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MIPAS

MIPAS Calibration and Level 1 Processor Configuration

MIPAS Level 1B Auxiliary Data File (ADF) Technical Note

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	Function	Name	Signature	Date
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DOCUMENT CHANGE RECORD

Issue	Rev.	Date	Change Description
1 Draft	-	20 February 2004	Draft of Document
1			
1	A	11 November 2004	Add ADF 4.0 and ADF 5.0
1	B	15 April 2005	Change ADF 4.0 (TDS 6) for ADF 4.1 and Add IFP version references
1	C	23 June 2005	Add ADF 6.0 and ADF 6.1
1	D	11 July 2005	Add table 2.5 and 2.6
1	E	10 July 2006	Add ADF7.0, ADF7.1, ADF7.2, ADF7.3
1	F	28 August 2008	Add ADF8.0, ADF8.1, ADF8.2, ADF8.3
1	G	29 May 2009	Add ADF8.4, ADF8.5, ADF8.6, ADF8.7
1	H	6 January 2010	Replacement of ADF8.4 and ADF8.5 by ADF8.4a and ADF8.5a
1	I	8 April 2010	Replacement of ADF8.4a by ADF8.4b
1	J	3 Apr 2012	Add ADF9.0, ADF9.1, ADF9.2, ADF9.3
1	K	13 Apr 2012	Same as ADF9.x, except correction to ADF PS1 filenames in table 2.3
1	L	24 Apr 2012	Add ADF9.4
1	M	19 Jul 2013	Add ADF9.0A, ADF9.1A, ADF9.2A, ADF9.3A, ADF9.4A, change filenames of PS1 ADFs
1	N	28 Oct 2014	Correct AD1 and Ref1 issue number
1	O	25 Nov 2014	Add ADF9.1B : use same pitch bias for complete FR period when using restituted attitude

DISTRIBUTION LIST

The following persons (or company) shall receive this document:

Project Team ☐

Client ☐

Other ☐

1. INTRODUCTION

1.1 PURPOSE OF DOCUMENT

This document describes and keeps tracks of the changes done to the MIPAS level 1B processor input data files.

1.2 SCOPE

The work support to MIPAS calibration and level 1 processor configuration is performed under ESRIN contract no 17124/03/I-OL

1.3 BIBLIOGRAPHY

1.3.1 Applicable Documents

AD 1	PO-TN-BOM-GS-0010	6A	MIPAS Level 1B Processing Input/Output Data Definition
AD 2	MIP_BOM_DI0	3	Data Investigation Summary Sheet "ADFs Update: MIP_MW1_AX, MIP_CA1_AX and MIP_PS1_AX"
AD 3	MIPQWG02		MIPAS Quality Working Group Meeting #2 (3-5 December 2003)
AD 4	MIPQWG03		MIPAS Quality Working Group Meeting #3 (29-30 March 2004)
AD 5	MIPQWG04		MIPAS Quality Working Group Meeting #4 (19-20 July 2004)
AD 6	MIPQWG05		MIPAS Quality Working Group Meeting #5 (4-5 October 2004)
AD 7	MIPQWG09		MIPAS Quality Working Group Meeting #9 (2-4 February 2006)
AD 8	MIPQWG10		MIPAS Quality Working Group Meeting #10 (13-15 June 2006)
AD 9	MIPQWG16		MIPAS Quality Working Group Meeting #16 (22-24 April 2008)
AD 10	MIPQWG18		MIPAS Quality Working Group Meeting #18 (3-5 Dec 2008)

1.3.2 References

Ref. 1	PO-RP-BOM-GS-0003	5E	Detailed Processing Model and Parameter Data List Document (DPM/PDL) for MIPAS Level 1B
Ref. 2	MIP_BOM_DI04		Data Investigation Summary Sheet "Verification of first L1B processed with new ADFs (MIP_MW1_AX, MIP_CA1_AX and MIP_PS1_AX) of November 2003"

