

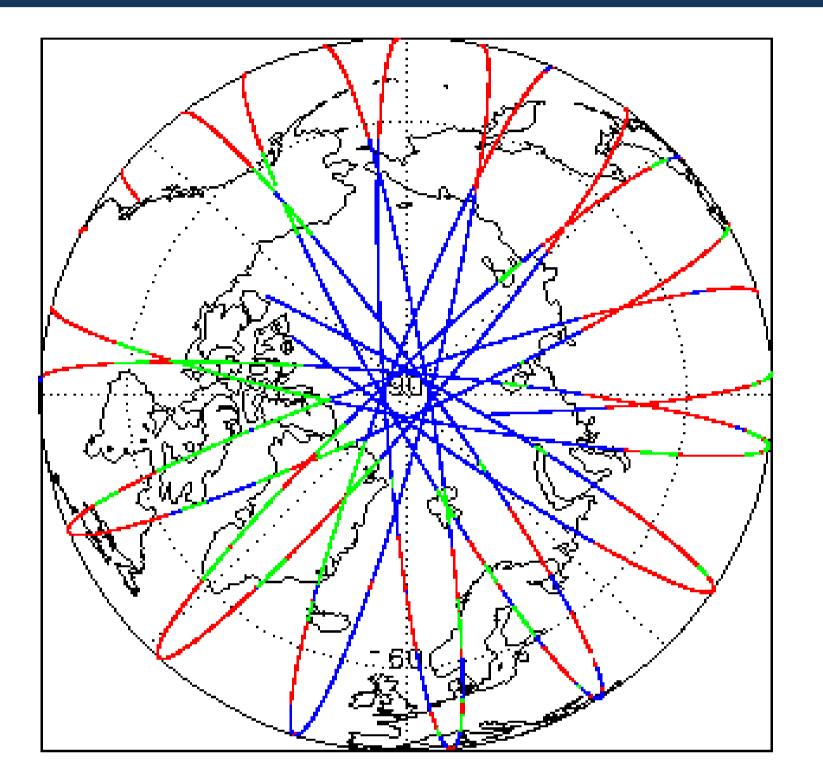
# 1. Overview

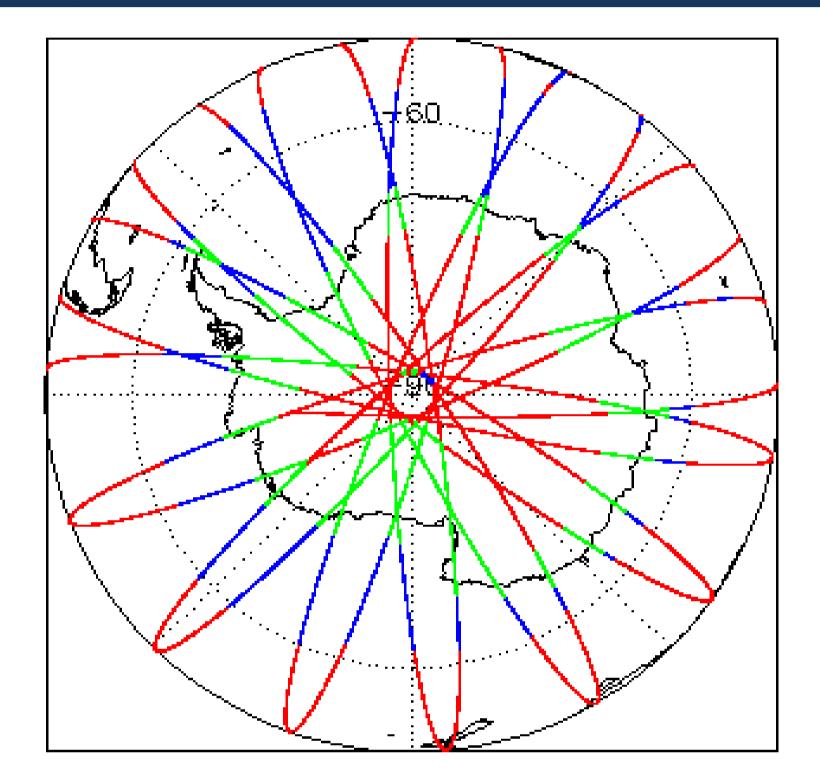
| <b>Report Production:</b> | 16-Dec-2020  |
|---------------------------|--|
| Processor Used:           | CryoSat Ocean Processor  |
| Data Used:                | Geophysical Ocean Products (GOP)<br>L1B, L2 & P2P Science Data |

