

## 1. Overview

|                                |   |                                 |   |
|--------------------------------|---|---------------------------------|---|
| <b>Report Production Date:</b> | <b>Data Used:</b>                         | OFFLINE L1B and L2 Science Data | Geophysical Ocean Products (GOP)<br>L1B and L2 Science Data |
| 13-Jun-2014                    | <b>Check</b>                              | <b>Status</b>                   | <b>Status</b>   |
|                                | 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 Data Check           | See Section 4.4 and 5.4         | Nominal   |
|                                | Measurement Confidence Data Check         | See Section 4.5 and 5.5         | See Section 7.5, 7.6, 8.5 and 8.6                           |

**Mission / Instrument News**

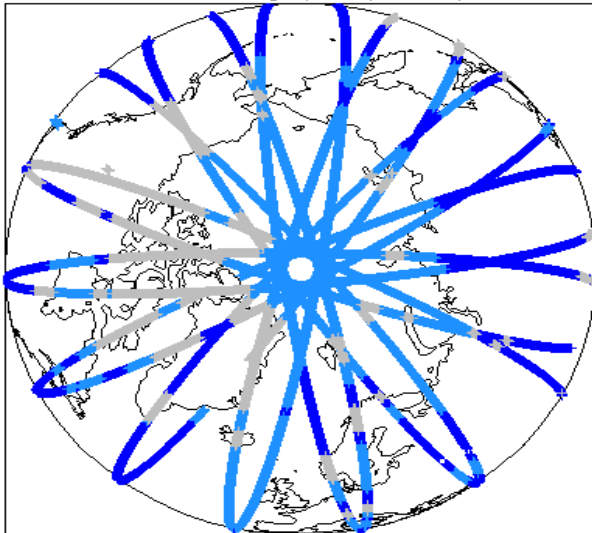
|             |   |
|-------------|---|
| 14-May-2014 | None  |
| 15-May-2014 | None  |
| 16-May-2014 | SIRAL unavailability on 16-May-2014 from 08:06:14 to 10:03:32 due to a planned orbit manoeuvre. |

## Report Contents

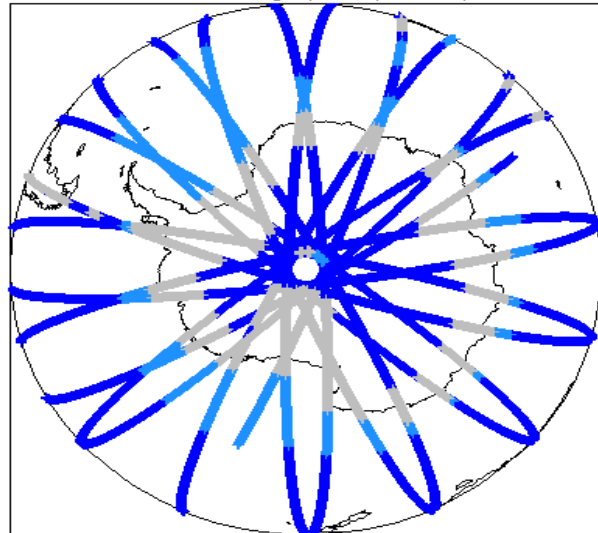
|   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>2 Global Coverage</li> <li>3 Instrument Configuration</li> </ul> | <p style="color: red; margin: 0;"><b>OFFLINE Science Data</b></p> <ul style="list-style-type: none"> <li>4 Level 1B Data Quality Check               <ul style="list-style-type: none"> <li>4.1 L1B Product Format Check</li> <li>4.2 L1B Product Header Analysis</li> <li>4.3 L1B Auxiliary Data File Usage Check</li> <li>4.4 L1B Auxiliary Correction Error Check</li> <li>4.5 L1B Measurement Confidence Data Check</li> </ul> </li> <li>5 Level 2 Data Quality Check               <ul style="list-style-type: none"> <li>5.1 L2 Product Format Check</li> <li>5.2 L2 Product Header Analysis</li> <li>5.3 L2 Auxiliary Data File Usage Check</li> <li>5.4 L2 Auxiliary Correction Error Check</li> <li>5.5 L2 Measurement Quality Flag Check</li> </ul> </li> <li>6 QCC Check               <ul style="list-style-type: none"> <li>6.1 QCC Errors</li> <li>6.2 Missing QCC Reports</li> </ul> </li> </ul> | <p style="color: blue; margin: 0;"><b>GOP Science Data</b></p> <ul style="list-style-type: none"> <li>7 Level 1B Data Quality Check               <ul style="list-style-type: none"> <li>7.1 L1B Product Format Check</li> <li>7.2 L1B Product Header Analysis</li> <li>7.3 L1B Auxiliary Data File Usage Check</li> <li>7.4 L1B Auxiliary Correction Error Check</li> <li>7.5 L1B Measurement Confidence Data Check</li> <li>7.6 L1B Waveform Group Data Check</li> </ul> </li> <li>8 Level 2 Data Quality Check               <ul style="list-style-type: none"> <li>8.1 L2 Product Format Check</li> <li>8.2 L2 Product Header Analysis</li> <li>8.3 L2 Auxiliary Data File Usage Check</li> <li>8.4 L2 Measurement Confidence Data Check</li> <li>8.5 L2 Range Measurement Check</li> <li>8.6 L2 SWH and Backscatter Measurement Check</li> </ul> </li> </ul> |
|---|---|---|

