MIPAS QWG #10 – Minutes and Action Items

Authors: L0: Roland Gessner (Astrium)
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Revision: F. Niro, 27/06/2006
T. Fehr, 12/07/2006

MIPAS QWG#10
13 – 15 June 2006
ESRIN

List of attendants

Ginette	Aubertin	BOMEM	13-15 June 2005
Sven	Bartha	ASTRIUM	13-15 June 2006
Claudio	Belotti	IFAC	13-15 June 2006
Manfred	Birk	DLR	13-15 June 2006
Gabriele	Brizzi	UB	13-15 June 2006
Bruno	Carli	IFAC	14-15 June 2006
Massimo	Carlotti	UB	13-15 June 2006
Simone	Ceccherini	IFAC	13-15 June 2006
Samuele	Del Bianco	IFAC	13-15 June 2006
Marta	De Laurentis	ESA	14-15 June 2006
Anu	Dudhia	OU	13-15 June 2006
Thorsten	Fehr	ESA	13-15 June 2006
Herbert	Fisher	IMK	15 June 2006
Jean Marie	Flaud	LISA	13-15 June 2006
Roland	Gessner	ASTRIUM	13-15 June 2006
Anne	Kleinert	IMK	13-15 June 2006
Peter	Mosner	ASTRIUM	13-15 June 2006
Valentina	Mauri	UB	14-15 June 2006
Fabrizio	Niro	ESA	13-15 June 2006
Hermann	Oelhaf	IMK	13-15 June 2006
Enzo	Papandrea	UB	14-15 June 2006
Robert	Poulin	BOMEM	13-14 June 2006
Manuel	López-Puertas	IAA	13-15 June 2006
Piera	Raspollini	IFAC	13-15 June 2006
John	Remedios	UL	13-14 June 2006
Marco	Ridolfi	UB	13-15 June 2006
Paul	Snoeij	ESA	13-15 June 2006
Claus	Zehner	ESA	15 June 2006
George	Wagner	DLR	13-15 June 2006

ACTION ITEMS

AI ID	AI description	Responsability	Due date
	Level 0 and Level 1		
AI_L0_10.01	F. Niro, MdL, ESOC to investigate in detail the reasons of the IF 16 data acquisition problem.	ESRIN (FN, MdL)	15/09/2006
AI_L0_10.02	Astrium (RG) to contact ESTEC/PLSO and to propose increase to a higher duty cycle	Astrium (RG)	Closed
AI_L1_10.01	ESRIN to provide a list of data available at the D-PAC ftp server	ESRIN (TF)	30/06/2006
AI_L1_10.02	ESRIN to provide to BOMEM, L0 data for AE mode and the corresponding AUX_FRA_AX files for L1B processing using restituted attitude method. Bomem to process L0 data.	ESRIN (FN), BOMEM (GA)	15/07/2006 15/10/2006
AI_L1_10.03	ESRIN to provide to users information about resolution mode (FR, RR...) vs orbit number.	ESRIN (MdL)	15/10/2006
AI_L1_10.04	OU to check for side ways looking modes retrieved Tangent Heigths. UO to send orbit information about L2 retrieved tangent heights (THs) to be compared with L1B tangent heights. Bomem to compare L1b tangent heights with L2 retrieved for data < dec. 2003	OU (AD) BOMEM (GA)	15/08/2006 15/10/2006
AI_L1_10.05	ESRIN to extract ADC_Min/Max monitoring data for orbits between 17000 and 21000.	ESRIN (FN)	15/08/2006
AI_L1_10.06	BOMEM to look at F/R correlation with SPC calibration.	IMK(AK), BOMEM (GA)	15/10/2006
AI_L1_10.07	BOMEM to assess if it worth to revisit the ILS model for monitoring purpose.	BOMEM (RP)	15/10/2006
AI_L1_10.08	All QWG members to take a look at the monthly report and provide feedbacks.	QWG (All)	30/06/2006
AI_L1_10.09	BOMEM to assess impacts of broadening (from saturation effects) for SPC calibration.	BOMEM (GA)	15/10/2006
AI_L1_10.10	BOMEM to implement <T, pressure, profile> model to compute FWHM monitored within SPC calibration.	BOMEM (GA)	15/10/2006
AI_L1_10.11	BOMEM to remove the saturated lines from the list of microwindows used for SPC calibration.	BOMEM (GA) LISA (JMF)	15/08/2006
AI_L1_10.12	BOMEM to implement the use of more than 1 altitude to perform SPC calibration.	BOMEM (GA)	15/10/2006
AI_L1_10.13	IFAC to investigate on the effect of offset-linear spectral calibration/correction on L2 performance.	IFAC (PR)	15/10/2006
AI_L1_10.14	BOMEM to change Life-limited Items configuration mode to adapt to reduced resolution.	BOMEM (GA)	15/07/2006
AI_L1_10.15	BOMEM to revise Long-life Items #short sweep criterion following reduced resolution mode planning.	BOMEM (GA)	15/07/2006
AI_L1_10.16	BOMEM to assess impacts of variation of radiometric error with time, as F/R delta is roughly constant.	BOMEM (RP)	15/10/2006