1.4 ACRONYMS

DPM	Detailed Processing Model
IECF	Instrument Engineering Calibration Facility
ILS	Instrument Line Shape
IODD	Input / Output Data Definition
IPF	Instrument Processing Facility
LOS	Line Of Sight
MICAL	MIPAS Calibration Processor
MIGSP	MIPAS Ground Segment Processor
MIPAS	Michelson interferometer for Passive Atmospheric Sounding
NRT	Near Real Time L0 products
TBC	To Be Confirmed
TBD	To Be Determined
TBR	To Be Reviewed
TN	Technical Note

1.5 DEFINITIONS

Word: Word Definition

2. CONFIGURATION

The following table gives the data files needed as input to the MIPAS level 1B processor. For more details, see [AD 1].

Table 2–1: MIPAS Level 1B Processor Input File Table

Type	Identifier	Name
Calibration	MIP_CG1_AX	Gain calibration
	MIP_CL1_AX	LOS calibration
	MIP_CS1_AX	ILS and spectral calibration
	MIP_CO1_AX	Offset validation
Auxiliary	MIP_CA1_AX	Instrument characterization data
	MIP_PS1_AX	Processing parameters
	MIP_MW1_AX	Microwindow dictionary

The calibration data files are changed periodically to take into account instrument response drift in order to meet requirement. On the other hand, auxiliary data files are more static and their optimization is done during level 1B processor improvement cycle.

2.1 CALIBRATION DATA FILES

From 16 November 2003:

The gain and offset calibration ADFs (MIP_CG1_AX and MIP_CO1_AX) are updated weekly to compensate for contamination effects. All historic ADF files will be regenerated as the updated configuration allows Gain and Offset characterization improvement.

The spectral calibration ADF (MIP_CS1_AX) will be updated on a weekly basis, prior to the gain calibration, as analysis has demonstrated that it results in improved gain calibration, and improvements for processing of the initial scans of each product. The spectral calibration history will be reconstructed prior to reconstruction of the gain history.

The line-of-sight calibration ADF (MIP_CL1_AX) will be updated frequently to correct for deviations in platform attitude. The calibration history for this file has already been reconstructed for historic deviations in pitch. It is to be noted that recent NRT data until 12 November 2003 (and potentially early OFL data) will be affected by inadequate LOS calibration.

Table 2–2: Calibration File Update Frequency Table

Orbit (Date)	MIP_CG1_AX	MIP_CL1_AX	MIP_CS1_AX	MIP_CO1_AX
Reprocessing (6 July 2002 – 18 nov 2003)	Weekly and after a cooler switching	Monthly	Weekly	Weekly and after a cooler switching
18 Nov 2003	Weekly	Monthly	Weekly	Weekly

2.2 AUXILIARY DATA FILES

Note: ADFs version 7.1, 7.3, 8.1, 8.3, 8.5, 8.7 can be used only while reprocessing L0 products. They cannot be used with NRT L0 products because the restituted attitude files are not available at that time.

