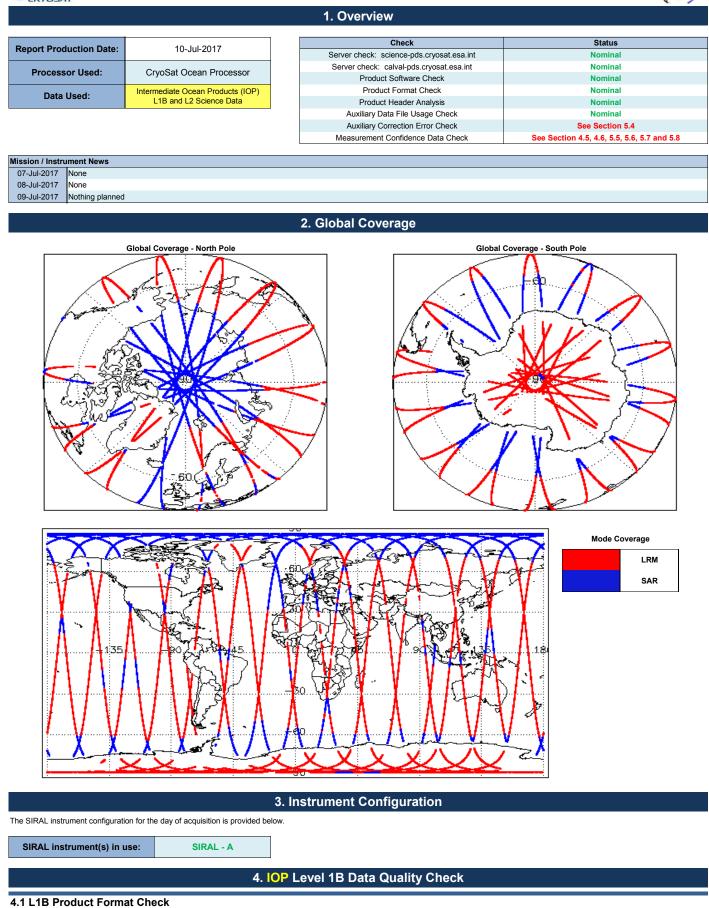


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Each product, retrieved and unpacked from the science server, is checked to ensure it consists of both an XML header file (.HDR) and a binary product file (.DBL).

Number of products with errors:

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.

| 4.3 L1B Auxilary Data File Usage Check | | |
|---|---|---|
| Each product is checked for missing Data Set Descriptors with respect to a pro- | e-determined baseline and also to chec | k the validity of Auxiliary Data Files is correct. |
| Number of products with errors: 0 | | |
| 4.4 L1B Auxiliary Correction Error Check | | |
| CryoSat L1B data includes a correction error flag (field 60) for each measurem | nent record. The bit value of this flag inc | licates any problems when set. |
| Number of products with errors: 0 | | |
| 4.5 L1B Measurement Confidence Data Check | | |
| CryoSat L1B data includes a measurement confidence flag (field 12) for each | measurement record. The bit value of t | his flag indicates any problems when set. |
| Number of products with errors: 2 | | |
| Product | Test Failed | Description |
| CS_OFFL_SIR_IOP_1B_20170708T095818_20170708T101300_B001 | Power scaling error | There is an error in the scaling of the L1B waveform for one or more records |

Power scaling error

There is an error in the scaling of the L1B waveform for one or more

records

4.6 L1B Waveform Group Data Check

CS_OFFL_SIR_IOP_1B_20170708T113051_20170708T113517_B001

CryoSat L1B data includes a waveform data flag (field 65) 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 products over land, but this is to be expected.

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| Number of | products with errors: |
|-----------|-----------------------|
|-----------|-----------------------|

| Product | Test Failed | Description |
|---|--------------|--|
| CS_OFFL_SIR_IOP_1B_20170708T011854_20170708T012109_B001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_IOP_1B_20170708T050832_20170708T051107_B001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_IOP_1B_20170708T102931_20170708T104422_B001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_IOP_1B_20170708T112015_20170708T113048_B001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_IOP_1B_20170708T155522_20170708T155625_B001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_IOP_1B_20170708T220018_20170708T220558_B001 | Loss of Echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_IOP_1B_20170708T224411_20170708T225102_B001 | Loss of Echo | The tracking echo is missing for one or more records |

5. IOP 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). 0

Number of products with errors:

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.

