

**Title:**

Bias in radiometric calibration of S1-A WV products acquired before 12th May 2020

**Description:**

A change of calibration methodology of S-1 WV products was associated to a compensation of a systematic bias on Normalised Radar Cross Section.

As a consequence, the Normalized Radar Cross Section of products processed before this date is considered biased with 0.55dB for WV1 and -0.38 dB for WV2.

**Degradation types:**

- |  |  |
|--|--|
| <input type="checkbox"/> DEGRADED_PRODUCT_RADIOMETRY                 | <input type="checkbox"/> DEGRADED_PRODUCT_GEOLOCATION            |
| <input checked="" type="checkbox"/> DEGRADED_RADIOMETRIC_CALIBRATION | <input type="checkbox"/> DEGRADED_PLATFORM_POINTING              |
| <input type="checkbox"/> DEGRADED_ORBIT_CONTROL                      | <input type="checkbox"/> DEGRADED_PERFORMANCE_INSTRUMENT_ANOMALY |
| <input type="checkbox"/> COMPLETE_PRODUCT_DEGRADATION                | <input type="checkbox"/> SLICE_PRODUCT_NON_CONCATENABLE          |
| <input type="checkbox"/> DEGRADED_PHASE                              | <input type="checkbox"/> OTHER                                   |

**Degradation percentage<sup>1</sup>:**

10%

**Impacted products:**

- |                             |   |  |   |  |                             |
|-----------------------------|---|--|---|--|-----------------------------|
| <b>Platform:</b>            | <input checked="" type="checkbox"/> S-1A    | <input type="checkbox"/> S-1B                          |   |  |                             |
| <b>Acquisition mode:</b>    | <input type="checkbox"/> EW                 | <input type="checkbox"/> IW                            | <input type="checkbox"/> SM                 | <input checked="" type="checkbox"/> WV     | <input type="checkbox"/> RF |
| <b>Product type:</b>        | <input type="checkbox"/> RAW                | <input checked="" type="checkbox"/> SLC                | <input type="checkbox"/> GRD                | <input checked="" type="checkbox"/> OCN    |                             |
| <b>Resolution class:</b>    | <input type="checkbox"/> MR                 | <input type="checkbox"/> HR                            | <input type="checkbox"/> FR                 | <input checked="" type="checkbox"/> N/A    |                             |
| <b>Polarization:</b>        | <input type="checkbox"/> SH (Single pol. H) | <input checked="" type="checkbox"/> SV (Single pol. V) | <input type="checkbox"/> DV (Double pol. V) |  |                             |
|                             | <input type="checkbox"/> DH (Double pol. H) |  |   |  |                             |
| <b>Processing facility:</b> | <input type="checkbox"/> PAC1 / UPA         | <input type="checkbox"/> PAC2 / DPA                    | <input type="checkbox"/> CGS2 / Svalbard    | <input type="checkbox"/> CGS3 / Maspalomas |                             |
|                             | <input type="checkbox"/> CGS1 / Matera      |  |   |  |                             |

**IPF version:** N/A

**Instrument Configuration ID (RDB):** N/A

**ADF files:**

AUX_INS	N/A
AUX_CAL	N/A
AUX_PP1	N/A
AUX_PP2	N/A
AUX_SCS	N/A

**Beginning of the issue:**

Start acquisition date: 2014-09-30 15:17:26 UT  
 Start generation date: N/A  
 Orbit: 2623  
 Datatake (hex): 002E84

**End of the issue:**

- not yet defined       available

End acquisition date: 2020-05-12 10:18:41 UT  
 End generation date: 2020-05-12 13:15:17 UT  
 Orbit: 32530  
 Datatake (hex): 03C480

<sup>1</sup> Percentage of degradation of the data in the product (100% means that the product should be masked in the product catalogue)

**Cause:**

The radiometric calibration of S1A & B WV products is performed by geophysical validation of measured normalised radar cross section (NRCS) vs predicted NRCS from numerical weather forecast/analysis and a wind geophysical model function (GMF).

During the year 2020, the WV geophysical calibration was updated. While the Cmod-ifr2 (Quilfen, et al., 2002) was used up to now, the Cmod5n (Herbash, 2008) GMF is now used.

On the 12nd May 2020, an update of processing gain for S-1A WV1 and S1-B WV1 beam was put in place to apply the radiometric calibration derived from this new methodology and hence improve the radiometric calibration of S-1A WV Level 1 products.

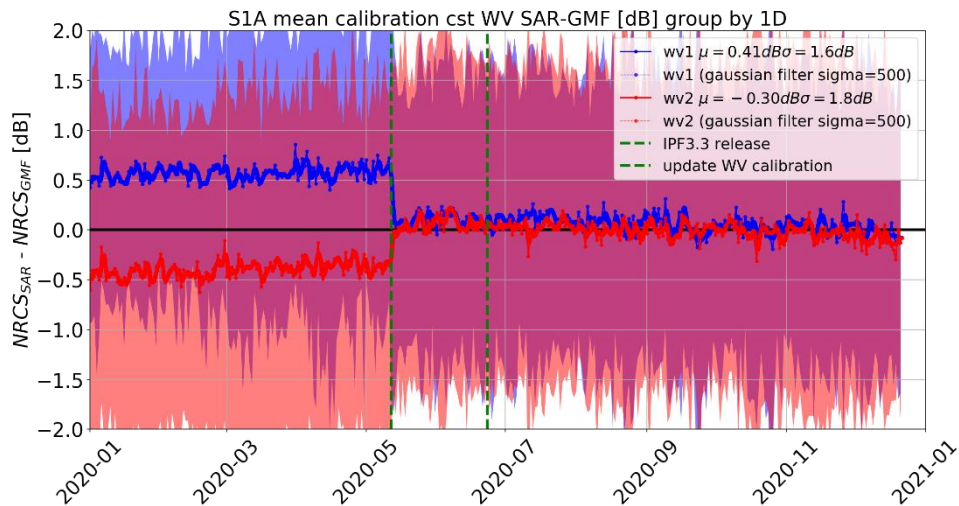
**Status:**

This Quality Disclaimer reports evolution of the product performances with recalibration of the processing.

**References:**

- **MPC ref:** MPCS-2096, MPCS-2402

Temporal evolution of S-1A WV1 and WV2 Normalised Radar Cross section



**Figure 1: assessment of the WV SLC calibration (denoised Sigma0) using geophysical approach i.e. comparison with Cmod-5n with ECMWF0.125° (3h)**