOPSINNCDF | RSSBCONCDF | RSSHAOFDNCDF | RSSHAOFDPLRMNCDF | RSSHAONCDF |
|--------------|---------------|---------------|---------------|------------|--------------|------------------|------------|
| SIR_GOPM1B   | 0             | 0             | 0             | 0          | 0            | 0                | 0          |
| SIR_GOPM_2   | 24            | 0             | 0             | 4          | 29           | 0                | 5          |
| SIR_GOPN1B   | 0             | 0             | 0             | 0          | 0            | 0                | 0          |
| SIR_GOPN_2   | 0             | 0             | 23            | 12         | 46           | 50               | 28         |
| SIR_GOPR1B   | 0             | 0             | 0             | 0          | 0            | 0                | 0          |
| SIR_GOPR_2   | 0             | 44            | 0             | 2          | 68           | 38               | 16         |

| Product Type | RSWHOEPFDNCDF | RSWHOEPFDPLRMNCDF | RSWHOEPNCDF | SOOHHIFHD | SCSTODHRNCDF | SCSTODNCDF | • |
|--------------|---------------|-------------------|-------------|-----------|--------------|------------|---|
| SIR_GOPM1B   | 0             | 0                 | 0           | 0         | 0            | 0          |   |
| SIR_GOPM_2   | 37            | 0                 | 3           | 0         | 0            | 0          |   |
| SIR_GOPN1B   | 0             | 0                 | 0           | 0         | 49           | 2          |   |
| SIR_GOPN_2   | 34            | 30                | 15          | 0         | 0            | 0          |   |
| SIR_GOPR1B   | 0             | 0                 | 0           | 0         | 132          | 12         |   |
| SIR_GOPR_2   | 32            | 48                | 2           | 4         | 0            | 0          |   |

| Product | Туре  | IOHHMOOR | MVIOEPFDNCDF | MVIOEPNCDF | MVIONCDF | RBSZOPOEPFDNCDF | RBSZOPOEPFDPLRMNCE | RBSZOPOEPNCDF |
|---------|-------|----------|--------------|------------|----------|-----------------|--------------------|---------------|
| SIR_GC  | )P_2_ | 13       | 29           | 29         | 4        | 29              | 19                 | 27            |

| Product Type | RNELPOTONCDF | RPEPOPFDPLRMSINNCD | RPEPOPFDSINNCDF | RPEPOPSINNCDF | RSSBCONCDF | RSSHAOFDNCDF | RSSHAOFDPLRMNCDF |
|--------------|--------------|--------------------|-----------------|---------------|------------|--------------|------------------|
| SIR_GOP_2_   | 1            | 15                 | 28              | 19            | 13         | 29           | 18               |

| Product Type | RSSHAONCDF | RSWHOEPFDNCDF | RSWHOEPFDPLRMNCDF | RSWHOEPNCDF | SPHLPQWNCDF | • | • |
|--------------|------------|---------------|-------------------|-------------|-------------|---|---|
| SIR_GOP_2_   | 25         | 29            | 19                | 14          | 29          |   |   |

