

ENVISAT CALIBRATION REVIEW

(9 - 13 September 2002)

SYSTEM	Monday, 9 September 2002 – Room NEWTON 1 and 2 (Plenary)	
	Subject of Presentation	Speaker
14:00	Objectives and Organization of the Review	J. Louet
14:10	History of the first months in orbit and next steps	J. Louet
14:25	Spacecraft Performance	F. Spoto
14:45	FOS status	A. Rudolph
15:05	COFFEE BREAK	
15:20	Instrument Overview	G. Levrini
16:00	PDS status	C. Garrido/H. Laur

ASAR	Tuesday, 10 September 2002 – Room NEWTON 1	
	Subject of Presentation	Speaker
09:00	Welcome	M. Zink
09:10	Introduction: ASAR Cal/Val project <ul style="list-style-type: none"> Instrument overview Cal/Val implementation plan/objectives Overall strategy & team organisation 	M. Zink
09:30	In-Orbit Operation <ul style="list-style-type: none"> Functional check-out & operations Summary of findings/anomalies Conclusions 	M. Hutchinson
09:50	Instrument In-Flight Calibration Antenna Stability <ul style="list-style-type: none"> TR-module history MS analysis, gain and phase stability 	R. Torres
10:10	COFFEE BREAK	
10:30	Instrument Gain Setting <ul style="list-style-type: none"> FBAQ function, histograms of block IDs Receiver gain adjustments 	M. Zink
10:40	Instrument Gain Monitoring <ul style="list-style-type: none"> Internal calibration scheme Instrument gain stability 	Ch. Buck
11:00	External Characterisation <ul style="list-style-type: none"> External characterisation approach Impact on elevation gain calculation 	M. Zink
11:20	Antenna Pattern Estimation from Rain Forest <ul style="list-style-type: none"> Approach and data sets used Results for VV polarisation 	M. Zink
11:40	Pattern Synthesis from Calibration Mode Measurements <ul style="list-style-type: none"> Tracking changes due to TRM drifts Pattern Maintenance Strategy 	R. Torres
12:00 – 14:00	LUNCH BREAK	
14:00	Determination of Absolute Gains from Transponder Responses <ul style="list-style-type: none"> Transponder performance summary Results 	Ch. Buck
14:20	Instrument Calibration Summary & Conclusions	M. Zink
14:50	Processor Verification PF-ASAR Status <ul style="list-style-type: none"> Summary of post-launch upgrades Processing parameter settings 	R. Barstow
15:10	Doppler Centroid Estimation Performance <ul style="list-style-type: none"> Doppler algorithms & results 	B. Rosich
15:30	COFFEE BREAK	
15:45	Doppler Centroid Estimation Accuracy <ul style="list-style-type: none"> Comparison with other estimators 	A. Monti-Guarnieri
16:00	Internal Calibration Processing & Processor Normalisation <ul style="list-style-type: none"> Algorithms & performance 	J. Closa
16:20	Burst Mode Processing <ul style="list-style-type: none"> Algorithms & performance 	B. Rosich
16:40	Processor Verification Summary & Conclusions	J. Closa

