# Product Quality Disclaimer

## Field: | Contents: | Filled by:
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Product Quality Disclaimer number | ENVI-GSOP-EOGD-QD-08-0094  
Issue Date: November 10th, 2003  
Revision: 2 of ENVI-GSOP-EOGD-QD-03-0027  
Revision Date: December 18, 2008 | SPPA Manager

## Affected data sets
- RA2_GDR_2P  
  Period of affected data sets: all processed data  
  F-PAC CMA Version : 6.1, 6.2, 6.3, 7.0, 7.1, 8.0, 9.0, 9.1, 9.2 | SPPA Engineer

## Disclaimer title
- Envisat RA-2 and MWR GDR Disclaimer | SPPA Engineer

## Product specification references
- Envisat RA-2 and MWR Product Handbook : [http://envisat.esa.int/dataproducts/](http://envisat.esa.int/dataproducts/)  
- RA2/MWR format description document: [http://envisat.esa.int/support-docs/productspecs/](http://envisat.esa.int/support-docs/productspecs/)  
- Additional information : [http://earth.esa.int/pcs/envisat/ra2/articles/](http://earth.esa.int/pcs/envisat/ra2/articles/) | SPPA Engineer

## Description
The following observations result from the Quality Analysis of the RA-2 and MWR data products. They have been organised as follows:
- RA-2 Sensor aspects  
- MWR Sensor aspects  
- Products and processing aspects

The RA-2 and MWR instruments unavailability can be found at the following link : [http://envisat.esa.int/instruments/availability/](http://envisat.esa.int/instruments/availability/)

**RA-2 sensor aspects :**
The details of the information summarizes here can be found at the following link (ECAR cyclic report): [http://earth.esa.int/pcs/envisat/ra2/reports/pcs_cyclic/](http://earth.esa.int/pcs/envisat/ra2/reports/pcs_cyclic/)

The major deficiencies that have affected and/or are affecting the data quality are:
- The loss of the S band  
- The anomaly of the S band
- The USO anomaly

1- The loss of the RA-2 S band

The investigations conducted on the abnormal RA-2 S band power drop that occurred since 17 January 2008 at 23:23:40 UTC (cycle 65, pass 289) have concluded to the failure of the S-band RA-2 RFSS (Radio Frequency Sub System) side A. Consequently, all S-band parameters, as well as all the parameters that depend on S band are not relevant anymore and must not be used on this date onwards.

A similar event has affected the redundant (side-B) S-band on 20 May 2006. In this case also it has been concluded to the lost of the S-band RA-2 RFSS side B.

2- RA-2 S-band anomaly

This anomaly which was an accumulation of the S-band waveforms, has disappeared after the upload of a new patch the 27th of June 2007. This can be observed on ECAR 60 onwards until the end of cycle 65 (S band power drop).

3- The RA-2 USO anomaly

An abnormal behaviour of the RA-2 USO has been intermittently affecting the altimetric range since 1st February 2006. A correction accounting for this effect has been developed and validated. Users are advised to apply the correction auxiliary files even during the non-anomalous period in order to correct for the nominal ageing drift of the USO device.

MWR sensor aspects

The details of the information summarizes here can be found at the following link (MWR cyclic report): http://earth.esa.int/pcs/envisat/mwr/reports/

The major deficiencies that have affected and/or are affecting the data quality are:
- The drift of the MWR sensor 36 GHz channel
1- The drift of the MWR sensor 36 GHz channel

This drift which has been pointed out during the Commissioning Phase has been confirmed. A correction is currently under study and will be implemented in a future version of the IPF.

Product and processing aspects

The details of the information summarizes here can be found at the following links:

ECAR cyclic report:
http://earth.esa.int/pcs/envisat/ra2/reports/pcs_cyclic/

GDR quality assessment report:

1- The list of the F-PAC CMA versions have been given at the beginning of this document and a summary of the description of each of these versions can be provided.

2- Regarding the features of the data:

- As already mentioned, the S band data are not to be used due to the S band loss (see RA2 Sensor Aspects above)

- In order to correct for the USO drift and the abnormal behaviour, users are advised to apply the auxiliary files correction provided at the following address:
http://earth.esa.int/pcs/envisat/ra2/auxdata/

- No external altimetric Range bias is presently applied to the data products

- There are cases over non-ocean surfaces, where the Pressure field is valid and the Inverse Barometric (IB) correction not calculated. A cut-off value is present above which the correction is not evaluated. The IB correction shall be set to 0 (zero) over all Land (but not sea ice).