Table 2–3: MIPAS Level 1B ADF History Table

Version	Name
1.0	MIP_CA1_AXT___20020504_105125_20020504_105125_20070504_105125
	MIP_PS1_AXT___20020503_183743_20020503_183743_20070503_183743
	MIP_MW1_AXT___20020505_170045_20020505_170045_20070505_170045
2.0	MIP_CA1_AXVIEC20020902_132141_20020902_141312_20070902_141312
	MIP_PS1_AXVIEC20020731_072518_20020730_163958_20070730_163958
	MIP_MW1_AXVIEC20020924_085838_20020924_110000_20070924_110000
3.0	MIP_CA1_AXVIEC20031021_143953_20020706_060000_20080706_060000
	MIP_PS1_AXVIEC20031021_144418_20020706_060000_20080706_060000
	MIP_MW1_AXVIEC20031021_144135_20020706_060000_20080706_060000
3.1	MIP_CA1_AXVIEC20031021_143953_20020706_060000_20080706_060000
	MIP_PS1_AXVIEC20040317_134725_20040109_000000_20090209_000000
	MIP_MW1_AXVIEC20031021_144135_20020706_060000_20080706_060000
	MIP_CL1_AXVIEC20040220_144507_20040117_000000_20050117_000000
3.2	MIP_CA1_AXVIEC20031021_143953_20020706_060000_20080706_060000
	MIP_PS1_AXVIEC20040421_090242_20040326_143428_20090326_000000
	MIP_MW1_AXVIEC20031021_144135_20020706_060000_20080706_060000
4.0 draft	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20040616_092932_20040616_092932_20090616_092932
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
4.1 (TDS6)	MIP_CA1_AXT___20040920_080130_20040920_080130_20090920_080130
	MIP_PS1_AXT___20040921_160807_20040921_160807_20090921_160807
	MIP_MW1_AXT___20040921_155916_20040921_155916_20090921_155916
5.0 draft	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20041118_140339_20041118_140339_20091118_140339
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
6.0	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20050620_HIGH_RESOLUTION
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
6.1	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20050620_LOW_RESOLUTION
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
7.0	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20060703_FR_ ATTMODE_0
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
7.1	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20060703_FR_ATTMODE_1
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
7.2	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20060703_RR_ATTMODE_0
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408

7.3	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20060703_RR_ATTMODE_1
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
8.0	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20080828_113540_20080828_113540_20130828_113540
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
8.1	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20080828_113916_20080828_113916_20130828_113916
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
8.2	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20080828_112718_20080828_112718_20130828_112718
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
8.3	MIP_CA1_AXT___20040614_115457_20040614_115457_20090614_115457
	MIP_PS1_AXT___20080828_113252_20080828_113252_20130828_113252
	MIP_MW1_AXT___20040614_115408_20040614_115408_20090614_115408
8.4	**MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000**
	MIP_PS1_AXT___20090529_123211_20020504_000000_20040809_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
8.4a	MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000
	MIP_PS1_AXT___20100106_074501_20020504_000000_20040809_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
8.4b	MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000
	MIP_PS1_AXT___20100407_161744_20020701_000000_20021129_000000
	MIP_PS1_AXT___20100407_161301_20021129_000000_20030309_000000
	MIP_PS1_AXT___20100407_161833_20030309_000000_20030615_000000
	MIP_PS1_AXT___20100407_161301_20030615_000000_20030910_000000
	MIP_PS1_AXT___20100407_161926_20030910_000000_20031210_000000
	MIP_PS1_AXT___20100407_161301_20031210_000000_20040809_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
8.5	**MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000**
	MIP_PS1_AXT___20090529_130638_20020504_000000_20040809_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
8.5a	MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000
	MIP_PS1_AXT___20100106_074635_20020504_000000_20040809_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
8.6	**MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000**
	MIP_PS1_AXT___20090529_123452_20040809_000000_20140529_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
8.7	**MIP_CA1_AXT___20040614_115457_20020401_000000_20140529_000000**
	MIP_PS1_AXT___20090529_124604_20040809_000000_20140529_000000
	MIP_MW1_AXT___20040614_115408_20020401_000000_20140529_000000
9.0	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20120403_090629_20020701_000000_20021129_000000
	MIP_PS1_AXT___20120403_090918_20021129_000000_20030309_000000
	MIP_PS1_AXT___20120403_091157_20030309_000000_20030615_000000
	MIP_PS1_AXT___20120403_091358_20030615_000000_20030910_000000
	MIP_PS1_AXT___20120403_091528_20030910_000000_20031210_000000
	MIP_PS1_AXT___20120403_091627_20031210_000000_20040809_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.1	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**