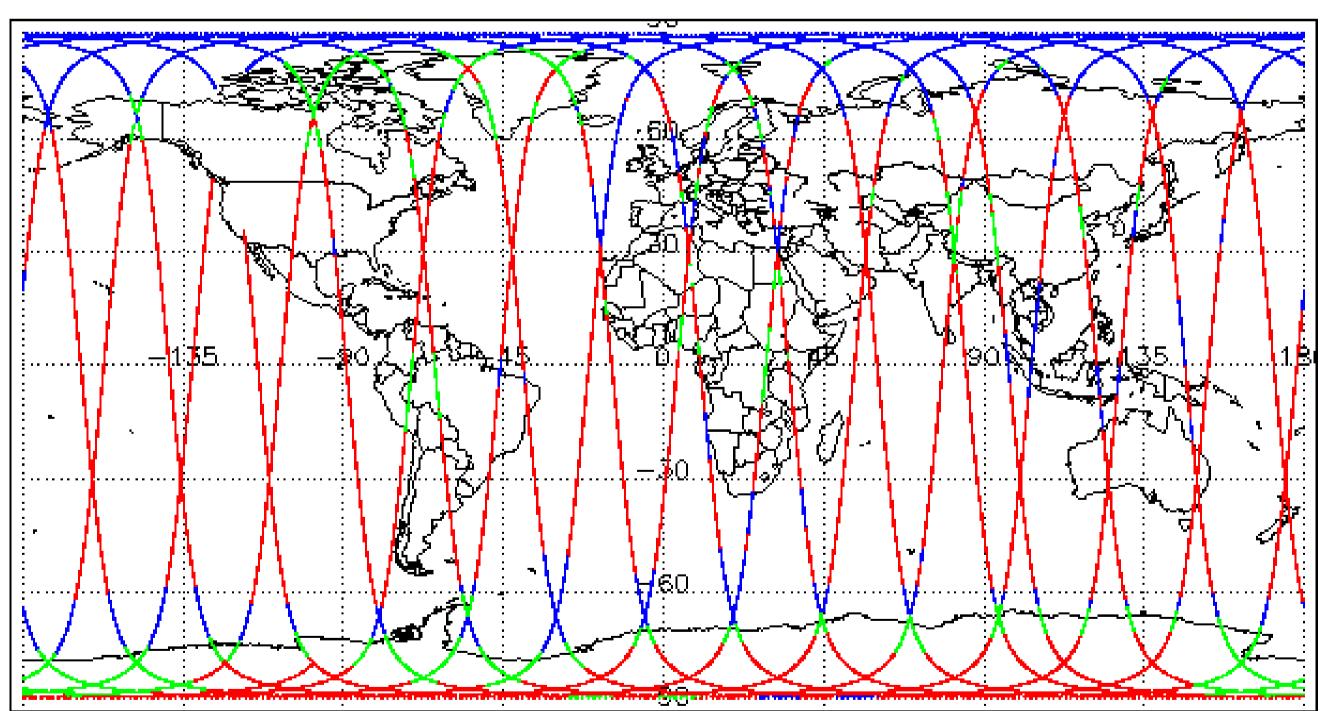
| Check                                      | L1 & L2                      | P2P                          |
|--|------------------------------|------------------------------|
| Server check: science-pds.cryosat.esa.int  | Nominal                      | Nominal                      |
| Server check: 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 and 5.5 | See Section 6.5              |
| 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 |

| Mission / Ins | trument News    |
|---------------|-----------------|
| 11-Nov-202    | None            |
| 12-Nov-202    | ) None          |
| 13-Nov-202    | Nothing planned |

# 2. Global Coverage







Mode 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 binary product file (.DBL).

Number of products with errors:

0

## **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:

## 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

2

0

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:

ProductTest FailedDescriptionCS\_OFFL\_SIR\_GOPM1B\_20201112T035910\_20201112T040015\_C001Power scaling errorThere is an error in the scaling of the L1B waveform for one or more<br/>recordsCS\_OFFL\_SIR\_GOPM1B\_20201112T074521\_20201112T081120\_C001Power scaling errorThere is an error in the scaling of the L1B waveform for one or more<br/>records

## 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.

22

| Product   | Test Failed  | Description  |
|---|--------------|--|
| CS_OFFL_SIR_GOPM1B_20201112T010130_20201112T013449_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20201112T102411_20201112T103704_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20201112T103828_20201112T104036_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20201112T142434_20201112T144725_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20201112T201636_20201112T201849_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPM1B_20201112T223026_20201112T224643_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T005430_20201112T005914_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T072346_20201112T072630_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T072637_20201112T072803_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T090607_20201112T090710_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T104036_20201112T104346_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T104401_20201112T104612_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T145928_20201112T150046_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T222425_20201112T222532_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPN1B_20201112T231744_20201112T231932_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T022505_20201112T023505_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T035442_20201112T035629_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T095042_20201112T095128_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T100235_20201112T100506_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T180446_20201112T180901_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T194257_20201112T194956_C001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_GOPR1B_20201112T212632_20201112T212812_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 binary product file (.DBL).