AI_L1_10.17	DLR to modelize microvibrations effect on offset/scene and to propagate microvibrations effects to calibrated scene. BOMEM to assess the impact of microvibration (sampling jitter, modulation of interferogram) on radiance accuracy.	DLR(MB) BOMEM (RP)	15/10/2006
AI_L1_10.18	BOMEM to investigate relationship between F/R and ice contamination.	BOMEM (RP)	15/10/2006
AI_L1_10.19	IMK to assess wether F/R is band dependent.	IMK (AK)	15/10/2006
AI_L1_10.20	Astrium to assess stability of PRTs for blackbody temperatures.	Astrium (RG)	15/10/2006
AI_L1_10.21	BOMEM to assess the behavior of the quantity [CBB(t) - DS(t0)] / [CBB(t0) - DS(t0)].	BOMEM (GA)	15/10/2006
AI_L1_10.22	BOMEM to investigate high resolution DS data from IF11. 1) Get data. 2) Perform processing to assess/investigate radiometric error.	BOMEM (GA)	15/10/2006
AI_L1_10.23	IFAC/UO to investigate on L2 retrieval of the gain/offset errors.	IFAC (BC) OU (AD)	15/10/2006
AI_L1_10.24	IMK to send data to DLR for gain/offset investigations related to INTERFEROMETER ageing.	IMK (AK)	30/06/2006
AI_L1_10.25	BOMEM/DLR to work out nonlinearity correction uncertainty assessments.	BOMEM (RP) DLR (MB)	15/10/2006
AI_L1_10.26	BOMEM to assess effect of ice contamination using A1 and A2 L0 data.	BOMEM (RP)	15/10/2006
AI_L1_10.27	BOMEM to get from Astrium orbit numbers and CBB data exhibiting variation of temperature from 240 to 246 kelvin.	BOMEM (GA) Astrium (RG)	30/08/2006
AI_L1_10.28	IFAC to assess whether or not NESR increase of 25% (proportional with gain) is tolerable for L2.	IFAC (BC)	15/10/2006
AI_L1_10.29	BOMEM to setup a plan to investigate problem with LOS calibration (geolocation).	BOMEM (GA)	15/08/2006
AI_L1_10.30	BOMEM to compute residual error of nonlinearity corrected data, after radiometric calibration.	BOMEM (RP)	15/10/2006
AI_L1_10.31	BOMEM to assess delivery date of officially accepted version of L1B prototype to support ACVE activities. Target date is as soon as possible in August.	BOMEM (RP)	15/07/2006
	Level 2		
AI_L2_10.01	Astrium to check the rationale of the approach defined in the DPM, if no records are found, the approach should be modified in order to perform the retrieval when the OM exists.	Astrium (SB)	15/08/2006
AI_L2_10.02	BOMEM(GA)/ESRIN(FN) to investigate on the root cause of band D data corruption/invalidation. FN to send L0 data, GA to process/examine the data	BOMEM(GA)/ ESRIN(FN)	15/10/2006
AI_L2_10.03	IFAC to provide the details of the new changes in an upgrade of the TN (within next week).	IFAC	Closed
AI_L2_10.04	Astrium to deliver to IFAC intermediate version for ADF tuning and conversion asap	Astrium (SB)	15/07/2006
AI_L2_10.05	Astrium, to inform QWG if there is any delay in the schedule	Astrium (SB)	15/07/2006

