

## MEMORANDUM

From : Pauline Cocevar, on behalf of the AATSR QWG      Document Ref : AATSRESL.MEM.024  
To : (A)ATSR Users      Date : 20 June 2017  
Issue : 1.0

### **SUBJECT : 34th AATSR QWG Meeting Summary**

The 34th AATSR QWG Meeting was held on 28<sup>th</sup>/29<sup>th</sup> March 2017 at RAL, Harwell, U.K. This Memorandum states the objectives of the Meeting, gives a selected highlight, and summarises the discussions that took place.

**Participants:** Philippe Goryl, Simon Pinnock (ESA); Dave Smith, Andy Smith, Caroline Cox (RAL Space); Gary Corlett (University of Leicester); Owen Embury (University of Reading); Hugh Kelliher, Ruth Wilson (Space ConneXions); Gareth Davies (SERCO); Pauline Cocevar, Fay Done, Chris Bernat (TVUK).

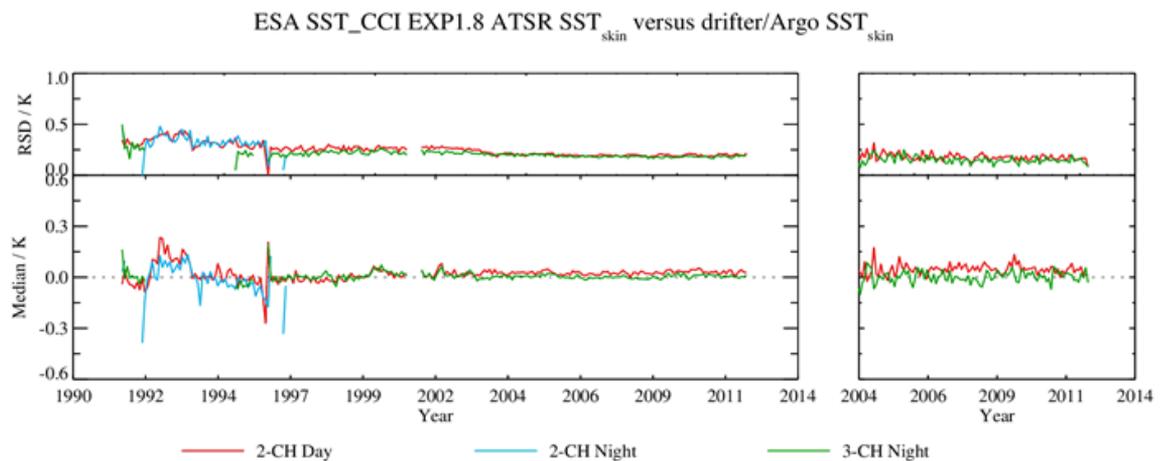
### **Objectives**

The main objectives of the Meeting were to:

- Assess the status of QWG Open Issues on data quality
- Receive up-to-date reports from the Calibration and Validation Scientists
- Obtain status updates for the ATSR-1/-2 v3.0.1 and the (A)ATSR 4<sup>th</sup> reprocessings
- Work towards compilation of a list of Improvement Activities (**IA**) to carry forward into the LTDP/Heritage Programme era

### **Highlight**

In honour of the 34<sup>th</sup>, and last, AATSR QWG meeting, the Validation Scientist displayed the improvement in ATSR SST quality that has taken place throughout the (A)ATSR era (validated against *in situ* data):



## Summary

A summary of the discussions is given in this section.