## 2. Global Coverage

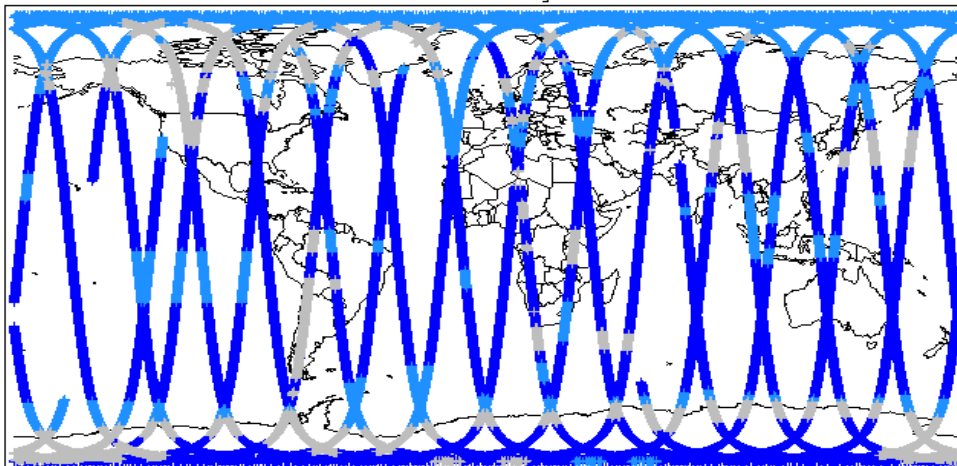
Global Coverage (north pole view)



Global Coverage (south pole view)

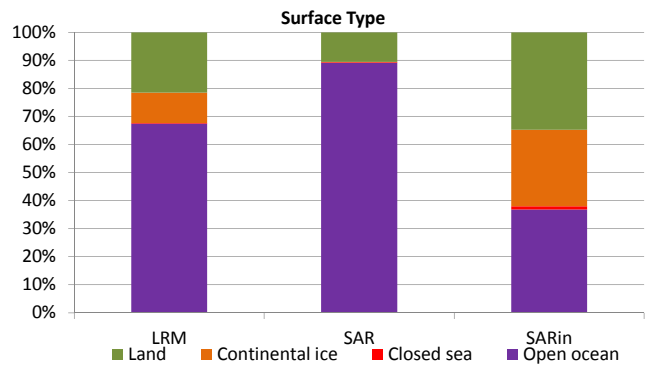
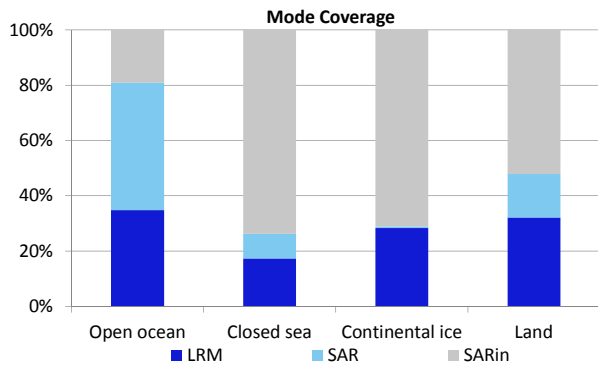