AI_L2_10.06	Astrium to change units of Error Propagation Matrix in the next release	Astrium (SB)	15/07/2006
AI_L2_10.07	IFAC to add to the TN of AI_L2_10.5 the recipe for the calculation of the pT error propagation matrix.	IFAC	15/07/2006
AI_L2_10.08	IFAC to repeat the test on the AILS	IFAC	15/10/2006
AI_L2_10.09	UL to determine the recipe to calculate error values for CI using NESR error propagation.	UL	15/08/2006
AI_L2_10.10	Astrium to check for spare space in the output to put CI error values (or to prepare spares for next release).	Astrium (SB)	15/08/2006
AI_L2_10.11	OU to model CO2 line-mixing in RFM to properly add line-mixing in MW selection and LUTs	OU	15/10/2006
AI_L2_10.12	UB to carry out further studies on CO2 line-mixing	UB, ESRIN (FN)	15/10/2006
AI_L2_10.13	IFAC to add line-mixing in the line-by-line calculation in the ORM (not in the prototype)	IFAC	15/10/2006
AI_L2_10.14	ESA/BOMEM to investigate how ILS fitted parameters change in time (trend?). To check if ILS parameters are distributed as a gaussian with respect to the average.	ESRIN (FN), BOMEM (GA,RP)	15/10/2006
AI_L2_10.15	UB + LISA to investigate the residuals in the NO2 MWs	UB, LISA (JMF)	15/10/2006
AI_L2_10.16	IFAC + OU to verify if the anomaly in the residuals of NO2 reported by OU is the same as reported by C. Belotti at a previous QWG.	IFAC, OU	15/10/2006
AI_L2_10.17	UB to deliver CO2 line-mixing error spectra to OU both for HR (17 sweeps) and RR (27 sweeps).	UB	15/10/2006
AI_L2_10.18	BOMEM(GA) to provide the final list of lines to JMF	BOMEM	01/10/2006
AI_L2_10.19	LISA to update the spectroscopic database for Ethane, and produce a TN on this.	LISA (JMF)	15/10/2006
AI_L2_10.20	BOMEM to complete the MIPAS L1B paper. R.Poulin will replace G.Perron for the MIPAS L1B paper completion (July 2006)	BOMEM (RP)	15/07/2006

Presentations:

All meeting presentations are available on the Uranus server:

ftp://pcf:Ur0Fr0@uranus.esrin.esa.it/MIPAS/To_QWG/20060613-QWG10/Presentation

0) Level 0

Welcome and Introductions by T.Fehr (ESRIN)

0.1 Introduction (T.Fehr/ESRIN)

- MIPAS instrument by ESTEC/PLSO status has been improved in ranking from "bad" (Jan 2006) to "fair" (May 2006), since the operations could be stabilised. It has to be noted that this consideration takes into account only the availability of the instrument compared to the originally planned duty cycle. MIPAS continues to operate in the experimental mission. However, the expected evolution was still rated as "bad" as the near term development of the system is uncertain.
- Based on fuel consumption, ESA expects ENVISAT operations to be continued until at least 2010.
- Funding for the Envisat mission is secured until 2010

0.2 Action Item Status (F.Niro/ESRIN)

Presentation of AI status (see handout)

- AI L1_6.02 has now a due date of Sept 2006; technote will be provided
- AI L1_7.03: action item to check whether the 1/f noise is due to instrument or processing; due for next QWG meeting
- AI L1_8.01: differences in engineering altitudes needs still to be investigated
- AI L1_8.03: not to be implemented in the IPF; R.Poulin suggests to close this action item
- AI L1_8.05: closed
- AI L1_8.09: Closed with presentationby Anne Kleinert at the meeting
- AI 9.05 closed with the presentation by Manfred Birk and Robert Poulin at the meeting
- AI L1_8.16: waiting for next L2 IPF expected for Sep or Oct 2006
- AI L2_9.02: closed with the presentation by John Remedios at the meeting
- AI L2_9.19: ongoing; due date before Sept 2006
- AI L2_9.20: ongoing; due date before Sept 2006

