## 1. Overview

| Report Production Date: | 12-Aug-2021 |
| --- | --- |
| Processor Used: | CryoSat Ice Processor |
| Data Used: | L1B and L2 OFFLINE Data |

| Check | Status |
| --- | --- |
| Server check: science-pds.cryosat.esa.int | Nominal |
| Server check: calval-pds.cryosat.esa.int | Nominal |
| Product Software Check | Nominal |
| Product Format Check | Nominal |
| Product Header Analysis | Nominal |
| Star Tracker Usage Check | Nominal |
| L1B Tracking Flag Check | See Section 4.4 |
| L1B Calibration Usage Check | Nominal |
| L1B & L2 Auxiliary Data File Usage Check | Nominal |
| L1B & L2 Auxiliary Correction Error Check | Nominal |
| L1B & L2 Measurement Confidence Data Check | See Section 4.8 and 5.5 |
| QCC Errors/ Warnings | See Section 6.1, 6.2 and 6.3 |

| Mission / Instrument News | |
| --- | --- |
| 13-Jul-2021 | None |
| 14-Jul-2021 | None |
| 15-Jul-2021 | Nothing planned |

## 2. Global Coverage
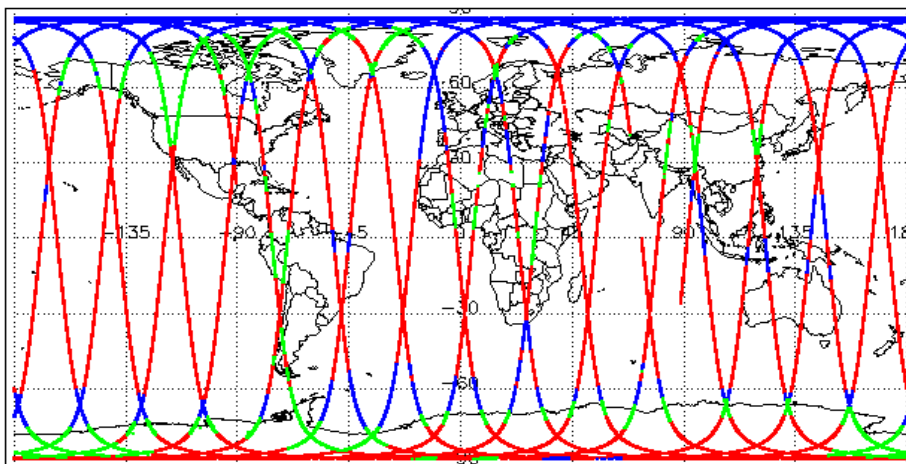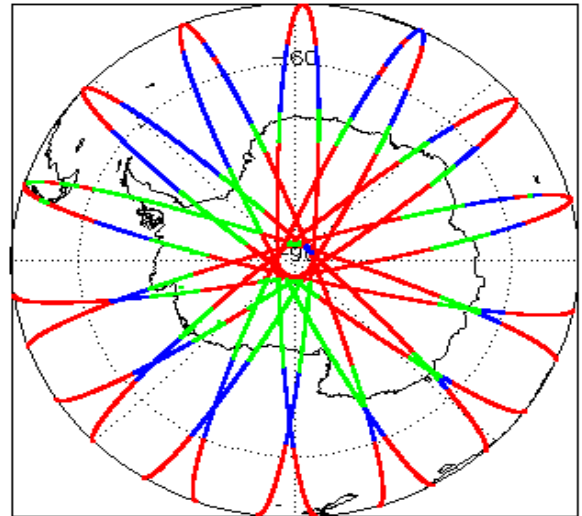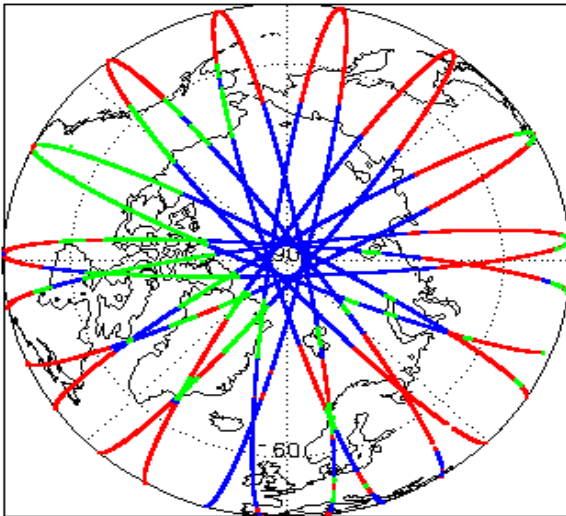