ASAR	Wednesday, 11 September 2002 – Room NEWTON 1	
	Subject of Presentation	Speaker
09:00	IM, WS, WV Product Verification and Quality Overview of Products	B. Rosich
09:10	Level0 Products <ul style="list-style-type: none"> • I/Q statistics, noise analysis • Missing SPs, timing monitoring 	B. Schättler
09:30	IMS, WVI - Single-Look Complex Products <ul style="list-style-type: none"> • Image Quality • Radiometric performance, noise floor 	B. Rosich
09:45	IMP - Ground Range Detected Products <ul style="list-style-type: none"> • Image Quality • Radiometric performance, noise floor 	P. Meadows
10:05	IMM - Medium Resolution Products <ul style="list-style-type: none"> • Image Quality • Radiometric performance, noise floor 	J. Closa
10:15	COFFEE BREAK	
10:30	WSM - Medium Resolution Products <ul style="list-style-type: none"> • Image Quality • Radiometric performance, noise floor 	J. Closa
10:40	IMG - Geocoded Products <ul style="list-style-type: none"> • Image Quality • Geometric performance 	D. Small
10:55	Browse Products <ul style="list-style-type: none"> • Image Quality • Radiometric performance 	M. Pirri
11:10	Derivation of RCS and σ^0 from ASAR Products <ul style="list-style-type: none"> • Interpretation of annotated parameters • Use of AUX products, examples 	M. Zink
11:20	Preliminary Verification of AP Mode	P. Pasquali/B. Hawkins
11:40	ASAR Interferometry	A. Monti-Guarnieri
12:00	Product Quality Summary & Conclusions	B. Rosich
12:30 – 14:00	LUNCH BREAK	
14:00	Wave Product Validation Approach/Objectives	Y.-L. Desnos
14:10	The ASAR Wave Level 1b & Level 2 Products <ul style="list-style-type: none"> • Algorithm description • Interpretation of the product 	H. Johnsen
14:30	Performance of the Improved Wave Level 1b Product	C. de Valk
14:50	First Level 2 Validation Results	B. Chapron
15:05	Wave Validation Summary & Discussion	Y.-L. Desnos
15:30	COFFEE BREAK	
15:45	Final Conclusions	M. Zink
16:00	General Discussion	
16:30	End of Meeting	

AATSR	Thursday, 12 September 2002 – Room NEWTON 1	
	Subject of Presentation	Speaker
09:00	Welcome	H. Tait
09:05	Introduction to AATSR Commissioning Process <ul style="list-style-type: none"> • Objectives • Team organisation 	H. Tait
09:10	Highlights of AATSR Commissioning	D. Llewellyn-Jones
09:20	Instrument Performance Verification and Optimisation <ol style="list-style-type: none"> 1. Overview <ul style="list-style-type: none"> • Instrument Description • Commissioning Strategy 	D. Smith
09:30	2. Functional Performance <ul style="list-style-type: none"> • Power • Thermal • Cooler • Scan Mechanism 	D. Smith
10:15	COFFEE	
10:30	3. Calibration Subsystems <ul style="list-style-type: none"> • Blackbody • Visible Calibration • Gain/offset Loop 	D. Smith
11:30	4. Signal Channel Performance <ul style="list-style-type: none"> • Dynamic Range • Radiometric Noise • Pixel Map Alignment • Low Gain Mode • Stray Light • EMC 	D. Smith
12:30	LUNCH	
14:00	5. Conclusions <ul style="list-style-type: none"> • Conclusions on instrument performance and L0 Data Quality • Data Examples • Comparison with ATSR-2 	D. Smith
14:20	Discussion	All
14:30	L1b Product Verification <ol style="list-style-type: none"> 1. Overview 	A. Birks
14:40	2. Format Verification	A. Birks
14:50	3. Verification of ADSs <ul style="list-style-type: none"> • SQUADS • Scan and pixel number • Geolocation • Solar angles • Scan pixel x and y • VISCAL GADS 	A. Birks
15:10	4. Verification of MDSs <ul style="list-style-type: none"> • Image Plane • Confidence Words • Land and cloud flags 	A. Birks
15:30	COFFEE	
15:45	5. Auxiliary File Tuning	A. Birks
15:55	6. Comparison with ATSR-2	A. Birks
16:05	7. Browse Product	A. Birks
16:15	8. Conclusions on L1b Data Quality	A. Birks
16:30	Discussion	All

16:30	Ongoing L2 Activities <ul style="list-style-type: none"> • Product Verification • Validation 	M. Edwards (30 mins) (with input on status of L2 processor verification from A. Birks)
17:00	Final Conclusions, Recommendations and Actions <ul style="list-style-type: none"> • Instrument performance • L1b products • L2 products • Recommendations/actions 	H. Tait (with possible input from DLJ and others)
17:30	End	