0.3 Mission Planning Status (M.de Laurentis/Rhea)

- Presentation of status (see handout)
- At present, the measurements are base on the recent MIPAS Mission Plan V4.2.
- Orbital re-initialisation is performed that introduces a 4 minute data gap. Note that the data gap issue was also discussed in the science meeting. During 2005 and 2006 this point of data gap was moved along the orbit to avoid non-availability of data always over the same position, especially for campaign measurement where data availability at certain location is mandatory.
- Calibration Scenarios:
  - LOS Calibration once per week with elevation angle offset of 0.1 deg

  - RGC once per day
  - WCC after every transition to HEATER
  - DS offset every 800 sec
- ECWMF requests 4 weeks of having continuous data (1 orbit on / 2 orbits off) – this will be discussed during the Science Team.
- LOS Calibration sideways: Number of MCMDs seems to be the limiting factor. The action is still open at ESOC. ESRIN states that it is not possible to reduce the number of commands manually.
- Recommendation to perform passive decontamination +IF16+IF4+IF16"calibration activity in case the IF16 acquisition problem can be solved

0.4 Data Acquisition Status (F. Niro/ESRIN)

- Presentation of status - see handout
- IF 16 data could not be acquired since April 2005. The specific difficulty in the IF16 data acquisition is that MERIS high rate measurement data segments are used. Note that the scenario has not been changed since the time when the data acquisition was successful.

AI_L0_10.01: ESRIN (FN, MdL) to investigate in detail the reasons of the IF 16 data acquisition problem.

0.5 Mission Plan Document Status (Science Team)

- This will be presented during the Science Team Meeting.
- Update of the mission planning following the QWG and the Science Team meeting.
- Herman Oelhaf is the prome QWG contact person for the Mission Planning

0.6 Instrument Status (P. Mosner/Astrium)

- Presentation – see handout:
- The overall instrument availability has improved significantly since the INT Heater was switched on (approximately one anomaly every 15 orbits). A short period of operations instability was observed in February 2006.
- Astrium considers the action items L1_9.02, L1_9.07 closed from their side.
- Decontamination activity planning (AI L1_9.07): Since the FCA performance depends also on the amount of ice within the FPS, regular decontamination activities are required. Analysis of the cooler performance over lifetime has shown that around May the FCA is stressed most. Therefore a decontamination activity should be performed in this period. At least a second decontamination activity is required in the year, which could be accommodated whenever there is an outage of the instrument that leads to a Standby or Standby/Refuse Mode (i.e. the Cooler being OFF).
- Gain figures by F.Niro have shown that a short-term switch-down of the instrument to Standby / refuse (occurred during the payload switch-off of 6th April 2006) leads already to a significant reduction of the gain (about 25% of decrease). Therefore the proposed decontamination of May is not needed anymore. A further decontamination should be planned during Oct/Nov 2006.

→ Usage of the MIPAS Backup Mode (M.Birk): Astrium states that the MIPAS Backup Mode that was operated in the frame of the anomaly investigations has proven to be instable. Therefore it can not be considered for nominal operations. A much more interesting option would be to consider MIPAS operation on side B.
→ Increase of duty cycle (M.Oelhaf, IMK): Since the instrument is showing relative operational stability and there are no signs of an obvious significant short-term mechanical degradation, it was

suggested to increase carefully the duty cycle to e.g. 40%. A higher duty cycle was also desired by various groups as e.g. ECWMF. In case of increasing problems, the duty cycle could then be reduced again.

AI_L0_10.02: Astrium (RG) to contact ESTEC/PLSO and to propose increase to a higher duty cycle

1) Level 1B

1.1 Level 1B Configuration ESRIN (FN)

- Baseline for L1 IPF
- L1 IPF processor Update
- L1 ADF updates
- L1B processing Status

→ M. Carlotti (UB) mentions that he has problem accessing/finding data at DPAC.

AI_L1_10.01 (ESRIN, TF) ESRIN to provide a list of data available at the D-PAC ftp server

1.2 Anomaly Investigation Status ESRIN (FN)

- Excessive number of MISSING ISPS in MPH for MIPAS L0 products: the anomaly was already observed with RA-2, it is a problem in the PFHS processor
- Non valid band A at same geo-location, IPF patch will be provided.
- Non valid L1B data: 29 Aug 2005, due to major MIPAS slide anomaly. L1 products deleted and should not be used for scientific purpose.
- Wrong MIPAS L1 product in D-PAC server due to usage of wrong MIP_CO1_AX ADF. Orbit 18779 reprocessed with correct ADF
- Badly calibrated L1b data for orbits 17039-17332 and 17835-18021 due to wrong L1 ADFs. A problem was observed in the offset calibration of the spectra due to a wrong MIP_CO1_AX (the offset calculated in this ADF is really different from the measured offset). The affected products were deleted from D-PAC server. The MIP_CO1_AX have been re-generated and the re-processing of this mission interval was completed at D-PAC.
- AE 2km tangent altitude bias. No progress since last QWG, investigation to be resumed.

