



RAL ATSR PLS Report to 19th ATSR Core Group Meeting

Covering the period 1st April 2000 until 30th June 2000

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1. PROGRESS SUMMARY

Good progress has been maintained throughout the period, and a number of milestones achieved.

The major activities during the quarter have been preparation of the bid for the Extension of the ATSR PLS SLA, continuation of the work on the CD-ROM, and the updating of the SST coefficients.

Work on this bid for the follow-on SLA will be complete by the time of the ACG meeting. The planning in this bid assumes the extension will be for a period of 18-months only. During the first 9-months it is expected ATSR-2 will be in full operation supporting the commissioning of ATSR-2, and that 3 campaigns will take place to support this. In the remaining 9-months it is assumed that ATSR-2 will be put into hibernation and AATSR will become the operational instrument. This is a planning assumption, it seems likely that ESA may wish to continue to operate ATSR-2 in a ERS-2/Envisat tandem mission.

2. INSTRUMENT STATUS

2.1 ATSR-2 STATUS

ATSR-2 has operated throughout this period and is currently operating nominally.

3. REPORTS ON INDIVIDUAL WORK PACKAGES

3.1 WP 1000 SCIENCE EXPLOITATION

3.1.1 WP 1100 Scientific Planning and Project Management

Regular meetings have been held of the ATSR PLS Project team to progress all aspects of the ATSR Post Lunch Support Programme.

3.1.2 WP 1200 Scientific Support

Work on the CD-ROM has progressed well and we are now awaiting a final decision on which coefficients to use for the production run.

Work on the SST retrieval coefficients has concentrated on getting agreement between the current sets of coefficients available from Edinburgh and RAL. At the time of the last meeting agreement between brightness temperatures had been reached for cases where no tropospheric aerosol included. However, when the tropospheric aerosol was introduced the RAL and Edinburgh disagreed. After some careful detective work by Andrew Birks working in collaboration with Chris Merchant this disagreement has been traced to a problem within the tropospheric aerosol section of the Edinburgh model. This problem has now been fixed and the calculated brightness temperatures for the two models in the case including tropospheric aerosol are now in broad agreement. There are however some residual differences which

seem to have a marked effect on the actual SST coefficients derived from each set of brightness temperatures. This situation is worst for ATSR-2, and in particular for the 4-channel retrieval. This noise amplification problem in the generation of the retrieval coefficients is now under investigation.

During the last quarter the RAL team has worked hard to identify the requirements for ATSR-2 PLS in the future, and has put together a bid for a ATSR PLS Extension that has been submitted to NERC for their consideration.

Work on the cloud clearing has continued as a background activity, due to lack of staff availability.

A paper entitled "cloud clearing over the ocean in the processing of data from Along Track Scanning Radiometer (ATSR)" was published in the May issue of the J. of Atmospheric and Oceanic Physics.

3.1.3 WP 1300 Underpinning Physics

Work continues on the ongoing items listed in Table 2 of the attached summary. The progress on these activities remains good and will be reported to future ACG meeting. The major activity has been the work on getting agreement between the current sets of coefficients from Edinburgh and RAL.

A verbal summary of this work will be given at the ACG.

3.1.4 WP 1400 Management Interfaces

The Project Scientist has maintained regular management level contact with ESA counterparts at ESA-HQ, ESTEC, ESRIN and ESOC.

3.1.5 WP 1500 Promotion

As part of the Powergen National Numeracy Project 317 children from 7 schools attended the laboratory to take part in ATSR related activities, with each class spending approximately half a day at the laboratory. During their stay they were given a talk on the ATSR instrument and used ATSR data to understand how different features could be discriminated eg Sea, Cloud, Land, fires, volcanos, icebergs etc. Following on from this the SISTeR instrument was demonstrated giving the children a "hands on" demonstration of an IR instrument.

An ATSR web based utility has been prepared to demonstrate some of the uses and potential uses of ATSR data, it will be expanded over time. It is currently being reviewed at RAL. You will need to have the Macromedia Flash plugin installed and JavaScript enabled for the demonstration to work properly. Versions of the Flash plugin are now available for most platforms. The demonstration has been tested on Netscape 4.7 but is best viewed using Internet Explorer 4 and above. The topics covered by the demonstration are:-

- What is ATSR
- Climate and Weather
- Sea Ice
- Cloud Studies
- Land Studies
- Volcanoes
- Areas of Interest
- SISTeR

The latest news page of the ATSR WWW site was updated throughout the period informing users of the on going status of the instrument. Maintenance of the existing ATSR WWW pages continues, and some new material has been added during the last quarter (Validation page). A log is available for the quarter on ATSR WWW access, it will be tabled at the forthcoming Core Group meeting.