Number of products with errors:

0

## **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:

## **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 which are expected due to surface type. All common flags are summarised in the list below, followed by a table highlighting any additional issues which 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:

| Product   | Test Failed   | Description  |
|---|---|--|
| CS_OFFL_SIR_GOPM_2_20201112T102411_20201112T103704_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_GOPM_2_20201112T214044_20201112T215329_C001 | Total Geocentric Ocean Tide (GOT)   | There is an error with the Total Geocentric Ocean Tide height (solution 1: GOT) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T005430_20201112T005914_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                                       | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), Total Geocentric Ocean Tide (GOT), Total<br>Geocentric Ocean Tide (FES) and the Non-Equilibrium Long Period Ocean<br>Tide for one or more records |
| CS_OFFL_SIR_GOPN_2_20201112T014610_20201112T014845_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_GOPN_2_20201112T031711_20201112T032101_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                                       | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), Total Geocentric Ocean Tide (GOT), Total<br>Geocentric Ocean Tide (FES) and the Non-Equilibrium Long Period Ocean<br>Tide for one or more records |
| CS_OFFL_SIR_GOPN_2_20201112T035845_20201112T035853_C001 |   | There is an error with the Mean Dynamic Topography (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T041810_20201112T041933_C001 | Total Geocentric Ocean Tide (GOT)   | There is an error with the Total Geocentric Ocean Tide height (solution 1: GOT) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T045654_20201112T050008_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_GOPN_2_20201112T050522_20201112T050637_C001 | Mean Dynamic Topography (1)   | There is an error with the Mean Dynamic Topography (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T064427_20201112T064544_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_GOPN_2_20201112T072346_20201112T072630_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>Mean Sea Surface (1), Mean Dynamic | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), Total Geocentric Ocean Tide (GOT), Total<br>Geocentric Ocean Tide (FES) and the Non-Equilibrium Long Period Ocean<br>Tide for one or more records |
| CS_OFFL_SIR_GOPN_2_20201112T072637_20201112T072803_C001 | Topography (1), Total Geocentric Ocean  | Topography height (solution 1), Total Geocentric Ocean Tide (GOT), Total Geocentric Ocean Tide (FES) and the Non-Equilibrium Long Period Ocean   |
| CS_OFFL_SIR_GOPN_2_20201112T082154_20201112T082341_C001 | Mean Dynamic Topography (1)   | There is an error with the Mean Dynamic Topography (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T090607_20201112T090710_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_GOPN_2_20201112T100006_20201112T100235_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_GOPN_2_20201112T104036_20201112T104346_C001 | Total Geocentric Ocean Tide (GOT),<br>Total Geocentric Ocean Tide (FES), Non-<br>Equilibrium Long Period Ocean Tide   | There is an error with the Total Geocentric Ocean Tide height (solution 1:<br>GOT and solution 2: FES) and the Non-equilibrium Long Period Ocean<br>Tide height for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T104401_20201112T104612_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_GOPN_2_20201112T113913_20201112T114252_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_GOPN_2_20201112T122044_20201112T122435_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_GOPN_2_20201112T122943_20201112T123019_C001 | Mean Dynamic Topography (1), Total<br>Geocentric Ocean Tide (GOT)   | There is an error with the Mean Dynamic Topography (solution 1) and the Total Geocentric Ocean Tide (solution 1: GOT) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T132026_20201112T132209_C001 | Mean Dynamic Topography (1)   | There is an error with the Mean Dynamic Topography (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T163625_20201112T163939_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_GOPN_2_20201112T172737_20201112T172832_C001 | Mean Dynamic Topography (1)   | There is an error with the Mean Dynamic Topography (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T180901_20201112T181016_C001 | Mean Dynamic Topography (1)   | There is an error with the Mean Dynamic Topography (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPN_2_20201112T181521_20201112T181838_C001 |   | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), Total Geocentric Ocean Tide (GOT), Total<br>Geocentric Ocean Tide (FES) and the Non-Equilibrium Long Period Ocean<br>Tide for one or more records |

| CS_OFFL_SIR_GOPN_2_20201112T194956_20201112T195234_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_GOPN_2_20201112T195427_20201112T200013_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_GOPN_2_20201112T204513_20201112T204634_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_GOPN_2_20201112T212812_20201112T213132_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_GOPN_2_20201112T222425_20201112T222532_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_GOPN_2_20201112T230729_20201112T230929_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20201112T004627_20201112T004650_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20201112T004650_20201112T005430_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_20201112T022505_20201112T023505_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_20201112T035730_20201112T035845_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20201112T040831_20201112T041619_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_20201112T054811_20201112T055748_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_20201112T072803_20201112T073526_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_20201112T090710_20201112T091235_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_20201112T100235_20201112T100506_C001 | Mean Sea Surface (1)                                 | There is an error with the MSS height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPR_2_20201112T104612_20201112T105305_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_20201112T110647_20201112T111502_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20201112T122435_20201112T122943_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_20201112T140202_20201112T140944_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_20201112T154043_20201112T154815_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_20201112T155219_20201112T155349_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20201112T155725_20201112T155907_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |
| CS_OFFL_SIR_GOPR_2_20201112T171723_20201112T172615_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_20201112T172615_20201112T172737_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_20201112T185822_20201112T190514_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_20201112T190514_20201112T190924_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_20201112T203806_20201112T204406_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_20201112T204406_20201112T204513_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_20201112T212632_20201112T212812_C001 | Mean Sea Surface (1)                                 | There is an error with the MSS height (solution 1) for one or more records  |
| CS_OFFL_SIR_GOPR_2_20201112T221749_20201112T221942_C001 | Mean Dynamic Topography (1)                          | There is an error with the Mean Dynamic Topography (solution 1) for one or more records   |

| CS_OFFL_SIR_GOPR_2_20201112T221947_20201112T222123_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_20201112T222123_20201112T222425_C001 |  | 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.

