



MEMORANDUM

From : IDEAS (A)ATSR QC Team	Document Ref : IDEAS-VEG-OQC-MEM-1226
To : (A)ATSR Users	Date : 24 May 2013
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SUBJECT : User Note for the Third ATSR Reprocessing

This User Note gives details for the planned reprocessing of ATSR-1 and ATSR-2 data.

Introduction

The third full reprocessing for ATSR-1 and ATSR-2 data in Envisat format is underway; it is anticipated that the full reprocessed (A)ATSR archive will be released mid-2013.

Outlined here are the processing updates that have been put in place for the ATSR-1 and ATSR-2 reprocessing, and the expected scientific improvements that should be seen by the users once the reprocessing is completed.

The technical note describing ATSR-1 and ATSR-2 data in Envisat format (APP-TN-05) is being updated to reflect the new reprocessed products, and will be available upon data release.

A full reprocessing for AATSR is also planned; details for this are included in a separate User Note and can be found [here](#).

Processing Chain Updates

The ATSR-1 and ATSR-2 processors used throughout are as follows:

- Level 1 (TOA) Processor: STEP/1.4
- Level 2 (NR, AR) Processor update: Prt2-L/0.7

Users may note that the Processing Stage Flag contained within the product name and MPH will be incremented from T to U, for example:

AT2_TOA_1PURAL19960814_062057_000000001014_00019_06887_0000.E2

Table 1 and Table 2 present a summary of the auxiliary data file (ADF) and other content updates that will take place for ATSR-1 and ATSR-2, respectively.

Table 1. ADF and other content updates for the ATSR-1 reprocessing

Item	Updates for ATSR-1 reprocessing
CH1 ADF	ATS_CH1_AXVRAL20120926_105816_19910717_000000_20000310_235959
SST coefficients update	ARC-method SST coefficient update, based on ARC files supplied via Space ConneXions Ltd (17 Jan 2012)
Calibration update	Reflectance Calibration Table update (1.6 µm only), based on "ATSR_VIS_DRIFT_v01_02" (version dated 09 Jan 2013)

Table 2. ADF and other content updates for the ATSR-2 reprocessing

Item	Updates for ATSR-2 reprocessing
CH1 ADF	ATS_CH1_AXVRAL20120817_074202_19950509_000000_20071231_235959
SST ADF	ATS_SST_AXVRAL20130123_095500_19950421_000001_20101231_235959
Calibration update	Reflectance Calibration Table update, based on "cal_v40" (version dated 09 Nov 2012)

Expected Scientific Improvements

The following improvements will be introduced for both ATSR-1 and ATSR-2:

- SST retrievals contained within L2 NR products will be improved via the use of updated SST coefficients. These coefficients have been supplied by the (A)ATSR Reprocessing for Climate (ARC) project, and include a temperature-dependent emissivity and updated spectroscopy [1].
- An improved and consistent calibration will be implemented for the reflectance channels via the use of updated reflectance calibration tables [2].
- The colocation displacement between the nadir and forward views will be improved via the use of the new L1B characterisation files (CH1 ADF).

L2P/L3U Products

The existing L2P archive will be replaced with L2P (and L3U) data generated by a new processor, which has been based upon the ARC processor. Whereas the previous L2P processor, in simple terms, repackaged the L2 NR product and added some ancillary information, this new processor applies its own algorithm to generate SSTs from the Level 1B data.

The L3U product is an entirely new product for ATSR-1, ATSR-2 and AATSR and will contain the ARC L2P dataset remapped onto a regular lat/lon grid.

The L2P and L3U reprocessing will be run independently of the ATSR-1/-2 reprocessing but aims to follow a similar schedule; full details will be given in a separate User Note.

Official Release of Reprocessed Data

Once all parties involved in quality control are satisfied that the ATSR reprocessed dataset is as complete as possible and the quality assessment has been completed, a recommendation will be made by the (A)ATSR Quality Working Group that it is ready for release.

ESA will inform the users of the official release of the reprocessed data; this will also include the final report on the QC of the data. All things having proceeded as expected, this shall cover the ATSR-1, ATSR-2 and AATSR data in all formats, meaning that users will have access to an improved, near-continuous dataset of accurate SSTs spanning 20 years. It is anticipated that the full (A)ATSR archive will be released mid-2013.

References

- [1] Merchant, C. J. *et al.* (2008) Deriving a sea surface temperature record suitable for climate change research from the along-track scanning radiometers. *Adv. Space Res.* **41**, 1–11.
- [2] Smith, D.L. and Cox, C.V. (2013) (A)ATSR solar channel on-orbit radiometric calibration. *Geoscience and Remote Sensing, IEEE Transactions on*, **51**, 1370-1382. <http://ieeexplore.ieee.org/stamp/stamp.jsp?tp=&arnumber=6414625&isnumber=6469257>