Global Coverage



Mode Coverage (%)

|  |     |       |
|--|-----|-------|
|  | LRM | 63.91 |
|  | SAR | 22.12 |
|  | SIN | 13.79 |



### 3. Instrument Configuration

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

|                             |                |
|-----------------------------|----------------|
| SIRAL instrument(s) in use: | SIRAL - A      |
| Star Tracker(s) in use:     | Star Tracker 1 |

### 4. OFFLINE 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 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

#### 4.3 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

#### 4.4 L1B Auxiliary Correction Error Check

Each product is checked for auxiliary corrections flagged by the ground-station processing chain as missing or containing errors.

Number of products with errors: 3

| Product   | Test Failed                         | Description  |
|---|-------------------------------------|--|
| CS_OFFL_SIR_LRM_1B_20140515T054939_20140515T061956_B001 | Dynamic atmosphere correction error | Due to a configuration issue with the handling of Auxiliary Files, products crossing a 6h time boundary are missing the Dynamic Atmospheric correction (CRYO-IDE-161). |
| CS_OFFL_SIR_LRM_1B_20140515T114123_20140515T120106_B001 | Dynamic atmosphere correction error | Due to a configuration issue with the handling of Auxiliary Files, products crossing a 6h time boundary are missing the Dynamic Atmospheric correction (CRYO-IDE-161). |
| CS_OFFL_SIR_SAR_1B_20140515T175912_20140515T180443_B001 | Dynamic atmosphere correction error | Due to a configuration issue with the handling of Auxiliary Files, products crossing a 6h time boundary are missing the Dynamic Atmospheric correction (CRYO-IDE-161). |

#### 4.5 L1B Measurement Confidence Data Check

CryoSat L1B data includes a measurement confidence flag word (field 14) for each 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_LRM_1B_20140515T011519_20140515T011708_B001 | TRK echo error | The tracking echo has returned an error |
| CS_OFFL_SIR_LRM_1B_20140515T231521_20140515T232645_B001 | TRK echo error | The tracking echo has returned an error |

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

Number of products with errors: 0

#### 5.3 L2 Auxiliary Data File Usage Check

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

Number of products with errors: 0

## 5.4 L2 Auxiliary Correction Error Check

Each product is checked for auxiliary corrections flagged by the ground-station processing chain as missing or containing errors.

Number of products with errors: 3

| Product   | Test Failed                         | Description  |
|---|-------------------------------------|--|
| CS_OFFL_SIR_LRM_2__20140515T054939_20140515T061956_B001 | Dynamic atmosphere correction error | Due to a configuration issue with the handling of Auxiliary Files, products crossing a 6h time boundary are missing the Dynamic Atmospheric correction (CRYO-IDE-161). |
| CS_OFFL_SIR_LRM_2__20140515T114123_20140515T120106_B001 | Dynamic atmosphere correction error | Due to a configuration issue with the handling of Auxiliary Files, products crossing a 6h time boundary are missing the Dynamic Atmospheric correction (CRYO-IDE-161). |
| CS_OFFL_SIR_SAR_2A_20140515T175913_20140515T180442_B001 | Dynamic atmosphere correction error | Due to a configuration issue with the handling of Auxiliary Files, products crossing a 6h time boundary are missing the Dynamic Atmospheric correction (CRYO-IDE-161). |

## 5.5 L2 Measurement Quality Flag Check

CryoSat L2 data includes a quality flag word (field 43) for each 20-Hz measurement record. The bit value of this flag is an assessment of the measurement quality by the ground-segment processing chains.