	MIP_PS1_AXT___20120403_092812_20020701_000000_20021129_000000
	MIP_PS1_AXT___20120403_094913_20021129_000000_20030309_000000
	MIP_PS1_AXT___20120403_095131_20030309_000000_20030615_000000
	MIP_PS1_AXT___20120403_095300_20030615_000000_20030910_000000
	MIP_PS1_AXT___20120403_095428_20030910_000000_20031210_000000
	MIP_PS1_AXT___20120403_095609_20031210_000000_20040809_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.2.	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20120403_100135_20040809_000000_20161214_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.3	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20120403_100321_20040809_000000_20161214_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.4	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20120424_085329_20020701_000000_20021129_000000
	MIP_PS1_AXT___20120424_085421_20021129_000000_20030309_000000
	MIP_PS1_AXT___20120424_085541_20030309_000000_20030615_000000
	MIP_PS1_AXT___20120424_085634_20030615_000000_20030910_000000
	MIP_PS1_AXT___20120424_085730_20030910_000000_20031210_000000
	MIP_PS1_AXT___20120424_085823_20031210_000000_20040809_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.0A	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20130718_090629_20020701_000000_20021129_003000
	MIP_PS1_AXT___20130718_090918_20021129_000000_20030309_013000
	MIP_PS1_AXT___20130718_091157_20030309_000000_20030615_003000
	MIP_PS1_AXT___20130718_091358_20030615_000000_20030910_013000
	MIP_PS1_AXT___20130718_091528_20030910_000000_20031210_003000
	MIP_PS1_AXT___20130718_091627_20031210_000000_20040809_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.1A	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20130718_092812_20020701_000000_20021129_003000
	MIP_PS1_AXT___20130718_094913_20021129_000000_20030309_013000
	MIP_PS1_AXT___20130718_095131_20030309_000000_20030615_003000
	MIP_PS1_AXT___20130718_095300_20030615_000000_20030910_013000
	MIP_PS1_AXT___20130718_095428_20030910_000000_20031210_003000
	MIP_PS1_AXT___20130718_095609_20031210_000000_20040809_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.2A	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20130718_100135_20040809_000000_20161214_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.3A	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20130718_100321_20040809_000000_20161214_000000
	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.4A	**MIP_CA1_AXT___20120315_132245_20020401_000000_20161214_000000**
	MIP_PS1_AXT___20130718_085329_20020701_000000_20021129_003000
	MIP_PS1_AXT___20130718_085421_20021129_000000_20030309_013000
	MIP_PS1_AXT___20130718_085541_20030309_000000_20030615_003000
	MIP_PS1_AXT___20130718_085634_20030615_000000_20030910_013000
	MIP_PS1_AXT___20130718_085730_20030910_000000_20031210_003000
	MIP_PS1_AXT___20130718_085823_20031210_000000_20040809_000000

	MIP_MW1_AXT___20120105_091859_20020401_000000_20161214_000000
9.1B	**MIP_PS1_AXT___20141125_135936_20020701_000000_2004090809_000000**

8. When using ADF 8.x and ADF 9.x sets, use also the MIP_CL1_AXT___20080729_075920_20020401_000000_20161214_000000 ADF LOS calibration that has no pitch bias correction.

Table 2–4: ADF Activation Date Table

ADFs Version	Start Validity Date	IPF version
1	April-2002	4.3.1
2	April-2002	4.3.1
3.0	April-2002	4.61
3.1	09-Jan-2004	4.61
3.2	26-Mar-2004	4.61
4.0 draft	Not disseminated	4.62
4.1 TDS6	09-Aug-2004	4.63
5.0 draft	Not disseminated	4.63
6.0	Not disseminated	4.63
6.1	09-Aug-2004	4.65
7.0	Not disseminated	5.00
7.1	Not disseminated	5.00
7.2	Not disseminated	5.00
7.3	Not disseminated	5.00
8.0	Not disseminated	5.00
8.1	Not disseminated	5.00
8.2	Not disseminated	5.00
8.3	Not disseminated	5.00
8.4	Not disseminated	5.00
8.4a	Not disseminated	5.00
8.4b	28-Jan-2010	5.05
8.5	Not disseminated	5.00
8.5a	Not disseminated	5.00
8.6	28-Jan-2010	5.05
8.7	Not disseminated	5.00
9.0	Not disseminated	7.00
9.1	Not disseminated	7.00
9.2	Not disseminated	7.00
9.3	Not disseminated	7.00
9.4	Not disseminated	7.00
9.0A	Not disseminated	7.00
9.1A	Not disseminated	7.00
9.2A	Not disseminated	7.00
9.3A	Not disseminated	7.00
9.4A	Not disseminated	7.00
9.1B	Not disseminated	7.11