AI_L1_10.02 (ESRIN, FN) to provide to BOMEM, L0 data for AE mode and the corresponding AUX_FRA_AX files for L1B processing using restituted attitude method. BOMEM(GA) to process L0 data

AI_L1_10.03 ESRIN(MdL) to provide to users information about resolution mode(FR,RR...) vs orbit number

AI_L1_10.04 OU (AD) to check for side ways looking modes retrieved tangent heights. BOMEM (GA) to compare L1b tangent heights with L2 retrieved for data < dec. 2003

1.3 Level 0 and Level 1B Monitoring ESRIN(FN)

- NRT L0 current monitoring baseline is outlined, no change since last QWG.
- L0 NRT product daily monitoring reports are on the web:
  http://earth.esa.int/pcs/envisat/mipas/reports/daily/Level_0_NRT/

- Presentation of L0 product daily/monthly monitoring for MIO Base Plate Temperatures, IDU, CBB temperatures, Cooler displacer
- IMK expressed that ice contamination could possibly be derived from the ADC max values (which is in L0 products) for the gain and offset measurements. Ideally the complete mission would have to be evaluated. It is suggested to monitor the ADC min/max for Offset, BB and DS to investigate Non-linearity. Astrium (RG) said that it could be done using PCDTool.

AI_L1_10.05 (ESRIN, FN) to extract ADC_Min/Max monitoring data for orbits between 17000 and 21000

- L1B product current monitoring baseline is outlined, no change since last QWG.
- L1B daily monitoring of OFL products generated at D-APC is on the web at:
  http://earth.esa.int/pcs/envisat/mipas/reports/daily/Level_1_OFL/
- Results of L1B product long term monitoring for Gain Calibration, Spectral Calibration, LOS calibration, Fringe count error, Scene spectra and NESR

AI_L1_10.06 BOMEM (GA), IMK(AK) to look at F/R correlation with SPC calibration.

- ILS monitoring, investigate changes in ILS shape over time. It is not expected to have ILS changes over time. Nevertheless the ILS parameters fitted in L1B products are affected by error, the accuracy of the ILS retrieval model should be assessed.

AI_L1_10.07 BOMEM (RP) to assess if it worth to revisit the ILS model for monitoring purpose.

→ Thorsten Fehr said that the monitoring results are presented in the monthly report and asked if QWG members were reading the monthly report. A. Kleinert suggests highlighting new items in monthly report with respect to historic items.

AI_L1_10.08 All QWG members to take a look at the monthly report and provide feedbacks.

1.4 Status of the L1B prototype BOMEM (GA)

- MIGSP v2.7 new features
- new DPM (4L) available
- IODD v5.0 avaialble
- L1B data users should adapt their software tools (IFAC/DLR/IMK/UO/UL) to be compatible with the new format.

1.5 L1B Investigation Status

a) BOMEM (GA)

- Feedback on proposed/actual MWs selection

AI_L1_10.09 BOMEM(GA) to assess impacts of broadening (from saturation effects) for SPC calibration.

AI_L1_10.10 BOMEM(GA) to implement <T, pressure, profile> model to compute FWHM monitored within SPC calibration.

AI_L1_10.11 BOMEM(GA), LISA(JMF) to remove the saturated lines from the list of microwindows used for SPC calibration.

AI_L1_10.12 BOMEM(GA) to implement the use of more than 1 altitude to perform SPC calibration (e.g., at 15 and 50 km).

- Spectral Calibration with quadratic coefficients fit vs linear fit

AI_L1_10.13 IFAC(PR) to investigate on the effect of offset-linear spectral calibration/correction on L2 performance.

- Life-limited items Monitoring
  - Interferometer qualified for 30.5000.000 sweeps

- No *DMOP information for 05/09/02-30/07/03, needs to be requested by Marta

AI_L1_10.14 BOMEM (GA) to change Life-limited Items configuration mode to adapt to reduced resolution.