1

Number of products with errors:

2

| Product   | Test Failed         | Description   |
|---|---------------------|---|
| CS_OFFL_SIR_GOPM_2_20201112T035910_20201112T040015_C001 | Power scaling error | There is an error in the scaling of the L2 waveform for one or more records |
| CS_OFFL_SIR_GOPM_2_20201112T074521_20201112T081120_C001 | Power scaling error | There is an error in the scaling of the L2 waveform for one or more records |

## 5.6 L2 Measurement Quality Flag Check

## L2 Quality Flags (20Hz)

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 OFFE SIR GOPM 2 202011111235929 202011121000818 C001 | <b>0</b>    | The OCOG Altimeter Range and Backscatter Quality Flags have been set for one or more records.  |
| CS_OFFL_SIR_GOPM_2_20201112T001126_20201112T003432_C001 | •           | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |

|   | Altimeter Range and Backscatter Quality  | set for one or more records.   |
|---|--|--|
| CS_OFFL_SIR_GOPM_2_20201112T005914_20201112T010008_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_20201112T010130_20201112T013449_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T014147_20201112T014610_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_20201112T015056_20201112T021454_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T024304_20201112T031251_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T032101_20201112T032650_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_20201112T033016_20201112T033436_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T033708_20201112T034409_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T040015_20201112T040216_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_20201112T040557_20201112T040656_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T041933_20201112T045303_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T050008_20201112T050522_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_20201112T051209_20201112T051854_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T052203_20201112T052627_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T054239_20201112T054450_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |

| CS_OFFL_SIR_GOPM_2_20201112T054452_20201112T054636_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records  |
|---|--|--|
| CS_OFFL_SIR_GOPM_2_20201112T055748_20201112T060814_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been                                 |
| CS_OFFL_SIR_GOPM_2_20201112T061059_20201112T063212_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T064016_20201112T064427_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_20201112T064928_20201112T070840_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T070932_20201112T071354_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T071752_20201112T072142_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T073644_20201112T074342_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T074521_20201112T081120_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T081343_20201112T081909_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_20201112T081928_20201112T082154_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_20201112T083014_20201112T084243_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T084330_20201112T090036_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T092406_20201112T093336_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T093539_20201112T095042_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T095310_20201112T095807_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_20201112T095846_20201112T100006_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_20201112T100706_20201112T101858_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T102411_20201112T103704_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T111502_20201112T112923_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T113238_20201112T113721_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_20201112T114451_20201112T121042_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T124434_20201112T130530_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T130619_20201112T130811_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T131259_20201112T131636_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_20201112T131659_20201112T132026_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_20201112T132411_20201112T135111_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG  | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been                                 |
|---|--|--|
| CS_OFFL_SIR_GOPM_2_20201112T142434_20201112T144725_C001 | Altimeter Range and Backscatter Quality<br>Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality, OCOG | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been                                 |
| CS_OFFL_SIR_GOPM_2_20201112T145055_20201112T145551_C001 | Altimeter Range and Backscatter Quality<br>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_20201112T150443_20201112T153734_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records  |
| CS_OFFL_SIR_GOPM_2_20201112T154944_20201112T155219_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been                                 |
| CS_OFFL_SIR_GOPM_2_20201112T162241_20201112T162404_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been                                 |
| CS_OFFL_SIR_GOPM_2_20201112T164337_20201112T171723_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T172911_20201112T173055_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T174835_20201112T180446_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T181016_20201112T181521_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_20201112T182211_20201112T185720_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T192010_20201112T194257_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T200200_20201112T201327_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T201636_20201112T201849_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T202330_20201112T203435_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T204634_20201112T204908_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_20201112T205029_20201112T210744_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T210943_20201112T212408_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T213132_20201112T213339_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_20201112T213432_20201112T213841_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_20201112T214044_20201112T215329_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T215756_20201112T220718_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T223026_20201112T224643_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T225210_20201112T230514_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPM_2_20201112T230929_20201112T231744_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_20201112T232048_20201112T233606_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |

| CS_OFFL_SIR_GOPM_2_20201112T233931_20201112T234355_C001 |  | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
|---|--|--|
| CS_OFFL_SIR_GOPM_2_20201112T235058_20201112T235102_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_20201112T040521_20201112T040557_C001 | $\mathbf{C}$   | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T040738_20201112T040831_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T050522_20201112T050637_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T180901_20201112T181016_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_20201112T104346_20201112T104401_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T105726_20201112T105814_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_20201112T110647_20201112T111502_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T200013_20201112T200200_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T205025_20201112T205029_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |

## L2 Quality Flags (20Hz 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: 97

| Product   | Test Failed   | Description  |
|---|---|--|
| CS_OFFL_SIR_GOPN_2_20201112T000818_20201112T001016_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T003516_20201112T003757_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_20201112T003853_20201112T004021_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_20201112T004423_20201112T004546_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_20201112T005430_20201112T005914_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T014036_20201112T014147_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_20201112T034648_20201112T034712_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_20201112T035208_20201112T035313_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_20201112T040738_20201112T040831_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_20201112T041619_20201112T041727_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T052627_20201112T052723_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_20201112T072346_20201112T072630_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.  |

|   | OCOC Altimator Danas Quality DL DM  | The OCOC Dense and Deckesster Quelity Flags have been est for one or   |
|---|---|--|
| CS_OFFL_SIR_GOPN_2_20201112T072637_20201112T072803_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_20201112T082154_20201112T082341_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_20201112T090223_20201112T090439_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_20201112T090607_20201112T090710_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T091235_20201112T091327_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T100006_20201112T100235_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T101930_20201112T101959_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_20201112T102014_20201112T102301_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_20201112T103704_20201112T103828_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_20201112T104036_20201112T104346_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_20201112T104401_20201112T104612_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_20201112T113020_20201112T113238_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_20201112T113913_20201112T114252_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_20201112T121824_20201112T121948_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_20201112T122044_20201112T122435_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T122943_20201112T123019_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_20201112T124155_20201112T124434_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_20201112T131028_20201112T131259_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_20201112T141826_20201112T141932_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_20201112T144928_20201112T145055_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T160750_20201112T160929_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_20201112T160945_20201112T161309_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_20201112T173120_20201112T173237_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T173613_20201112T173739_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T174607_20201112T174835_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T181521_20201112T181838_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |

| CS_OFFL_SIR_GOPN_2_20201112T194956_20201112T195234_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_20201112T195427_20201112T200013_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T204908_20201112T205025_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_20201112T213841_20201112T214017_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPN_2_20201112T222425_20201112T222532_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_20201112T224644_20201112T225210_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_20201112T230729_20201112T230929_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_20201112T234434_20201112T234820_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_20201112T234902_20201112T234938_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_20201112T004650_20201112T005430_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T013449_20201112T013729_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T022505_20201112T023505_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T031251_20201112T031711_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T035853_20201112T035910_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_20201112T040415_20201112T040455_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_20201112T040831_20201112T041619_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T045303_20201112T045654_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T050637_20201112T051209_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T054811_20201112T055748_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T060814_20201112T061059_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T064544_20201112T064928_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T072803_20201112T073526_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T081120_20201112T081220_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T082341_20201112T083014_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T084243_20201112T084330_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_20201112T090710_20201112T091235_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |

|   | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG  | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags   |
|---|---|--|
| CS_OFFL_SIR_GOPR_2_20201112T093336_20201112T093539_C001 | Altimeter Range and Backscatter Quality<br>PLRM<br>Ocean Altimeter Range, SSHA, SWH                                       | set for one or more records.   |
| CS_OFFL_SIR_GOPR_2_20201112T100235_20201112T100506_C001 | and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM                                     | The Ocean Altimeter Range, SSHA, SWH and Backscatter Quality Flags<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T104612_20201112T105305_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T105726_20201112T105814_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_20201112T110647_20201112T111502_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_20201112T130811_20201112T131028_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T140202_20201112T140944_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T141027_20201112T141258_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_20201112T144726_20201112T144928_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T150108_20201112T150443_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T153848_20201112T153925_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_20201112T154043_20201112T154815_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T155219_20201112T155349_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_20201112T155725_20201112T155907_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_20201112T160033_20201112T160213_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T161950_20201112T162241_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T162404_20201112T162934_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T163939_20201112T164337_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T171723_20201112T172615_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T180446_20201112T180901_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T185822_20201112T190514_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T190514_20201112T190924_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T194257_20201112T194956_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T200013_20201112T200200_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T204406_20201112T204513_C001 | Ocean Altimeter Range, SSHA, SWH<br>and Backscatter Quality PLRM, OCOG<br>Altimeter Range and Backscatter Quality<br>PLRM | set for one or more records.   |
| CS_OFFL_SIR_GOPR_2_20201112T210744_20201112T210935_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_20201112T212408_20201112T212512_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
|---|---|--|
| CS_OFFL_SIR_GOPR_2_20201112T215555_20201112T215756_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T221749_20201112T221942_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_20201112T221947_20201112T222123_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T230514_20201112T230729_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<br>and the OCOG Altimeter Range and Backscatter Quality Flags have been<br>set for one or more records. |
| CS_OFFL_SIR_GOPR_2_20201112T233606_20201112T233931_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_20201112T235641_20201112T235810_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.  |

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

Currently, there are several common flags raised in the Level 2 products, which are summarised below.

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

Number of products with errors:

190

## 5.8 L2 Ocean Retracking Quality Check

L2 Retracking Flags (20Hz)

| CryoSat L2 data includes an ocean retracking quali  | ity 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 curre   | ntly 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:   | 72   |
| L2 Retracking Flags (20Hz, PLRM)  |  |
| CryoSat L2 data includes an ocean retracking quali  | ity 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   | g is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.   |
| Number of products with errors:   | 144  |
|   | 6. GOP L2 Pole-to-Pole Data Quality Check  |
| 6.1 P2P Product Format Check  |  |
| Each product, retrieved and unpacked from the scie  | ence 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:   | 0  |
| 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.       |
| For all products, a series of pre-defined checks are <b>Number of products with errors:</b> | performed on the MPH and SPH in order to identify any inconsistencies and/or errors raised by the ground-segment processing chain.       |
|   | 0  |
| Number of products with errors:<br>6.3 P2P Auxiliary Data File Usage                        | 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 which are expected due to surface type. All common flags are summarised in the list below, followed by a table highlighting any additional issues which 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:

| Product   | Test Failed  | Description   |
|---|--|---|
| CS_OFFL_SIR_GOP_220201112T000257_20201112T005233_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_220201112T005233_20201112T014212_C001 |  | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), the Total Geocentric Ocean Tide height<br>(solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height<br>for one or more records |
| CS_OFFL_SIR_GOP_220201112T014212_20201112T023148_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 20201112T023148 20201112T032126 C001 | Topography (1), Total Geocentric Ocean               | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), the Total Geocentric Ocean Tide height<br>(solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height<br>for one or more records |
|--|--|---|
| US OFFE SIR GOP / /0/0111/103/1/6 /0/0111/1041103 U001 |  | 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_220201112T041103_20201112T050041_C001  |  | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1) and the Total Geocentric Ocean Tide<br>height (solution 1: GOT) for one or more records   |
| CS_OFFL_SIR_GOP_220201112T050041_20201112T055017_C001  |  | 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_220201112T055017_20201112T063955_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_220201112T063955_20201112T072932_C001  | Topography (1), Total Geocentric Ocean               | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), the Total Geocentric Ocean Tide height<br>(solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height<br>for one or more records |
| CS_OFFL_SIR_GOP_220201112T072932_20201112T081910_C001  |  | 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_220201112T081910_20201112T090847_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_220201112T090847_20201112T095825_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_220201112T095825_20201112T104801_C001  |  | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), the Total Geocentric Ocean Tide height<br>(solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height<br>for one or more records |
| CS_OFFL_SIR_GOP_220201112T104801_20201112T113739_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_220201112T113739_20201112T122716_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_220201112T122716_20201112T131654_C001  | Topography (1), Total Geocentric Ocean               | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1) and the Total Geocentric Ocean Tide<br>height (solution 1: GOT) for one or more records   |
| US UFFL SIR GUP / 202011121131654 202011121140631 COUT | 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_220201112T140631_20201112T145609_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  |
| US OFFE SIR GOP / /0/0111/145009 /0/0111/1154545 COUT  | 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  |
| US OFFE SIR GOP / 202011121154545 202011121163524 COUT | 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_220201112T163524_20201112T172500_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  |
| US OFFE SIR GOP / /0/0111/11/2500 /0/0111/1181438 COUT | 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_220201112T181438_20201112T190415_C001  | Topography (1), Total Geocentric Ocean               | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1), the Total Geocentric Ocean Tide height<br>(solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height<br>for one or more records |
| US UFFL SIK GUP / /U/U/1//190415 /U/U/1//195353 UUU    | 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  |
| US OFFL SIR GOP Z ZUZUTTIZT195353 ZUZUTTIZTZU4329 UUUT | 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_220201112T204329_20201112T213307_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_220201112T213307_20201112T222244_C001  | Topography (1), Total Geocentric Ocean               | There is an error with the MSS height (solution 1) and the Mean Dynamic<br>Topography height (solution 1) and the Total Geocentric Ocean Tide<br>height (solution 1: GOT) 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:

| Product  | Test Failed         | Description   |
|--|---------------------|---|
| CS_OFFL_SIR_GOP_220201112T032126_20201112T041103_C001  | Power scaling error | There is an error in the scaling of the L2 waveform for one or more records |
| CS_OFFL_SIR_GOP_2_20201112T072932_20201112T081910_C001 | Power scaling error | There is an error in the scaling of the L2 waveform for one or more records |

## 6.6 P2P Measurement Quality Flag Check

| P2P Quality Flags (20Hz)  |   |
|---|---|
| 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 fr  | om the L2 Quality Flags, please see Section 5.6 for the full list of products affected.   |
| Number of products with errors:   | 29  |
| P2P Quality Flags (20Hz PLRM)   |   |
| Since the P2P Quality Flags are copied directly fr  | om the L2 Quality Flags, please see Section 5.6 for the full list of products affected.   |
| Number of products with errors:   | 29  |
| P2P Quality Flags (1 Hz & 1Hz PLRM)   |   |
| Since the P2P Quality Flags are copied directly fr  | om the L2 Quality Flags, please see Section 5.6 for the full list of products affected.   |
| Number of products with errors:   | 29  |
|   |   |
| 6.8 P2P Ocean Retracking Quality C  | Check   |
| 6.8 P2P Ocean Retracking Quality C<br>P2P Retracking Flags (20Hz)   | Check   |
| P2P Retracking Flags (20Hz)   | Check<br>by flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.  |
| <b>P2P Retracking Flags (20Hz)</b><br>Cryosat P2P data includes an ocean retracking qualit  |   |
| <b>P2P Retracking Flags (20Hz)</b><br>Cryosat P2P data includes an ocean retracking qualit  | ty flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.   |
| <b>P2P Retracking Flags (20Hz)</b><br>Cryosat P2P data includes an ocean retracking qualit<br><b>Ocean Retracking Quality Flag (PLRM):</b> This flag is   | ry flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.<br>Is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.   |
| P2P Retracking Flags (20Hz)<br>Cryosat P2P data includes an ocean retracking qualit<br>Ocean Retracking Quality Flag (PLRM): This flag is<br>Number of products with errors:<br>P2P Retracking Flags PLRM   | ry flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.<br>Is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.   |
| <ul> <li>P2P Retracking Flags (20Hz)</li> <li>Cryosat P2P data includes an ocean retracking qualit</li> <li>Ocean Retracking Quality Flag (PLRM): This flag is</li> <li>Number of products with errors:</li> <li>P2P Retracking Flags PLRM</li> <li>CryoSat L2 data includes an ocean retracking quality</li> </ul> | ry flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.<br>Is currently set for products GOPR and GOPN products over sea ice, but this is to be expected.<br>29   |
| <ul> <li>P2P Retracking Flags (20Hz)</li> <li>Cryosat P2P data includes an ocean retracking qualit</li> <li>Ocean Retracking Quality Flag (PLRM): This flag is</li> <li>Number of products with errors:</li> <li>P2P Retracking Flags PLRM</li> <li>CryoSat L2 data includes an ocean retracking quality</li> </ul> | y flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.<br>s currently set for products GOPR and GOPN products over sea ice, but this is to be expected.<br>29<br>flag for each 20-Hz PLRM measurement record. The bit value of this flag indicates any problems when set. |