MERIS	Tuesday, 10 September 2002 – Room EINSTEIN	
	Subject of Presentation	Speaker
09:00	Welcome	
09:10	Introduction: MERIS CalVal project <ul style="list-style-type: none"> • CalVal implementation plan/objectives • Overall strategy & team organisation • Status 	S. Delwart
09:20	Instrument Status <ul style="list-style-type: none"> • Functional check-out & operations • Performance Analyses • Summary of findings/anomalies • Conclusions 	H. Sontag
09:40	Instrument Performance <ul style="list-style-type: none"> • Requirements / Budgets • Analysis approach & tools • Results / Findings 1. Pointing Performance <ul style="list-style-type: none"> • Geo-location and resampling accuracy • Conclusions 	S. Delwart L. Bourg
10:15	COFFEE BREAK	
10:30	Instrument Performance (continued) <ul style="list-style-type: none"> • Requirements / Budgets • Analysis approach & tools • Results / Findings 2. Spectral Performance <ul style="list-style-type: none"> • Spectral Characterization • Spectral Model • Spectral accuracy • Spectral Stability • Conclusions 3. Radiometric Performance <ul style="list-style-type: none"> • Dark current characteristics • NEDL / SNR • Instrument Stability / Degradation • Diffuser BRDF Accuracy / Degradation • Early Vicarious Calibration Results (tbc) • Corrections (smile, straylight, NL) • Conclusions 	S. Delwart L. Bourg S. Delwart / J-P Huot
12:10	Performance Summary & Conclusions	S. Delwart
12:30 – 14:00	LUNCH BREAK	
14:00	Routine In-Flight Calibration <ul style="list-style-type: none"> • Radiometric Calibration • Spectral Calibration • Campaigns (Spectral and BRDF) • Conclusions 	S. Delwart
14:30	Level 1B algorithm <ul style="list-style-type: none"> • Baseline Verification • MERIS IPF updates • Conclusions 	L. Bourg
15:00	Status Report: Level 2 project <ul style="list-style-type: none"> • Overview: L2 verification and validation activities 	J-P Huot / C. Brockmann
15:30	COFFEE BREAK	
15:45	Recommendations/Actions <ul style="list-style-type: none"> • IPF algorithm updates • Routine In-Flight Calibration updates • Long-term monitoring functions updates 	S. Delwart
17:00	General Discussion	
17:30	End of Meeting	

RA-2/MWR	Wednesday, 11 September 2002 – Room EINSTEIN	
DORIS	Subject of Presentation	Speaker
09:00	Welcome	M. Roca
09:05	Introduction: RA-2/MWR CalVal project: <ul style="list-style-type: none"> • Overall strategy & team organisation • Summary of the workshop objectives (as from Monday opening session) • RA-2 Calibration objectives and approach. 	M. Roca
09:15	RA-2 Tracking Performance Analysis: <ul style="list-style-type: none"> • Instrument summary / requirements • Tracking performance objectives • Problems encountered with the instrument launch configuration • On-board parameters/SW modifications for performance optimisation 	M. Roca
09:35	RA-2 Tracking Performance Results <ul style="list-style-type: none"> • RSL after improvement • Statistics • Acquisition/Tracking performance vs ERS performance • Cross-over analysis 	S. Laxon
10:15	COFFEE BREAK	
10:30	S-band Performance	M. Roca
10:45	Questions (on RA-2 performance)	All
11:00	Instrumental Corrections <ul style="list-style-type: none"> • IF Mask • PTR • USO 	C. Celani
11:30	Level 1b Processing <ul style="list-style-type: none"> • Window Delay • Sigma-0 calibration factor • Datation 	M. Milagro/ M. Roca
12:15	Questions	All
12:30 – 14:00	LUNCH BREAK	
14:00	Individual Echoes	M. Roca
14:15	RA-2 summary and discussion	All (MR)
14:45	MWR Instrument Performance	PF/LE/EO/ MVA/JG
15:30	COFFEE BREAK	
15:45	MWR Level 1b (engineering verification)	PF/LE/EO/ MVA/JG
16:15	Questions and discussion	All
16:30	DORIS Instrument Performance	CNES
16:45	DORIS Product Quality	B. Bonhoure
17:05	Orbit Product Validation	B. Duesmann
17:20	Questions	All
17:30	End of first today meeting	