AI_L1_10.15 BOMEM (GA) to revise Long-life Items #short sweep criterion following reduced resolution mode planning.

b) IMK (AK)

- Evolution of the gain function 2002-2006, trend of maximum gain increase and spectra location of gain maximum.
- Regular decontamination shall be carried out 2 to 3 times per year.
- Forward-Reverse Oscillations
- High resolution data shows systematic offset difference between forward/reverse sweeps. In reduced resolution mode, forward/reverse difference is not seen. Offset and F/R difference are highly variable in time.

→ B. Carli mentioned the importance of the stability of the radiometric error. The F/R problem is thus an issue that is important to be investigated.

AI_L1_10.16 BOMEM (RP) to assess impacts of variation of radiometric error with time, as F/R delta is roughly constant.

AI_L1_10.17 DLR (MB) to modelize microvibrations effect on offset/scene and to propagate microvibrations effects to calibrated scene. BOMEM (RP) to assess the impact of microvibration (sampling jitter, modulation of interferogram) on radiance accuracy.

AI_L1_10.18 BOMEM(RP) to investigate relationship between F/R and ice contamination

AI_L1_10.19 IMK(AK) to assess whether F/R is band dependent

c) DLR (GW)

- MIPAS Radiometric accuracy is determined by several error sources: Calibration BB emissivity, Extrapolation/interpolation error of gain/offset, Phase error, Microvibrations, Pointing jitter, Detector non-linearity, Numerical processing.

AI_L1_10.20 Astrium(RG) to assess stability of PRTs for blackbody temperatures

AI_L1_10.21 BOMEM(GA) to assess the behaviour of the quantity [CBB(t) - DS(t0)] / [CBB(t0) - DS(t0)].

AI_L1_10.22 BOMEM (GA) to investigate high resolution DS data from IF11. 1) Get data. 2) Perform processing to assess/investigate radiometric error.

AI_L1_10.23 IFAC(BC)/UO(AD) to investigate L2 retrieval of the gains. OU (AD) to assess gain retrieval feasibility at L2.

AI_L1_10.24 IMK(AK) to send data to DLR(MB) for gain/offset investigations related to INTERFEROMETER ageing

AI_L1_10.25 BOMEM(RP)/DLR(MB) to work out nonlinearity correction uncertainty assessments.

- Non-linearity and ice: Radiometric gain error for A2, 1% for 67% ice peak absorption. Negligible on other channels.

AI_L1_10.26 BOMEM(RP) to assess effect of ice contamination using A1 and A2 L0 data.

AI_L1_10.27 BOMEM(GA) to get from Astrium(RG) orbit numbers and CBB data exhibiting variation of temperature from 240 to 246 Kelvin

AI_L1_10.28 IFAC(BC) to assess whether or not NESR increase of 25% (proportional with gain) is tolerable for L2.

1.6 Level 1B performance assessment BOMEM(RP)

- Forward/Reverse, effect of corrupted interferograms.
- Non-linearity comparison using polynomial / phenomenological models

1.7 Review Level 1B workplan (BOMEM/All)

Highest priority:

- Improve detector non-linearity modeling/characterization/correction. To work with DLR
- Improve LOS calibration

AI_L1_10.29 BOMEM(GA) to setup a plan to investigate problem with LOS calibration (geolocation).

AI_L1_10.30 BOMEM(GA) to compute residual error of nonlinearity corrected data, after radiometric calibration.

- Clean Delivery of MIGSP and MICAL S/W, and Documentation

AI_L1_10.31 BOMEM(RP) to assess delivery date of officially accepted version of L1B prototype to support ACVE activities. Target date is as soon as possible in August

2) Level 2

2.1) Level 2 Configuration Status (Fabrizio Niro, ESA)

- Fabrizio Niro (ESA) L2 IPF configuration changes. There are no changes for the moment.
- In the frame of new IPF 5.0 development we receive a draft version of ml2pp, final delivery of the prototype expected next September.
- The IPF 5.0 is expected to be operationanl in the beginning 2007.