- Presence of tiny secondary peaks in the Ku σ0 histogram has been observed.

- The MWR geophysical products are only valid over ocean.

- The negative values of MWR Cloud Liquid
Water content have to be considered as equal to zero

- For the period before the loss of the S band, the dual frequency ionospheric correction has never been calibrated.
- No Ice Flag is currently available in RA-2 GDR products. If needed, it can be computed according to the algorithm provided in the ECAR.
- The rain flag is wrong (dependency on S band and no tuning of the algorithm coefficients) and should not be used from the beginning of the mission.

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<tr>
<th>Originator</th>
<th>P. Féménias ESA &amp; QWG</th>
<th>SPPA Engineer</th>
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<tr>
<td>Approver</td>
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<td>SPPA Manager</td>
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# Product Quality Disclaimer

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## Disclaimer title

Envisat RA-2 and MWR GDR Disclaimer

## Product specification references

Envisat RA-2 and MWR Product Handbook

http://envisat.esa.int/dataproducts/

Level 2 RA2 FD/VGDR format description document

http://earth.esa.int/pcs/envisat/ra2/articles/

## Description

The following observations result from the Quality Analysis of the RA-2 and MWR data products.

### RA-2 sensor aspects

1. The RA-2 S-band anomaly, which appears as an accumulation of the S-band waveforms, still affects a small percentage (~4-5%) of the RA-2 data. More information available in the Envisat Cycle Altimetry Report (ECAR) on http://earth.esa.int/pcs/envisat/ra2/reports/pcs_cyclic/

2. Abnormal high values of SSH (w.r.t. MSS) have been observed after an instrumental anomaly recovery (SEU Failure) over an orbit segment (Pass 216, cycle 16 from May 5, 2003) of roughly 500 km. Investigation is ongoing.

3. The RA-2 USO drift is currently not applied to the RA-2 data products. More information available on http://earth.esa.int/pcs/envisat/ra2/reports/pcs_cyclic/

4. The RA-2 data have been degraded, over two periods of time, due to missing RA-2 on-board calibration tables. The periods are:
   - From 18 Mar 2003 18:50:40 to 09 Apr 2003 17:12:24
   - From 27 Sep 2003 12:52:00 to 30 Sep 2003 12:45:00
   - It is currently advised to disregard these data.

5. The mispointing values computed from the waveforms in the Level 2 processing is too high, with a mean value of 0.023 deg. (0.14 deg.). A tuning of the ground-processing algorithm is required and shall be part of a new processing chain upgrade.

6. Presence of tiny secondary peaks in the Ku \( \sigma_0 \) histogram has been observed. Investigation is ongoing.

7. The mean S-band \( \sigma_0 \) coefficient is currently lower than the Ku-band one. This should be the opposite. Investigation is ongoing.

8. Based on an ECMWF study, the ENVISAT wave heights are over-estimated by 4%.

9. There are cases over non-ocean surfaces, where the Pressure field is valid and the Inverse Barometric (IB) correction not calculated. A cut-off value is present above which the correction is not evaluated. The IB correction shall be set to 0 (zero) over all Land (but not sea ice).

10. The RA-2 Sea State Bias (SSB) correction is still preliminary. The SSB S-band values are currently equivalent to the Ku-band SSB.

11. The DORIS ionospheric chain has to be tuned even if improved since the F-PAC CMA version 6.1.

12. The Dual frequency ionospheric correction still needs to be calibrated.

### MWR sensor aspects

13. The drift of the MWR sensor 36 GHz channel pointed out during the Commissioning Phase is confirmed. More information on data impact on http://earth.esa.int/pcs/envisat/mwr/

14. Please consider that the MWR geophysical products are only valid over ocean.

15. The negative values of MWR Cloud Liquid Water content have to be considered as equal to zero.

### Product related aspects

16. No external Altimetric Range bias is presently applied to the data products

17. The Satellite manoeuvres are not flagged in the current processing chain versions. More information on maintenance manoeuvres on http://earth.esa.int/pcs/envisat/ra2/reports/pcs_cyclic/

## Originator

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