| Mode Coverage (%) | |
| --- | --- |
| LRM | 65.9 |
| SAR | 20.7 |
| SARIn | 13.5 |
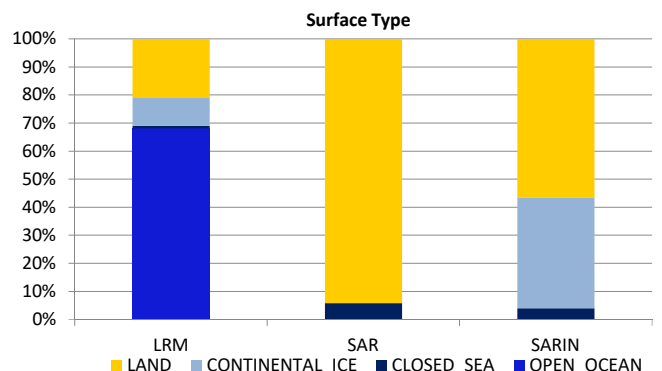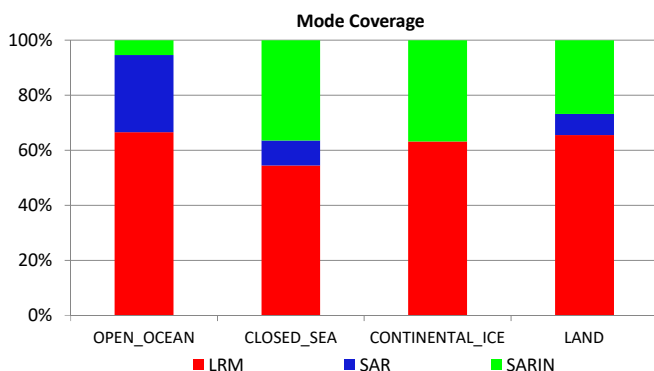
## 3. Instrument Configuration

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

| SIRAL instrument(s) in use: | SIRAL - A |
|---|---|

## 4. 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 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 carried out 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

### 4.3 Star Tracker Usage Check

Each product is checked in order to ensure a valid star tracker file has been used in processing.

**Number of products with errors:**　　　0

### 4.4 L1B Tracking Flags Check

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

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

**Number of products with errors:**　　　103

| Product | Test Failed | Description |
|---|---|---|
| CS_OFFL_SIR_LRM_1B_20210714T000156_20210714T000908_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T001033_20210714T001130_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T002238_20210714T002916_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T002949_20210714T002954_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T002956_20210714T003016_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T003533_20210714T003607_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T003613_20210714T005644_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T010351_20210714T010725_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T011437_20210714T014143_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T014146_20210714T014154_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T014158_20210714T014219_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T014223_20210714T014225_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T014231_20210714T014240_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T020341_20210714T020913_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T021020_20210714T021150_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T021154_20210714T021353_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T021356_20210714T021408_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T021410_20210714T023848_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T024647_20210714T025015_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T034013_20210714T034659_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T034732_20210714T034807_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T035003_20210714T035115_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T035256_20210714T035431_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T040018_20210714T040034_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T040408_20210714T041038_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T042142_20210714T042712_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T043423_20210714T050941_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T052302_20210714T052327_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T052615_20210714T052710_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T053032_20210714T053321_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T060101_20210714T060609_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T061310_20210714T064842_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T074320_20210714T074514_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T075249_20210714T080510_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T080632_20210714T080650_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T080652_20210714T080933_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T081415_20210714T082838_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T090032_20210714T091448_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T092221_20210714T092426_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T093142_20210714T094512_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T094842_20210714T095804_D001 | Loss of echo | The tracking echo is missing for one or more records |