2.2) Anomaly Investigation Status (Fabrizio Niro, ESA)

- FN presents the L2 anomaly investigation status. Old anomalies were closed; they will be corrected in the IPF 4.66.
- A new anomaly was detected for RR data of 21-22 Aug 2004. The problem was a high number of failed retrieval. Investigation shows that the retrieval failed when band D is corrupted, even though all the other bands are good. The same results obtained with the prototype; in fact the processor flags as corrupted one sweep even if only one band is corrupted. FN suggests relaxing the criteria; in particular in this case, since band D is not used in retrieval.

→ Sven Bartha (Astrium) confirms the algorithm is built to operate in this way.
→ Bruno Carli (IFAC) says that the approach should be to perform the retrieval whenever there is a suitable OM.

AI_L2_10.01 Astrium to check the rationale of the approach defined in the DPM, if no records are found, the approach should be modified in order to perform the retrieval when the OM exists.

AI_L2_10.02 BOMEM(GA)/ESRIN(FN) to investigate on the root cause of band D data corruption/invalidation. FN to send L0 data, GA to process/examine the data

2.3) Level 2 Monitoring (Fabrizio Niro, ESA)

- FN makes a presentation on L2 Monitoring. Monitoring baseline has not changed since last QWG.
- L2 daily reports can now be found on the web:
  http://earth.esa.int/pcs/envisat/mipas/reports/daily/Level_2_OFL/

2.4) Contents of the Level 2 Baseline Upgrade (IFAC)

- Piera Raspollini (IFAC) presents L2 Baseline upgrades.

AI_L2_10.03 IFAC to provide the details of the new changes in an upgrade of the TN (within next week).

2.5) ML2PP Status (S. Bartha, ASTRIUM)

- Sven Bartha (Astrium) presents changes in the prototype processor and ML2PP Status. Some changes are still to be done. He proposes a schedule to be discussed.
- Delivery of ml2pp+DPM is expected by next September 2006
- I/O DD updates is expected by end of July.

AI_L2_10.04 Astrium to deliver to IFAC intermediate version for ADF tuning and conversion as soon as possible

AI_L2_10.05 Astrium, to inform QWG if there is any delay in the schedule

→ Marco Ridolfi (UB) suggests to modify the algorithm for the calculation of pT induced error propagation to take into account the actual units of pT error propagation matrices reported in the ADFs.

AI_L2_10.06 Astrium to change units of Error Propagation Matrix in the next release

AI_L2_10.07 IFAC to add to the TN of AI_L2_10.5 the recipe for the calculation of the pT error propagation matrix.

2.6) Level 2 Investigation/Study Status

a) IFAC - Investigation on L1_9.14

- Simone Ceccherini (IFAC) shows results about impact of Resampling vs. Undersampling in the L2 products, he notes that the differences between the two methods are within the order of the retrieval error.

b) IFAC - Investigation on L2_9.02

- Piera Raspollini (IFAC) shows preliminary results on ILS error causes

→ Anu Dudhia (OU) confirms that REC analysis finds a 2% error in the width of the AILS and not in the correlation between residuals and 2nd order derivative. This result is calculated for all residuals points and it is not limited to the unmasked ones.

AI_L2_10.08 IFAC to repeat the test on the AILS

c) IFAC - Investigation on L2_9.05

- Piera Raspollini (IFAC) observes oscillations in CH4 & N2O profiles, she used measurement in coincidence with MIPAS-balloon, a single reason for profiles oscillations could not be found.

→ Anne Kleinert (IMK) states she believes this not a forward/reverse problem.
→ Anu Dudhia (OU) asks if oscillations correlate with the oscillations in the retrieved continuum.
→ Hermann Oelhaf (IMK) states that the problem is not only the oscillations but also the excessive values retrieved at low altitudes.
→ Massimo Carlotti (UB) suggests that the oscillations could be induced by MW transitions in the various altitudes.

d) IFAC - Investigation on continuum anomaly

- Claudio Belotti (IFAC) shows an anomaly in MIPAS L2 official ESA data. He observed that continuum values are fitted for altitudes above 30 km, while the retrieval above this altitude should not be performed by the processor.
- Retrieved continuum values will be used at IFAC to determine frequency of cirrus clouds presence.
- OAR to opened against the IPF

e) UL - Investigation on cloud filtering and L2_9.11

- John Remedios (UL) makes a presentation on cloud filtering, a new algorithm is proposed that calculates Cloud Index (CI) on all bands if these are available. Species-dependent threshold could be implemented.
- This new algorithm will not to be used for the next IPF implementation, since the cloud index in band D is not reliable (see oxford presentation at QWG#9).
- The 3 cloud indices (A, B, D) could be anyhow written as output in the L2 products for giving additional information to the user; possibly also the error on CI should be included in the output. A discussion is made about the need of CI error values in the outputs.