RA-2/MWR	Thursday, 12 September 2002 – Room EINSTEIN	
DORIS	Subject of Presentation	Speaker
09:00	Introduction to approach and objectives of the Product Cross-calibration and Validation	J. Benveniste
09:15	RA-2/MWR Level 2 Processor Verification	J. Benveniste/ M.P. Milagro
09:45	RA-2/MWR Level 2 Products Validation	J. Benveniste/ M.P. Milagro
10:15	COFFEE BREAK	J. Benveniste
10:30	SWH Validation	J. Benveniste
10:45	Questions and discussion	All
11:10	Sigma-0 (or Backscatter) Calibration <ul style="list-style-type: none"> • Introduction/ Objectives /Requirements • Absolute Cal: <ul style="list-style-type: none"> ▪ Transponder design and calibration ▪ Data Processing • Cross-cal with ERS Sigma-0 & Passive • Conclusions 	M. Roca H.Jackson M.Roca B. Greco M. Roca
12:10	Questions and discussion	All
12:30 – 14:00	LUNCH BREAK	
14:00	Absolute Range Calibration <ul style="list-style-type: none"> • Calibration Concept (orbit/ RA-2 range/ instantaneous sea level) • Altimeter range measurement and atmospheric corrections • The Orbits • The Instantaneous Sea Level retrieval: <ul style="list-style-type: none"> ▪ moored GPS buoys ▪ light GPS buoys ▪ tide gauges data • The closure: bias retrieval 	R. Francis R.Francis/A.Martellucci E. Doornbos T. Schueler A. Rius P-Y. LeTraon P-Y. LeTraon
15:45	COFFEE BREAK	
16:00	Range Calibration conclusion and discussion	All (MR)
16:30	Summary of the RA-2/MWR/DORIS session	
17:00	Recommendations, Actions and Conclusions	
17:30	End of RA-2/MWR/DORIS Session	

GOMOS	Tuesday, 10 September 2002 – Room NEWTON 2	
	Subject of Presentation	Speaker
09:00	Welcome	Odile Fanton d'Andon
09:05	Introduction: GOMOS CalVal project <ul style="list-style-type: none"> • CalVal implementation plan/objectives/achievements • Overview of the team organisation and activities 	Odile Fanton d'Andon
09:15	Mission Planning Overview <ul style="list-style-type: none"> • Routine background plan • Specific Calibration activities (LIN,SSM, UNI,...) • Supporting geophysical campaigns • Conclusions 	Paul Snoeij
09:30	Instrument Performance (SPA,SPB,FP,SATU) <ul style="list-style-type: none"> • Requirements / Budgets • Analysis approach & tools • Results / Findings 4. Detection & Pointing Performance <ul style="list-style-type: none"> • Detection range • Systematic mispointing 5. Radiometric Performance <ul style="list-style-type: none"> • Non-linearity • SNR • Non-uniformity • Radiometric calibration & accuracy 	Renaud Fraise (ASTRIUM) / Gilbert Barrot (ACRI-ST)
10:15	COFFEE BREAK	
10:30	Instrument Performance (Cont'd) 6. Optomechanical Stability <ul style="list-style-type: none"> • Thermal behaviour • Stability aspects 7. Stray light <ul style="list-style-type: none"> • External & internal contribution 8. Spectral Performance <ul style="list-style-type: none"> • Wavelength assignment (methods & results) • Spectral dispersion & Stability 9. GOMOS CCD performance <ul style="list-style-type: none"> • Modulation • Mean dark charge evolution • Hot pixels • RTS • Cosmic rays 	Renaud Fraise (ASTRIUM) / Gilbert Barrot (ACRI-ST) Renaud Fraise (ASTRIUM) Jean-Loup Bertaux (SA) Antoine Mangin (ACRI-ST)/ Alain Hauchecorne (SA)
12:30 – 14:00	LUNCH BREAK	
14:00	Level 1B algorithm <ul style="list-style-type: none"> • Overview / upgrades • Evolution of the algorithms : alternatives Level 1B verified products <ul style="list-style-type: none"> • Stellar spectra • Limb • Spectrometers transmission • Photometers • Pointing / Geolocation 	Gilbert Barrot (ACRI-ST) Jean-Loup Bertaux (SA) Erkki Kyrölä (FMI) Francis Dalaudier (SA) Antoine Mangin (ACRI-ST) Alain Hauchecorne (SA)
15:15	COFFEE BREAK	