| | | |
|---|---|---|
| CS_OFFL_SIR_LRM_1B_20210714T100029_20210714T100822_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T102057_20210714T103732_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T110022_20210714T110830_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T113249_20210714T113504_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T113510_20210714T113526_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T113908_20210714T113953_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T114020_20210714T114158_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T114200_20210714T114210_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T114212_20210714T114742_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T120245_20210714T120906_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T120920_20210714T123536_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T124146_20210714T124709_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T131839_20210714T131923_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T131925_20210714T132424_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T132448_20210714T132543_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134628_20210714T134630_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134635_20210714T134651_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134701_20210714T134717_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134719_20210714T134802_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134804_20210714T134804_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134808_20210714T134812_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T134814_20210714T141407_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T143015_20210714T145824_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T145827_20210714T150056_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T150129_20210714T150729_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T161639_20210714T162559_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T162628_20210714T162631_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T162633_20210714T162636_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T162639_20210714T163127_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T163731_20210714T163735_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T163738_20210714T163850_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T163903_20210714T163932_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T163932_20210714T164036_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T164322_20210714T164334_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T180947_20210714T181345_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T181347_20210714T181449_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T181501_20210714T181640_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T181642_20210714T181653_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T183556_20210714T191122_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T201427_20210714T202908_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T203350_20210714T203513_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T203515_20210714T203622_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T203736_20210714T205056_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T210851_20210714T212207_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T212421_20210714T214059_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T215346_20210714T220042_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T220346_20210714T221235_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T221238_20210714T221411_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T221550_20210714T222942_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T224828_20210714T225010_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T225246_20210714T225833_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T230310_20210714T230350_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T230352_20210714T230800_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T231043_20210714T231631_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T233137_20210714T233216_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T233221_20210714T233913_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T233915_20210714T233936_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T233939_20210714T234104_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T234502_20210714T234545_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T234549_20210714T234550_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T234553_20210714T234554_D001 | Loss of echo | The tracking echo is missing for one or more records |
| CS_OFFL_SIR_LRM_1B_20210714T234559_20210714T234612_D001 | Loss of echo | The tracking echo is missing for one or more records |

## 4.5 L1B Calibration Usage Check

Each product is checked in order to ensure that the necessary calibration files have been used in processing.

**Number of products with errors:**　　　　　　　　0

## 4.6 L1B Auxiliary Data File Usage Check

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

**Number of products with errors:** 0

## 4.7 L1B Auxiliary Correction Error Check

CryoSat L1B data includes a correction error flag (field 54) for each measurement record. The bit value of this flag indicates any problems when set.

**Number of products with errors:** 0

## 4.8 L1B Measurement Confidence Data Check

CryoSat L1B data includes a measurement confidence flag (field 18) for each measurement record. The bit value of this flag indicates any problems when set.

**Currently, there are several common error flags raised in the Level 1B products which are expected due to operational mode or surface type. All common flags are summarised in the list below, followed by a table of any additional issues arising from this test.**

**Block Degraded Flag:** This flag is currently set for a number of individual records generally at the start or end of products (all modes), but this is to be expected.

**Phase Perturbation Flag:** This flag is currently set for all L1B SARIn products, indicating that the ADC correction application is deactivated, but this is in line with the current configuration.

**Number of products with errors:** 3

| Product | Test Failed | Description |
|---|---|---|
| CS_OFFL_SIR_LRM_1B_20210714T034013_20210714T034659_D001 | Echo error, TRK echo error | The tracking echo has returned an error and the Rx1 Echo Error flag is set, indicating a degraded echo |
| CS_OFFL_SIR_LRM_1B_20210714T052302_20210714T052327_D001 | Echo error, TRK echo error | The tracking echo has returned an error and the Rx1 Echo Error flag is set, indicating a degraded echo |
| CS_OFFL_SIR_LRM_1B_20210714T161639_20210714T162559_D001 | Echo error, TRK echo error | The tracking echo has returned an error and the Rx1 Echo Error flag is set, indicating a degraded echo |

# 5. 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 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 carried out on the MPH and SPH in order to identify any inconsistencies and/or errors raised by the ground-segment processing chain.