Presently, there are several common data Quality Flag errors raised by the L2 products which are either expected due to changes made to the IPF processor in Baseline-B or are due to known issues with the data processors. The investigation of the known issues are on-going and are due to be resolved with the next update of the L2 processors. All common known issues are summarised in the list below, followed by a table of any additional issues arising from this test.

**Freeboard Error:** This Quality Flag is correctly set in all products as this parameter is currently not provided in the L2 products and the Freeboard value is set to the default value of -9999.

**SARin x-track angle error:** Currently there is an on-going investigation into the high number of errors from the 'SARin x-track Error' Quality Flag over Antarctica.

**Height error and Backscatter error:** It has been noted that the number of errors arising from the 'Backscatter Error' and 'Height Error' Quality Flag is much higher than expected over land areas and this is currently part of an on-going investigation by expert teams.

Number of products with errors: 1

| Product   | Test Failed     | Description                                   |
|---|-----------------|---|
| CS_OFFL_SIR_SAR_2A_20140515T145141_20140515T145433_B001 | Peakiness error | There is an error in the peakiness derivation |

## 6. OFFLINE QCC Check

The QCC is a CryoSat facility that 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.

NB. There is currently a discrepancy between the number of QCC reports and the number of products reported. This is a known issue and investigation is on-going.

| Product type | Nb. Products | Nb. QCC Reports | Nb. Valid | Nb. Warnings | Nb. Errors |
|--------------|--------------|-----------------|-----------|--------------|------------|
| SIR_GDR_2A   | 0            | 0               | 0         | 0            | 0          |
| SIR_LRM_1B   | 144          | 0               | 0         | 0            | 0          |
| SIR_LRM_2    | 144          | 0               | 0         | 0            | 0          |
| SIR_SAR_1B   | 112          | 0               | 0         | 0            | 0          |
| SIR_SAR_2A   | 113          | 0               | 0         | 0            | 0          |
| SIR_SIN_1B   | 110          | 0               | 0         | 0            | 0          |
| SIR_SIN_2    | 110          | 0               | 0         | 0            | 0          |

### 6.1 QCC Errors

Number of products with QCC errors: 0

### 6.2 Missing QCC Reports

Number of products with missing QCC reports: All

## 7. GOP Level 1B Data Quality Check

### 7.1 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

### 7.2 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.

Number of products with errors: 0

### 7.3 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

### 7.4 L1B Auxiliary Correction Error Check

Each product is checked for auxiliary corrections flagged by the ground-station processing chain as missing or containing errors.

Number of products with errors: 0

### 7.5 L1B Measurement Confidence Data Check

CryoSat L1B data includes a measurement confidence flag (field 12) for each measurement record. The bit value of this flag indicates any problems when set.

Number of products with errors: 2

| Product  | Test Failed         | Description  |
|--|---------------------|--|
| CS_OFFFL_SIR_GOP_1B_20140515T011519_20140515T011708_B001 | Power scaling error | There has been an error in the scaling of the L1B waveform |
| CS_OFFFL_SIR_GOP_1B_20140515T231521_20140515T232645_B001 | Power scaling error | There has been an error in the scaling of the L1B waveform |

### 7.6 L1B Waveform Group Data Check

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 a large number of products over land, indicating that the tracking echo is missing.

Number of products with errors: 39

## 8. GOP Level 2 Data Quality Check

### 8.1 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

### 8.2 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

### 8.3 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

### 8.4 L2 Measurement Confidence Data Check

CryoSat L2 data includes a quality flag (field 14) for each 20-Hz measurement record. The bit value of this flag is an assessment of the measurement quality by the processing chains.

Number of products with errors: 0

### 8.5 L2 Range Measurement Check

Each product is checked to detect range measurements flagged by the processing chain as missing or containing errors.

**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 some products over land and continental ice.

Number of products with errors: 211

### 8.6 L2 SHW and Backscatter Measurement Check

Each product is checked to detect parameters related to SWH and sigma0 that are flagged by the processing chain as missing or containing errors.

**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 some products over land and continental ice.

Number of products with errors: 189