3.2 WP 2000 IN-FLIGHT OPERATIONS

3.2.1 WP 2100 System Management

The software, hardware, and data links necessary to support the ATSR- 2 instrument has been maintained throughout the period.

3.2.2 WP 2200 Instrument Operations

ATSR-2

The instrument has continued to run nominally throughout the reporting period.

The instrument was not in Yaw steering mode but in fine pointing mode for a 24 hr period period on 29th May 2000. Details were reported on the ATSR web site.

The VISCAL data is available from:

http://www.atstr.rl.ac.uk/html/calibration_table.html

Support from ESOC for ATSR-2 continues to be excellent.

3.2.3 WP 2300 Monitoring

ATSR-2: Detailed daily monitoring has been maintained in case the scan anomaly recurs.

There was one period of significant scan mirror jitter during period, full details can be found on the ATSR web site.

3.2.4 WP 2400 Troubleshooting and Diagnostics

No Action has been required during this quarter.

3.2.5 WP 2500 On-board Software and High-level Documents

No work required during this quarter.

3.2.6 WP 2600 ATSR-2 X-band EDS development and Maintenance

There has been no work in this reporting period.

3.2.7 WP 2700 Maintenance of the S-Band EDS-1/2

The ATSR-2 Engineering data system is now running operationally on the ALPHA VMS system with no problems. A new approach to archiving the postscript files of the daily housekeeping plots has been implemented to allow these be transferred to CD-ROM, rather than keeping a paper archive. Currently the paper versions are still being used.

The old VMS-based system is still running in parallel with the new, but with the daily plot production switched off. The old system is still being used to generate the Viscal data for the ATSR Web pages. New hardware (EXabyte tape-drive and SCSI controller has been purchased to allow the Viscal software to be run on the new EDS ALPHA - porting will be done during the next quarter.

3.3 WP 3000 CALIBRATION AND VALIDATION

3.3.1 WP 3100 Calibration and Validation Planning

Tim Nightingale attended an ENVISAT Cal/Val meeting at ESRIN on the 2nd-3rd May. Marianne Edwards (Leicester University) also attended in her capacity as AATSR validation scientist, and reported on this meeting at the last Core Group Meeting.

A useful meeting was held at SOC on the 8th May with Edward Cooper (RVS) at which the issue of SISTeR deployment on RVS was discussed. For SISTeR to be considered for deployment on RVS cruises it was clear that the SISTeR instrument would have to be a highly automated instrument requiring minimal supervision.

In order to meet this requirement the SISTeR instrument would require the following upgrades:-

1. Automated door.
 - No operator intervention required to protect instrument in adverse weather conditions.
2. Autoboot into running mode.
 - Power on and run, no operator set up required.
3. Datalogging.
 - Datalogging with minimal operator involvement.
 - Automated Instrument health reports and file archiving.

Items 1 and 2 are part of SISTeR upgrades planned for the current financial year. The Datalogging software upgrade has been included in the submission for work from April 2001.

SOC will keep RAL up to date with the details of forthcoming cruises. Once these upgrades have been completed and the instrument is in a position to be considered for participation in a cruise, then it would be possible to train up a student to operate the instrument on one of the week long "shakedown" cruises.

3.3.2 WP 3200 Infrared Calibration and Validation

Analysis of all of the SISTeR validation campaigns is nearing completion. A summary of the current status of analysis will be tabled at the forthcoming Core Group meeting.

A revised SISTeR dataset (V1.1) has been delivered to JAMSTEC/ARM for the Nauru99 experiment.

Revised SISTeR calibration software has been written, in order to rationalise the calibration procedure. IDL display software for ATSR-2 overpass has also been written.

SISTeR instrumentation

Work on the instruments has been slow over this quarter, with Tim Nightingale concentrating on analysis of campaign data.

A design for the implementation of an automated weather door to the SISTeR instrument has been completed, engineering drawing are currently being prepared.

3.3.3 WP 3300 Visible Calibration and Validation

Work on the long term monitoring of the visible channel calibration and the intercomparisons with other sensors continues.

3.4 WP 4000 ALGORITHMS

3.4.1 WP 4100 Algorithm Management

3.4.2 WP 4200 Algorithm Development

Reported under Science support, as the current work relates to improvements in the algorithm coefficients and a review of the cloud algorithm and its performance.