# 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   | 207          | 207             | 6         | 201          | 0          |
| SIR_GOPR1B   | 114          | 114             | 0         | 114          | 0          |
| SIR_GOPN1B   | 103          | 103             | 3         | 100          | 0          |
| SIR_GOPM_2   | 207          | 207             | 151       | 56           | 0          |
| SIR_GOPR_2   | 114          | 114             | 29        | 83           | 2          |
| SIR_GOPN_2   | 103          | 103             | 38        | 65           | 0          |
| SIR_GOP_P2P  | 29           | 29              | 0         | 27           | 2          |

## 7.1 QCC Errors

| Number of | QCC | reports | with | errors: |
|-----------|-----|---------|------|---------|
|-----------|-----|---------|------|---------|

4

#### Total number of occurrences of each error

| Product Type | RLOBOPNCDF | RL | RLOBOPNCDF | RL | - | - | - | - | - | - | - |
|--------------|------------|----|------------|----|---|---|---|---|---|---|---|
| SIR_GOPR_2   | 2          | 2  | 2          | 2  |   |   |   |   |   |   |   |

| Product Type | RLOBOPNCDF | RL | RLOBOPNCDF | RL | - | - | - | - | - | - | - |
|--------------|------------|----|------------|----|---|---|---|---|---|---|---|
| SIR_GOP_2_   | 2          | 2  | 2          | 2  |   |   |   |   |   |   |   |

| <b>Test Description Key:</b> | est 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 reports with warnings

2144

#### Total number of occurrences of each warning

| Product Type | BCSHNCDF | IOHHMOOR | MVIOEPFDNCDF | MVIOEPNCDF | MVIONCDF | RBSZOPOEPFDNCDF | RBSZOPOEPFDPLRMNCD |  |  |  |  |
|--------------|----------|----------|--------------|------------|----------|-----------------|--------------------|--|--|--|--|
| SIR_GOPM1B   | 201      | 0        | 0            | 0          | 0        | 0               | 0                  |  |  |  |  |
| SIR_GOPM_2   | 0        | 0        | 40           | 38         | 1        | 42              | 0                  |  |  |  |  |
| SIR_GOPN1B   | 98       | 0        | 0            | 0          | 0        | 0               | 0                  |  |  |  |  |
| SIR_GOPN_2   | 0        | 0        | 9            | 32         | 8        | 24              | 26                 |  |  |  |  |
| SIR_GOPR1B   | 110      | 0        | 0            | 0          | 0        | 0               | 0                  |  |  |  |  |
| SIR_GOPR_2   | 0        | 2        | 40           | 45         | 0        | 38              | 29                 |  |  |  |  |

| Product Type | RBSZOPOEPNCDF | RDTCONCDF | RLPTONCDF | RMSSGHOPONCDF | RNELPOTONCDF | RPEPOPFDLRMNCDF | RPEPOPFDPLRMSARNCD |
|--------------|---------------|-----------|-----------|---------------|--------------|-----------------|--------------------|
| SIR_GOPM1B   | 0             | 0         | 0         | 0             | 0            | 0               | 0                  |
| SIR_GOPM_2   | 36            | 0         | 0         | 1             | 3            | 31              | 0                  |
| SIR_GOPN1B   | 0             | 0         | 0         | 0             | 0            | 0               | 0                  |
| SIR_GOPN_2   | 17            | 1         | 20        | 0             | 1            | 0               | 0                  |
| SIR_GOPR1B   | 0             | 0         | 0         | 0             | 0            | 0               | 0                  |
| SIR_GOPR_2   | 12            | 0         | 23        | 0             | 5            | 0               | 50                 |