AI_L2_10.09 UL to determine the recipe to calculate error values for CI using NESR error propagation.

AI_L2_10.10 Astrium to check for spare space in the output to put CI error values (or to prepare spares for next release).

- JR (UL) continues his presentation on extreme values of H2O. Ultra-low (10^-10) values of H2O show no clear relationship with CI. High H2O values are correlated to CI-A CI-D.

f) OU - Investigation on error budget and L2_9.03

- Anu Dudhia (OU) makes a presentation on error budget.
- A discussion is made on the possible inclusion of CO2 line-mixing in the LUT and not in line-by-line:

→ Bruno Carli (IFAC) recalls that line-by-line was never used in the operative processor
→ Jean-Marie Flaud (LISA) suggests to introduce CO2 line-mixing also in line-by-line
→ Marco Ridolfi (UB) suggests introducing it only in the line-by-line of the scientific code

AI_L2_10.11 OU to model CO2 line-mixing in RFM to properly add line-mixing in MW selection and LUTs

AI_L2_10.12 UB to carry out further studies on CO2 line-mixing

AI_L2_10.13 IFAC to add line-mixing in the line-by-line calculation in the ORM (not in the prototype)

→ Bruno Carli (IFAC) recalls that ILS retrieved from L1 is not used in L2 and that F. Niro showed a large variability of ILS during the RR mission. It is needed to verify how reliable the algorithm of ILS retrieval in L1 is.

AI_L2_10.14 ESA/BOMEM to investigate how ILS fitted parameters change in time (trend?). To check if ILS parameters are distributed as a Gaussian with respect to the average.

- Dudhia continues his presentation on NO2 retrieval in case of excessive NO2 in the stratosphere (AI_L2_9.03). He considers two case of enhancement, using two scaling factor (x10, x100) to multiply the NO2 profiles above 40km. A factor 100 is probably too high. A factor 10 is a possible event.
- The use of one extra MW to improve the retrieval in the case of a 10 times enhancement of NO2 in the high stratosphere gives better accuracy.

AI_L2_10.15 UB + LISA to investigate the residuals in the NO2 MWs (within next QWG)

AI_L2_10.16 IFAC + OU to verify if the anomaly in the residuals of NO2 reported by OU is the same as reported by C. Belotti at a previous QWG.

g) UBo - Investigation on CO2 line mixing

- Gabriele Brizzi (UB), presentation on CO2 line-mixing

AI_L2_10.17 UB to deliver CO2 line-mixing error spectra to UO both for HR (17 sweeps) and RR (27 sweeps).

h) IAA - Investigation on gradient and non-LTE

- Manuel López Puertas (IAA) presents results on a study on effects of Temperature-LOS gradients on H2O and NO2

→ Massimo Carlotti (UB) recalls that MW are selected to minimize the effect of T gradients

- Manuel López Puertas (IAA) presents results on NLTE studies on H2O, N2O and CO2.
- No updates in the NLTE error spectra.
- Results on solar storm (Jan 2005) effects on NO spectra are shown.

i) LISA - Investigation on spectroscopic database

- Jean-Marie Flaud (LISA) makes a presentation on lines used for spectral calibration and on updates on the spectroscopic database.

AI_L2_10.18 BOMEM(GA) to provide the final list of lines to JMF

- He suggests to update the line intensity of C2H6 (Ethane).

AI_L2_10.19 LISA to update the spectroscopic database for Ethane, and produce a TN on this.

2.8) Level 2 Workplan (IFAC/ALL)

- Bruno Carli (IFAC) L2 work plan, asks if priority should be given to ADF for NRT or for RR with old measurement scenario.

→ Thorsten Fehr, NRT is not going to restart before 2007, RR old scenario is needed for validation purposes

3.2 Publications, MIPAS validation papers

AI_L2_10.20 BOMEM to complete the MIPAS L1B paper. R.Poulin will replace G.Perron for the MIPAS L1B paper completion (July 2006)