Wind Model File Usage: This file is currently not included in all L2 products.

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 two 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.

Sea State Bias Error: The error value is currently set for products over land and sea ice, but this is to be expected.

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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_IOP_220170707T235528_20170708T000343_B001 | GIM Ionospheric Correction | There is an error with the GIM lonospheric correction for one or more records |
| CS_OFFL_SIR_IOP_220170708T062227_20170708T062408_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T085045_20170708T090536_B001 | For the second s | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T092617_20170708T093342_B001 | Total Geocentric Ocean Tide (FES) | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) for one or more records |
| CS_OFFL_SIR_IOP_220170708T095604_20170708T095818_B001 | Total Geocentric Ocean Tide (FES), Non- | There is an error with the Total Geocentric Ocean Tide height (solution 1: GOT and solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_2_20170708T095818_20170708T101300_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T110631_20170708T110804_B001 | Lotal Geocentric Ocean Lide (EES) | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) for one or more records |
| CS_OFFL_SIR_IOP_2_20170708T111927_20170708T112014_B001 | For Formation Period Ocean Tide (FES), Non- | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |

| CS_OFFL_SIR_IOP_220170708T112014_20170708T113048_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
|--|---|---|
| CS_OFFL_SIR_IOP_2_20170708T113051_20170708T113517_B001 | Total Geocentric Ocean Tide (FES) | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) for one or more records |
| CS_OFFL_SIR_IOP_220170708T122643_20170708T123030_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_2_20170708T130543_20170708T130720_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T155658_20170708T155717_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T173542_20170708T173612_B001 | Total Geocentric Ocean Tide (FES) | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) for one or more records |
| CS_OFFL_SIR_IOP_220170708T173809_20170708T174017_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T211208_20170708T212648_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T213230_20170708T214836_B001 | | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T220558_20170708T221943_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T222157_20170708T223810_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T224411_20170708T225102_B001 | Total Geocentric Ocean Tide (FES), Non- Equilibrium Long Period Ocean Tide | There is an error with the Total Geocentric Ocean Tide height (solution 2: FES) and the Non-equilibrium Long Period Ocean Tide height for one or more records |
| CS_OFFL_SIR_IOP_220170708T231149_20170708T231328_B001 | Mean Sea Surface (2) | There is an error with the MSS height (solution 2) for one or more records |

5.5 L2 Measurement Confidence Data Check

CryoSat L2 data includes a measurement confidence flag (field 14) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set. Number of products with errors: 2

| Product | Test Failed | Description |
|---|---------------------|---|
| CS_OFFL_SIR_IOP_220170708T095818_20170708T101300_B001 | Power scaling error | There is an error in the scaling of the L2 waveform for one or more records |
| CS_OFFL_SIR_IOP_220170708T113051_20170708T113517_B001 | Power scaling error | There is an error in the scaling of the L2 waveform for one or more records |

5.6 L2 Range Measurement Check

CryoSat L2 data includes an Ocean (field 25) and Ice (field 30) Range Averaging Status flag for each measurement record. The bit value of this flag indicates any problems when set.

Currently, there are two common status flags 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.

Ocean Range Averaging Status Flag: This flag is currently set for products over land and sea ice, but this is to be expected.