**Number of products with errors:** 0

## 5.3 L2 Auxiliary Data File Usage Check

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

**Number of products with errors:** 0

## 5.4 L2 Auxiliary Correction Error Check

CryoSat L2 data includes a correction error flag (field 30) for each measurement record. The bit value of this flag indicates any problems when set.

**Number of products with errors:** 0

## 5.5 L2 Measurement Quality Flag Check

CryoSat L2 data includes a quality flag (field 50) for each 20-Hz measurement record. The bit value of this flag indicates any problems when set.

**Currently, there are several common error flags raised in the Level 2 products which are expected due to operational mode or surface type. All common flags are summarised in the list below, followed by a table of any additional issues arising from this test.**

**Freeboard error:** This flag is correctly set in all L2 SAR products that are not discriminated as sea-ice, and for which freeboard cannot be calculated.

**Height and Backscatter errors:** These flags are currently set for products over land, but this is to be expected. Retracker 1 Height and Backscatter error flags are also set for products over sea-ice, but this is to be expected.

**Peakiness error:** This flag is currently set for products over sea-ice, but this is to be expected.

**SARIn X-Track Angle Error:** This flag is set when the difference between the computed surface elevation and the DEM is >50 m. The DEM is only available over Greenland and Antarctica and as a result this flag is set for L2 SARIn products in all other locations as expected.

**SSHA interpolation error:** This flag is currently set for a number of SAR products occurring at surface type boundaries, but this is to be expected.

**Number of products with errors:** 53

| Product | Test Failed | Description |
|---|---|---|
| CS_OFFL_SIR_LRM_2__20210713T235731_20210714T000136_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T002956_20210714T003016_D001 | Surface Model Unavailable | No DEM or Slope Model was used for the location of one or more records |
| CS_OFFL_SIR_LRM_2__20210714T003613_20210714T005644_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T011437_20210714T014143_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T021410_20210714T023848_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T025443_20210714T032820_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T034013_20210714T034659_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |

| | | |
|---|---|---|
| CS_OFFL_SIR_LRM_2__20210714T035256_20210714T035431_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T043423_20210714T050941_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T051933_20210714T052134_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T053930_20210714T055554_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T061310_20210714T064842_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T071102_20210714T073345_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T075249_20210714T080510_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T080632_20210714T080650_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T080652_20210714T080933_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T081415_20210714T082838_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T084122_20210714T085843_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T090032_20210714T091448_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T093142_20210714T094512_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T094842_20210714T095804_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T102057_20210714T103732_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2), Surface model unavailable | There is a height and backscatter error for Retracker 2 , a height error for Retracker 3 and no DEM or Slope Model was used for the location of one or more records |
| CS_OFFL_SIR_LRM_2__20210714T104308_20210714T105128_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T105215_20210714T105539_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T120920_20210714T123536_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T125145_20210714T130717_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T134814_20210714T141407_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T143015_20210714T145824_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2), Surface model unavailable | There is a height and backscatter error for Retracker 2 , a height error for Retracker 3 and no DEM or Slope Model was used for the location of one or more records |
| CS_OFFL_SIR_LRM_2__20210714T150129_20210714T150729_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T152036_20210714T155232_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T164420_20210714T164423_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T164439_20210714T164730_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T165928_20210714T170935_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T171113_20210714T173240_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T174942_20210714T180620_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T183556_20210714T191122_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2), Surface model unavailable | There is a height and backscatter error for Retracker 2 , a height error for Retracker 3 and no DEM or Slope Model was used for the location of one or more records |