| Product Type | RPEPOPFDPLRMSINNCD | RPEPOPFDSARNCDF | RPEPOPFDSINNCDF | RPEPOPLRMNCDF | RPEPOPSARNCDF | RPEPOPSINNCDF | RSSBCONCDF |
|--------------|--------------------|-----------------|-----------------|---------------|---------------|---------------|------------|
| SIR_GOPM1B   | 0                  | 0               | 0               | 0             | 0             | 0             | 0          |
| SIR_GOPM_2   | 0                  | 0               | 0               | 26            | 0             | 0             | 5          |
| SIR_GOPN1B   | 0                  | 0               | 0               | 0             | 0             | 0             | 0          |
| SIR_GOPN_2   | 24                 | 0               | 31              | 0             | 0             | 26            | 19         |
| SIR_GOPR1B   | 0                  | 0               | 0               | 0             | 0             | 0             | 0          |
| SIR_GOPR_2   | 0                  | 60              | 0               | 0             | 48            | 0             | 1          |

| Product Type | RSSHAOFDNCDF | RSSHAOFDPLRMNCDF | RSSHAONCDF | RSWHOEPFDNCDF | RSWHOEPFDPLRMNCDF | RSWHOEPNCDF | RWTCONCDF |
|--------------|--------------|------------------|------------|---------------|-------------------|-------------|-----------|
| SIR_GOPM1B   | 0            | 0                | 0          | 0             | 0                 | 0           | 0         |
| SIR_GOPM_2   | 28           | 0                | 8          | 36            | 0                 | 3           | 0         |
| SIR_GOPN1B   | 0            | 0                | 0          | 0             | 0                 | 0           | 0         |

| SIR_GOPN_2 | 40 | 54 | 27 | 27 | 29 | 15 | 6 |
|------------|----|----|----|----|----|----|---|
| SIR_GOPR1B | 0  | 0  | 0  | 0  | 0  | 0  | 0 |
| SIR_GOPR_2 | 63 | 38 | 12 | 38 | 47 | 1  | 0 |

| Product Type | IOHHMOOR | MVIOEPFDNCDF | MVIOEPNCDF | MVIONCDF | RBSZOPOEPFDNCDF | RBSZOPOEPFDPLRMNCD | RBSZOPOEPNCDF |
|--------------|----------|--------------|------------|----------|-----------------|--------------------|---------------|
| SIR_GOP_2_   | 21       | 29           | 29         |          | 29              | 15                 | 28            |

| Product Type | RDTCONCDF | RLPTONCDF | RMSSGHOPONCDF | RNELPOTONCDF | RPEPOPFDPLRMSINNCD | RPEPOPFDSINNCDF | RPEPOPSINNCDF |
|--------------|-----------|-----------|---------------|--------------|--------------------|-----------------|---------------|
| SIR_GOP_2_   | 1         | 28        | 1             | 8            | 17                 | 29              | 23            |

| Product Type | RSSBCONCDF | RSSHAOFDNCDF | RSSHAOFDPLRMNCDF | RSSHAONCDF | RSWHOEPFDNCDF | RSWHOEPFDPLRMNCDF | RSWHOEPNCDF |
|--------------|------------|--------------|------------------|------------|---------------|-------------------|-------------|
| SIR_GOP_2_   | 17         | 29           | 18               | 24         | 29            | 17                | 15          |

| Test Description Key:   | 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     |  |  |  |  |  |
| RDTCONCDF               | RangeDryTroposphericCorrectionOceanNetCDF                   | The Dynamic atmospheric correction should be between -1050mm and 1000mm (or missing) for surface type = ocean - NetCDF                       |  |  |  |  |  |
| RLPTONCDF               | RangeLongPeriodTideOceanNetCDF                              | The Long period tide height should be between -50mm and 50mm (or missing) for surface type = ocean   |  |  |  |  |  |
| RMSSGHOPONCDF           | RangeMSSGeoidHeightOPOceanNetCDF                            | The MSS/geoid height should be between -106000mm and 88000mm (or missing) for surface type = ocean -<br>NetCDF                               |  |  |  |  |  |
| 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                   |  |  |  |  |  |
|                         | 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<br>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                                    |  |  |  |  |  |
|                         | 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 |  |  |  |  |  |
|                         | RangeSignificantWaveHeightOceanExcludingPolarNetCDF         | The significant wave height should be between 0mm and 15000mm (or missing) for surface type = ocean for latitudes between -70 and 70 degrees |  |  |  |  |  |
| RWTCONCDF               | RangeWetTroposphericCorrectionOceanNetCDF                   | The Wet tropospheric correction should be between -500mm and -1mm (or missing) for surface type = ocean - NetCDF                             |  |  |  |  |  |
| SPHRTASCNSNCDF          | SPH_Rel_Time_ASC_Node_Start_v2_NetCDF                       | Rel_Time_ASC_Node_Start mismatch (DBL ASC, rounded up to 0.1)  |  |  |  |  |  |
| SPHRTASCNSNCDF          | SPH_Rel_Time_ASC_Node_Stop_v2_NetCDF                        | Rel_Time_ASC_Node_Stop mismatch (DBL ASC, rounded up to 0.1)   |  |  |  |  |  |

# 7.3 Missing QCC Reports

Number of products with missing QCC reports:

1

## Product name

No GOPX reports missing

## Product name

CS\_OFFL\_SIR\_GOP\_2\_\_20201112T231222\_20201113T000159\_C002