| Test Description Key:   |   |  |  |  |  |  |  |  |  |
|-------------------------|---|--|--|--|--|--|--|--|--|
| Abbreviation            | Test name   | Details  |  |  |  |  |  |  |  |
| BCSHNCDF                | BurstCounterStep20HzNetCDF                                  | The burst counter should be one higher with regard to the previous burst counter   |  |  |  |  |  |  |  |
| IOHHMOOR                | IndexOf1Hzin20HzMappingOutOfRange                           | The mapping of 20 Hz to 1 Hz measurements should be in the range 0 to (number of 1 Hz samples - 1)   |  |  |  |  |  |  |  |
| MVIOEPFDNCDF            | MissingValueIntOceanExcludingPolarFD2NetCDF                 | The value should not be a 'missing value' for surface type 0 only for latitudes between -70 and 70 degrees                                   |  |  |  |  |  |  |  |
| MVIOEPNCDF              | MissingValueIntOceanExcludingPolarNetCDF                    | The value should not be a 'missing value' for surface type 0 only for latitudes between -70 and 70 degrees                                   |  |  |  |  |  |  |  |
| MVIONCDF                | MissingValueIntOceanNetCDF                                  | The value should not be a 'missing value' for surface type 0 only  |  |  |  |  |  |  |  |
| RBSZOPOEPFDNCDF         | RangeBackscatterSigmaZeroOPOceanExcludingPolarFD2NetCDF     | The backscatter sigma zero should be between 700 and 7500 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees     |  |  |  |  |  |  |  |
| RBSZOPOEPFDPLRM<br>NCDF | RangeBackscatterSigmaZeroOPOceanExcludingPolarFD2PLRMNetCDF | The backscatter sigma zero should be between 700 and 7500 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees     |  |  |  |  |  |  |  |
| RBSZOPOEPNCDF           | RangeBackscatterSigmaZeroOPOceanExcludingPolarNetCDF        | The backscatter sigma zero should be between 700 and 7500 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees     |  |  |  |  |  |  |  |
| RNELPOTONCDF            | RangeNELPOceanTideOceanNetCDF                               | The Non-equilibrium long period ocean loading tide height should be between -40mm and 40mm (or missing) for surface type = ocean             |  |  |  |  |  |  |  |
| RPEPOPFDLRMNCDF         | RangePeakinessExcludingPolarOPFD2LRMNetCDF                  | The Peakiness should be between 0 and 6400 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                    |  |  |  |  |  |  |  |
| RPEPOPFDPLRMSAR<br>NCDF | RangePeakinessExcludingPolarOPFD2PLRMSARNetCDF              | The Peakiness should be between 0 and 15000 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                   |  |  |  |  |  |  |  |
| RPEPOPFDPLRMSINN<br>CDF | RangePeakinessExcludingPolarOPFD2PLRMSINNetCDF              | The Peakiness should be between 0 and 90000 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                   |  |  |  |  |  |  |  |
| RPEPOPFDSARNCDF         | RangePeakinessExcludingPolarOPFD2SARNetCDF                  | The Peakiness should be between 0 and 15000 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                   |  |  |  |  |  |  |  |
| RPEPOPFDSINNCDF         | RangePeakinessExcludingPolarOPFD2SINNetCDF                  | The Peakiness should be between 0 and 90000 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                   |  |  |  |  |  |  |  |
| RPEPOPLRMNCDF           | RangePeakinessExcludingPolarOPLRMNetCDF                     | The Peakiness should be between 0 and 6400 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                    |  |  |  |  |  |  |  |
| RPEPOPSARNCDF           | RangePeakinessExcludingPolarOPSARNetCDF                     | The Peakiness should be between 0 and 15000 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                   |  |  |  |  |  |  |  |
| RPEPOPSINNCDF           | RangePeakinessExcludingPolarOPSINNetCDF                     | The Peakiness should be between 0 and 90000 (or missing) for surface type = ocean for latitudes between -70 and 70 degrees                   |  |  |  |  |  |  |  |
| RSSBCONCDF              | RangeSeaStateBiasCorrectionOceanNetCDF                      | The sea state bias correction should be between -500mm and 0mm (or missing) for surface type = ocean   |  |  |  |  |  |  |  |
| RSSHAOFDNCDF            | RangeSeaSurfaceHeightAnomalyOceanFD3NetCDF                  | The sea surface height anomaly should be between -3000mm and 3000mm (or missing) for surface type = ocean                                    |  |  |  |  |  |  |  |
| RSSHAOFDPLRMNCD F       | RangeSeaSurfaceHeightAnomalyOceanFD3PLRMNetCDF              | The sea surface height anomaly should be between -3000mm and 3000mm (or missing) for surface type = ocean                                    |  |  |  |  |  |  |  |
| RSSHAONCDF              | RangeSeaSurfaceHeightAnomalyOceanNetCDF                     | The sea surface height anomaly should be between -3000mm and 3000mm (or missing) for surface type = ocean                                    |  |  |  |  |  |  |  |
| RSWHOEPFDNCDF           | RangeSignificantWaveHeightOceanExcludingPolarFD2NetCDF      | The significant wave height should be between 0mm and 15000mm (or missing) for surface type = ocean for latitudes between -70 and 70 degrees |  |  |  |  |  |  |  |
| RSWHOEPFDPLRMNC<br>DF   | RangeSignificantWaveHeightOceanExcludingPolarFD2PLRMNetCDF  | The significant wave height should be between 0mm and 15000mm (or missing) for surface type = ocean for latitudes between -70 and 70 degrees |  |  |  |  |  |  |  |
| RSWHOEPNCDF             | RangeSignificantWaveHeightOceanExcludingPolarNetCDF         | The significant wave height should be between 0mm and 15000mm (or missing) for surface type = ocean for latitudes between -70 and 70 degrees |  |  |  |  |  |  |  |
| SOOHHIFHD               | SameOrOneHigher1HzIndexFor20HzData                          | The 1 Hz index of a 20 Hz sample should be the same or 1 higher than its previous sample   |  |  |  |  |  |  |  |
|                         |   |  |  |  |  |  |  |  |  |

| SCSTODHRNCDF | SequenceCounterStepTODHRNetCDF | The sequence counter should be modulo 4 higher with regard to the previous sequence counter           |
|--------------|--------------------------------|---|
| SCSTODNCDF   | SequenceCounterStepTODNetCDF   | The sequence counter should be one higher (modulo 16384) with regard to the previous sequence counter |

# 7.3 Missing QCC Reports

Number of products with missing QCC reports:

L1B and L2 Product name

P2P Product name
CS\_OFFL\_SIR\_GOP\_2\_20230408T231920\_20230409T000856\_C002