## QWG Open Issues

A number of open data quality issues are expected to be resolved in either the ATSR-1/-2 v3.0.1 reprocessing, or in the (A)ATSR 4<sup>th</sup> reprocessing (subject to validation):

- ATSR-1 1.6/3.7 Channel Switching: (v3.0.1) 1.6  $\mu\text{m}$  channel measurements in ATSR-1 products have been made available
- ATSR-1 Erroneously Calibrated BTs (also known as inverted BTs): (v3.0.1) Pixels have now been flagged with exception values that show the measurement cannot be calibrated
- ATSR-2 post-June 2003 data: (v3.0.1) Data from after the failure of the ERS-2 on-board tape recorder have been gathered from stations around the world, and are now available
- (A)ATSR Geolocation: (4<sup>th</sup> reprocessing) Orthogeolocation to a Digital Elevation Model (**DEM**), and the use of restituted auxiliary attitude and orbit data are expected to improve absolute nadir geolocation and view colocation.
- AATSR Land/Sea Mask: (4<sup>th</sup> reprocessing) The use of Sentinel land/sea masks (LSM) should improve issues with inaccuracies in the Envisat LSM.

In addition, efforts have been made by many parties to enhance the availability of Level 0 measurement data from ERS-1, ERS-2 and Envisat, leading to expanded datasets for all instruments.

Open issues not yet resolved will be carried forward into the Improvement Activities list.

## Calibration Scientist's Report

Details of further possible improvements to (A)ATSR geolocation, using experience with SLSTR, were presented. There are currently large errors for SLSTR in regions of high elevation, since pixels are not remapped to their true coordinates after orthogeolocation to the DEM. Therefore, there is an offset between the orthogeolocated position and the image grid coordinates. The offsets are greatest where the view angle is large, i.e. at the edge of nadir and oblique views. Hence, tools reliant on regridded data will produce a systematic error in geometric calibration.

An update on the implementation of calibration corrections for the AATSR 12 micron nonlinearity within the 4<sup>th</sup> reprocessing was presented. Note that the correction can account for both spectral response error and detector response nonlinearity. However, a shift in the radiative transfer model would be needed to compute any coefficients.

## Validation Scientist's Report

Validation of 4<sup>th</sup> reprocessing test products has been carried out, by comparing with those from the 3<sup>rd</sup> reprocessing. The scientific data have been shown to be valid, however it is cautioned that in any image line the implementation of orthogeolocation showed some pixels to be filled differently, therefore there is not an exact match up between the 3<sup>rd</sup> and 4<sup>th</sup> reprocessing products.

The final version of the Validation Issues report is expected to be generated before the end of September 2017. The current version (issue 5D) is accessible at:

<http://atsrsensors.org/pdf/ATSR%20Validation%20Issues.pdf>

### **ATSR-1/-2 v3.0.1 Reprocessing Update**

This reprocessing is being undertaken to correct the empty packet handling error that was present in the 3<sup>rd</sup> reprocessing (v3.0). This resulted in some products having a corrupted last granule, with incorrect exception flag, as well as 'ghost' measurement data being present in the empty packets.

The reprocessing is ongoing, with a first pass through existing ATSR-1/-2 data almost complete, and a second due that will contain new data from the L0 recovery activities and QWG Open Issues. It is expected to be complete by the end of summer 2017.

### **(A)ATSR 4<sup>th</sup> Reprocessing Update**

This reprocessing is being undertaken to generate (A)ATSR products in a format similar to that from SLSTR, as well as to improve some quality aspects of the data, as seen in QWG Open Issues.

Work is under way on all aspects of this reprocessing. An AATSR L1B validation dataset will be generated in the first instance, however the full (A)ATSR 4<sup>th</sup> L1B reprocessing dataset is not expected to be complete by the end of 2017.

### **Improvement Activities**

Now that the era of the QWG is coming to an end, QWG open issues will be carried forward into an Improvement Activities (IA) list, that will be scrutinised by both former QWG members and the members of the ATSR Science Advisory Group (SAG). The IA list will retain all known issues, as well as capturing new issues. The activities will be categorised into type (data improvement, study, LTDP), for each instrument, data level with different ownership (QWG or SAG). Priorities will be agreed by the owners, and these will feed into any future improvement activity that may be countenanced by the LTDP/Heritage Programme.

### **Further information**

Should any (A)ATSR data user require any further information on any of the issues summarised above, please contact ESA at <https://earth.esa.int/web/guest/contact-us>