| CS_OFFL_SIR_LRM_2__20210714T193031_20210714T200205_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
|---|---|---|
| CS_OFFL_SIR_LRM_2__20210714T201427_20210714T202908_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T203350_20210714T203513_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T203515_20210714T203622_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T203736_20210714T205056_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T210851_20210714T212207_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T212421_20210714T214059_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T215346_20210714T220042_D001 | Surface Model Unavailable | No DEM or Slope Model was used for the location of one or more records |
| CS_OFFL_SIR_LRM_2__20210714T220346_20210714T221235_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2), Surface model unavailable | There is a height and backscatter error for Retracker 2 , a height error for Retracker 3 and no DEM or Slope Model was used for the location of one or more records |
| CS_OFFL_SIR_LRM_2__20210714T221238_20210714T221411_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T221550_20210714T222942_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T225246_20210714T225833_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T230310_20210714T230350_D001 | Surface Model Unavailable | No DEM or Slope Model was used for the location of one or more records |
| CS_OFFL_SIR_LRM_2__20210714T230352_20210714T230800_D001 | Height Error (Retracker 2), Height Error (Retracker 3), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 and a height error for Retracker 3 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T230922_20210714T231017_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T231043_20210714T231631_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |
| CS_OFFL_SIR_LRM_2__20210714T234807_20210715T000814_D001 | Height Error (Retracker 2), Backscatter Error (Retracker 2) | There is a height and backscatter error for Retracker 2 for one or more records |

## 6. 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_LRM_1B | 162 | 162 | 162 | 0 | 0 |
| SIR_SAR_1B | 106 | 106 | 106 | 0 | 0 |
| SIR_SIN_1B | 101 | 101 | 101 | 0 | 0 |
| SIR_LRM_2 | 162 | 162 | 161 | 1 | 0 |
| SIR_SAR_2 | 101 | 106 | 106 | 0 | 0 |
| SIR_SIN_2 | 106 | 101 | 98 | 3 | 0 |
| SIR_GDR_2 | 14 | 14 | 0 | 0 | 14 |

## 6.1 QCC Errors

**Number of products with QCC errors:**                14

| Product Type | MPHDUTNCDF | MPHXPFNCDF | MPHXVFNCDF | MPHYPFNCDF | MPHYVFNCDF | MPHZPFNCDF | MPHZVFNCDF | STRUCTURESIZ EANDREAD | - | - | - |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIR_GDR_2_ | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | |

**Test Description Key:**

| Abbreviation | Test name | Details |
|---|---|---|
| MPHDUTNCDF | MPH_Delta_UT1_NetCDF | Delta_UT1 mismatch |
| MPHXPFNCDF | MPH_X_Position_Float_v2_NetCDF | X_Position mismatch (DBL float (GDR), rounded to 100) |
| MPHXVFNCDF | MPH_X_Velocity_Float_v2_NetCDF | X_Velocity mismatch (DBL float (GDR), rounded to 1) |
| MPHYPFNCDF | MPH_Y_Position_Float_v2_NetCDF | Y_Position mismatch (DBL float (GDR), rounded to 100) |
| MPHYVFNCDF | MPH_Y_Velocity_Float_v2_NetCDF | Y_Velocity mismatch (DBL float (GDR), rounded to 1) |
| MPHZPFNCDF | MPH_Z_Position_Float_v2_NetCDF | Z_Position mismatch (DBL float (GDR), rounded to 100) |
| MPHZVFNCDF | MPH_Z_Velocity_Float_v2_NetCDF | Z_Velocity mismatch (DBL float (GDR), rounded to 1) |
| STRUCTURESIZEANDR | STRUCTURE_SIZE_AND_READ | Under investigation. |

## 6.2 QCC Warnings

**Number of QCC reports with warnings**                4

Total number of occurrences of each warning

| Product Type | AXDME | AXSMMEOCI | - | - | - | - | - |
|---|---|---|---|---|---|---|---|
| SIR_LRM_2_ | 0 | 1 | | | | | |
| SIR_SIN_2_ | 3 | 0 | | | | | |

**Test Description Key:**

| Abbreviation | Test name | Details |
|---|---|---|
| AXDME | AttributeXrefDemMustExist | The xref_dem attribute is mandatory in SIN products over continental ice |
| AXSMMEOCI | AttributeXrefSlopeModelMustExistOverContinentalIce | The xref_slope_model is mandatory in LRM products over continental ice |

## 6.2 Missing QCC Reports

**Number of products with missing QCC reports:**          0