15:30	<p>Level 2 algorithm</p> <ul style="list-style-type: none"> • Overview / upgrades <p>Preliminary Level 2 verified products</p> <ul style="list-style-type: none"> • High resolution temperature profile • Tangent line densities • Aerosols retrieval • Local profiles • GOMOS internal consistency checks • Coherency with model – climatology • External comparisons 	<p>Antoine Mangin (ACRI-ST)</p> <p>Alain Hauchecorne (SA) Erkki Kyrölä (FMI) Johanna Tamminen (FMI) Odile Fanton d’Andon Marielle Guirlet Bertrand Theodore</p>
16:45	<p>Summary/Recommendations/Actions</p> <ul style="list-style-type: none"> • IPF algorithm update • Calibration Chains • Long term quality analysis procedure • Outstanding actions 	<p>Odile Fanton d’Andon Rob Koopman</p>
17:10	<p>General Discussion</p>	
17:30	<p>End of Meeting</p>	

SCIAMACHY	Wednesday, 11 September 2002 – Room NEWTON 2	
	Subject of Presentation	Speaker
09:00	Welcome	C. Chlebek/DLR, J. Burrows/IFE
09:10	Introduction <ul style="list-style-type: none"> • SCIAMACHY Instrument Commissioning & Processor Verification • Overall strategy & team organisation 	J. Frerick/ESA
09:20	Functionality and Performance of SCIAMACHY Mechanisms <ul style="list-style-type: none"> • Scanners, apertures, filters • Calibration sources, • Sun follower 	N.N. Astrium
09:40	Thermal Control & Performance <ul style="list-style-type: none"> • Handling of thermal system • Final temperatures • Expectations over lifetime 	N.N. Dutch Space
09:55	Mission Planning Overview <ul style="list-style-type: none"> • Mission Planning during Commissioning 	M. Gottwald/SOST DLR
10:15	COFFEE BREAK	
10:30	Instrument Performance <ol style="list-style-type: none"> 1. Instrument States 2. Spectral Performance 3. Radiometric Performance <ul style="list-style-type: none"> • Instrument Throughput, Etalon • On-ground key data unchanged 4. Degradation monitoring 5. Pointing Performance <ul style="list-style-type: none"> • Instrument pointing and Sun Follower Verification • Tangent height verification • Geolocation and Timing in 1b products 	S. Noel/SOST-IFE J. Skupin/IFE G. Lichtenberg, SRON N.N./TPD M. Wuttke/SOST-IFE N.N./Astrium H. Bovensmann/IFE N.N./ESA
12:30 – 14:00	LUNCH BREAK	
14:00	In-flight calibration and orbit dependencies <ul style="list-style-type: none"> • Spectral Calibration • Leakage Current • Sun Mean Reference Spectra • PPG/Etalon 	B. Cozzoni/ESA J. Frerick/ESA J. Skupin/IFE S. Slijkhuis/DLR-IMF
15:00	Ground Scene dependent corrections I <ul style="list-style-type: none"> • Memory Effect and Red Grass • Straylight 	R. Hoogeveen/SRON G. Lichtenberg/SRON
15:30	COFFEE BREAK	
15:45	Ground Scene dependent corrections II <ul style="list-style-type: none"> • Polarisation 	P. Stammes/KNMI
16:00	Spectrally calibrated Radiance <ul style="list-style-type: none"> • Precision/accuracy estimate • Possible interference with level 2 processing 	J. Frerick/ESA R. deBeek/IFE
16:30	Overview of first level 2 verification results	A. Piters/KNMI
16:50	General status of level 2 products	J. Frerick/ESA
17:20	Discussion/Conclusions	all