Ice Range Averaging Status Flag: This flag is currently set for products over land, but this is to be expected. 36

Number of products with errors:

| Product | Test Failed | Description |
|--|----------------------------|--|
| CS_OFFL_SIR_IOP_2_20170708T002125_20170708T002600_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T002600_20170708T002603_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T002603_20170708T002616_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T002637_20170708T002754_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T020127_20170708T020513_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T020520_20170708T020529_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T020536_20170708T020900_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T033938_20170708T034427_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T034434_20170708T034803_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T051932_20170708T052456_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T065856_20170708T070354_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T084106_20170708T084259_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T093503_20170708T093755_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T102000_20170708T102211_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T102256_20170708T102712_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T111404_20170708T111442_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T115753_20170708T120614_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T133651_20170708T133849_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T133935_20170708T134433_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T151617_20170708T151654_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |

| CS_OFFL_SIR_IOP_220170708T151857_20170708T152456_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
|--|----------------------------|--|
| CS_OFFL_SIR_IOP_220170708T165805_20170708T170327_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T183813_20170708T184220_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T201208_20170708T201705_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T201706_20170708T201711_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T201719_20170708T201726_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T201726_20170708T202044_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T210044_20170708T210355_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T215053_20170708T215604_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T215604_20170708T215610_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T215610_20170708T215617_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T215617_20170708T215622_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T215623_20170708T215635_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T215640_20170708T215811_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_220170708T233515_20170708T233521_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |
| CS_OFFL_SIR_IOP_2_20170708T233554_20170708T233655_B001 | Ice Range Averaging Status | The Ice Range Averaging Status Flag has been set for one or more records. |

5.7 L2 SWH and Backscatter Measurement Check

CryoSat L2 data includes a SWH Averaging Status flag (field 49) and an Ocean (field 55) and Ice (field 61) Backscatter Averaging Status flag for each measurement record. The bit value of this flag indicates any problems when set

Currently, there are three common status flags 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.

SWH Averaging Status Flag: This flag is currently set for products over land and sea ice, but this is to be expected.

Ocean Backscatter Averaging Status Flag: This flag is currently set for products over land and sea ice, but this is to be expected.

Ice Backscatter Averaging Status Flag: This flag is currently set for products over land, but this is to be expected 28

Number of products with errors:

Product Test Failed Description The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T002125_20170708T002600_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T002637 20170708T002754 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T020127_20170708T020513_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T020520_20170708T020529_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T020536 20170708T020900 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T033938_20170708T034427_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T034434 20170708T034803 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T051932 20170708T052456 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T065856_20170708T070354_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T084106 20170708T084259 B001 Ice Backscatter Averaging Status ecords The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T093503_20170708T093755_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T102000_20170708T102211_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP_2__20170708T102256_20170708T102712_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T115753_20170708T120614_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T133651_20170708T133849_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T133935 20170708T134433 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T151617 20170708T151654 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T151857 20170708T152456 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T165805 20170708T170327 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T201208 20170708T201705 B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T201726_20170708T202044_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T210044_20170708T210355_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T215604_20170708T215610_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS OFFL SIR IOP 2 20170708T215610 20170708T215617 B001 Ice Backscatter Averaging Status ecords The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T215617_20170708T215622_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T215623_20170708T215635_B001 Ice Backscatter Averaging Status records The Ice Backscatter Averaging Status Flag has been set for one or more CS_OFFL_SIR_IOP_2__20170708T215640_20170708T215811_B001 Ice Backscatter Averaging Status ecords

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5.8 L2 Ocean Retracking Quality Check

CryoSat L2 data includes an ocean retracking quality flag (field 19) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.

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

Number of products with errors:

6. IOP 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 | Nb. Products | Nb. QCC Reports | Nb. Valid | Nb. Warnings | Nb. Errors |
|---------------------------------------|---|-----------------|-----------|--------------|------------|
| SIR_IOP_1B | 232 | 232 | 232 | 0 | 0 |
| SIR_IOP_2 | 232 | 232 | 232 | 0 | 0 |
| | | | | | |
| 6.1 QCC Errors | | | | | |
| Number of QCC reports with errors: | | 0 | | | |
| • | | | | | |
| 6.2 QCC Warnings | | | | | |
| Number of QCC reports with warnings | | 0 | | | |
| | | | | | |
| 6.3 Missing QCC Reports | | | | | |
| lumber of products with missing QCC n | eports: | 0 | | | |
| | and the second se | | | | |