3.4.3 WP 4300 Algorithm Maintenance

Other than those reported above, no significant maintenance activities have been required during this reporting period.

3.5 WP 5000 DATA PROCESSING SOFTWARE

The ABT consolidation software has now been in pre-operational use since the last Core Group Meeting. During this time its robustness has been proven and no SPRs have been raised. Data for the first CD-ROM covering July, August and September 1999 have been processed together with June to December 1995 - all with v321 of SADIST-2 to provide full consolidation. This software will be handed over to the data processing team in the next quarter.

3.5.1 WP 5100 Software Requirements

There has been no work in this reporting period.

3.5.2 WP5200 Software Maintenance (SADIST-2 V300)

There has been no work in this reporting period.

3.6 WP6000 DATA HANDLING

3.6.1 WP6100 Data Management

The State Vector information from ESRIN continues to be received successfully, including simulated year 2000 state vectors which were archived at RAL.

3.6.2 WP6200 Archive Improvements & Population.

ATSR-1 processing is still suspended pending a full assessment of the quality of the LRDAF tapes. This activity, which includes a selective comparison against the processing of the old ATSR-1 data set is being undertaken with a few to determining whether or not the new LRDAF archive is of sufficient high quality that it can be used instead of the old data tapes or if it will be necessary to merge the two data sets, taking the best orbits from each. Progress is being made but is being hampered by problems processing some of the old data tapes, possibly due to deterioration in the original Exabyte media.

An update on the current situation will be given at the forthcoming ACG meeting.

3.6.2.1 WP6201 Data Archive Maintenance.

During the analysis of ATSR-2 data for the period May 95 to December 95, some of the data had to be re-supplied to RAL by ESA due to "tape failure".

3.6.3 WP6300 Primary Mission Processing.

ATSR-2 processing is complete to end of April 2000. May 2000 is scheduled for processing on 6th July 2000.

3.6.3.1 WP6301 Browse Population & Operation.

The ABF system had significant problems over a three week period this quarter, which have now been satisfactorily resolved. There is currently no backlog of files.

A log is available for the quarter on ABF use, it will be tabled at the forthcoming Core Group meeting.

3.6.4 WP6400 Full Resolution Data Processing for the NERC Community.

The following table summarises data services provided this quarter. Also shown are data services for previous quarter periods for comparison purposes.

	Received	Completed	Outstanding	Transferred to MRF	Cancelled	Paused	Products Distributed
2000 Q1	15	17	3	1	0	4	22354
2000 Q2	8	9	1	1	0	4	11309

Additionally, all ATSR-2 data between June 1995 and December 1995 has been reprocessed with the new algorithm generating 2875 asst and 2875 abt products which will be used as part of the forthcoming ATSR ASST CD-ROM.

Additionally, the MRF processing has produced 2867 asst products and 2867 abt products

Shown below are the statistics provided to DOSTAG.

	GBT	GSST	UBT	ASST	GBROWSE	Products Distributed
2000 Q1	14647	7259	21	427	-	22354
2000 Q2	8176	3076	19	19	19	11309

3.6.5 WP6500 Reprocessing.

ATSR-2 MRF processing is currently up to date, there is no backlog.

3.6.6 WP 6600 Order Handling and Distribution

See reports under above work packages.

The following users have been supplied data during the reporting period

Name	Institute	Country	Requests
Martin Wooster	KCL	UK	2
Neil Young	CRC, Antarctic Research	Australia	1
Tim Nightingale	RAL	UK	1
Chris Merchant	University of Edinburgh	UK	2
Robert Potter	S.O.C	UK	1
James Harle	S.O.C	UK	1
Ashley Seabrooke	Leicester	UK	1

Listed below are institutions that have accessed the ASST FTP site

Institution
ESRIN
Meteorological Office
CSIRO
Webbridges, Italy (Aerospace / Telecommunications Software Company)

4. WP 7000 HIGH LEVEL MANAGEMENT

4.1 WP 7100 OVERALL RAL PROJECT MANAGEMENT

Regular progress meetings with the Project Scientist and the EO Data Group Leader have been held to progress work.

5. PLANS FOR THE NEXT QUARTER

The specific milestones for the next quarter are given in Table 3 of the attached progress summary, plus the following list of standing activities:

- Continued operational support for the ATSR-2 instrument.
- Continued ATSR image product service.
- Continued routine ATSR-2 ASST processing.
- Continued routine ABF population and image generation through the Master Request File.
- Continued support for routine ABF operations to users.
- Issue of new CD-ROM