MIPAS	Thursday, 12 September 2002 – Room NEWTON 2	
	Subject of Presentation	Speaker
09:00	Welcome	H. Nett
09:10	Introduction: MIPAS CalVal project <ul style="list-style-type: none"> • CalVal implementation plan/objectives • Overall strategy & team organisation 	H. Nett
09:20	In-Orbit Operation <ul style="list-style-type: none"> • Functional check-out & operations • Performance Analyses • Summary of findings/anomalies • Conclusions 	R. Gessner & P. Mosner (Astrium GmbH)
09:50	Mission Planning Overview <ul style="list-style-type: none"> • Specific Calibration activities (SEMs, LOS, FOV ...) • Supporting geophysical campaigns • Conclusions 	M. Sanchez Gestido
10:15	COFFEE BREAK	
10:30	Instrument Performance <ul style="list-style-type: none"> • Requirements / Budgets • Analysis approach & tools • Results / Findings 10. Radiometric Performance <ul style="list-style-type: none"> • NESR_0, NESR_T • Radiometric accuracy & aliasing • Detector non-linearity • Stability aspects • Results of independent analysis (**) 11. Spectral Performance <ul style="list-style-type: none"> • ILS • Spectral axis calibration • Linearity & Stability • Results of independent analysis (**) 12. Pointing Performance <ul style="list-style-type: none"> • Systematic LOS mispointing • FOV alignment checks (**) work conducted under AO projects 652 & 145	G. Perron/ABB BOMEM with ESA & AO PIs
12:10	Performance Summary & Conclusions	G. Perron & H. Nett
12:30 – 14:00	LUNCH BREAK	
14:00	Routine In-Flight Calibration <ul style="list-style-type: none"> • Radiometric Calibration Scenario • Spectral Calibration & ILS retrieval • LOS calibration • Conclusions 	G. Perron
14:30	Level 1B algorithm <ul style="list-style-type: none"> • Baseline Modifications • Specific Topics ('aliasing' peak, spurious spikes, ...) • MIPAS IPF update • Conclusions 	G. Perron & H. Nett
15:00	Status Report: Level 2 project <ul style="list-style-type: none"> • Overview: Level 2 activities • Results from L1B/L2 data analysis • Evolution of algorithm baseline • Auxiliary databases 	B. Carli / IFAC & A. Dudhia / U. of Oxford
15:30	COFFEE BREAK	
15:45	Recommendations/Actions <ul style="list-style-type: none"> • IPF algorithm update • Calibration Chains • Long-term monitoring functions • Outstanding actions 	H. Nett, G. Perron, B. Carli, A. Dudhia
16:45	Conclusions	H. Nett
17:00	General Discussion	all
17:30	End of Meeting	

FINAL	Friday, 13 September 2002 – Room NEWTON 1 and 2 (Plenary)	
	Subject of Presentation	Speaker
09:00	Recall of Objectives of the Review and Organization of the Session	G. Levrini
09:10	ASAR Calibration Results	M. Zink
09:20	AATSR Calibration Results	H. Tait
09:30	MERIS Calibration Results	S. Delwart
09:40	RA-2/MWR Calibration Results	M. Roca, J. Benveniste
10:00	DORIS Calibration Results (Orbit)	P. Vincent
10:10	GOMOS Calibration Results	O. Fanton d'Andon
10:20	SCIAMACHY Calibration Results	J. Frerick
10:30	MIPAS Calibration Results	H. Nett
10:40	COFFEE BREAK	
11:00	Discussion	All
12:15	Summary of Recommendations	G. Levrini
12:30	End of the Review	