Table 2–5: ADF ABB-Bomem Delivery Date Table

ADFs Version	Delivery Date
1	April-2002
2	05-May-2002
3.0	06-Jul-2002
3.1	09-Jan-2004
3.2	26-Mar-2004
4.0 draft	12-Aug-2004
4.1 TDS6	23-Nov-2004
5.0 draft	23-Nov-2004
6.0	21-Jun-2005
6.1	21-Jun-2005
7.0	10-Jul-2006
7.1	10-Jul-2006
7.2	10-Jul-2006
7.3	10-Jul-2006
8.0	28-Aug-2008
8.1	28-Aug-2008
8.2	28-Aug-2008
8.3	28-Aug-2008
8.4	29-May-2009
8.4a	6-Jan-2010
8.4b	8-Apr-2010
8.5	29-May-2009
8.5a	6-Jan-2010
8.6	29-May-2009
8.7	29-May-2009
9.0	13-Apr-2012
9.1	13-Apr-2012
9.2	13-Apr-2012
9.3	13-Apr-2012
9.4	24-Apr-2012
9.0A	18-Jul-2013
9.1A	18-Jul-2013
9.2A	18-Jul-2013
9.3A	18-Jul-2013
9.4A	18-Jul-2013
9.1B	25-Nov-2014

Table 2–6: PS1 ADF Validation Date Table

ADFs Version	Start Validity Date	Stop Validity Date
1	April-2002	May-2002
2	April-2002	July-2002
3.0	April-2002	09-Jan-2004
3.1	09-Jan-2004	26-Mar-2004
3.2	26-Mar-2004	09-Aug-2004
4.0 draft	09-Aug-2004	June-2005
4.1 TDS6	09-Aug-2004	June-2005
5.0 draft	Aug-2004 Only for specific orbits done in backup slide1 or slide2 mode	Oct-2004 Only for specific orbits done in backup slide1 or slide2 mode
6.0	April-2002	09-Aug-2004
6.1	09-Aug-2004	-
7.0	April-2002	09-Aug-2004
7.1	April-2002	09-Aug-2004
7.2	09-Aug-2004	-
7.3	09-Aug-2004	-
8.0	April-2002	09-Aug-2004
8.1	April-2002	09-Aug-2004
8.2	09-Aug-2004	-
8.3	09-Aug-2004	-
8.4	April-2002	09-Aug-2004
8.4a	April-2002	09-Aug-2004
8.4b	01-July-2002	29-Nov-2002
8.4b	29-Nov-2002	09-March-2003
8.4b	09-March-2003	15-Jun-2003
8.4b	15-Jun-2003	10-Sep-2003
8.4b	10-Sep-2003	10-Dec-2003
8.4b	10-Dec-2003	09-Aug-2004
8.5	April-2002	09-Aug-2004
8.5a	April-2002	09-Aug-2004
8.6	09-Aug-2004	-
8.7	09-Aug-2004	-
9.0	01-July-2002	29-Nov-2002
9.0	29-Nov-2002	09-March-2003
9.0	09-March-2003	15-Jun-2003
9.0	15-Jun-2003	10-Sep-2003
9.0	10-Sep-2003	10-Dec-2003
9.0	10-Dec-2003	09-Aug-2004
9.1	01-July-2002	29-Nov-2002
9.1	29-Nov-2002	09-March-2003
9.1	09-March-2003	15-Jun-2003
9.1	15-Jun-2003	10-Sep-2003
9.1	10-Sep-2003	10-Dec-2003
9.1	10-Dec-2003	09-Aug-2004
9.2	09-Aug-2004	End of mission

9.3	09-Aug-2004	End of mission
9.4	01-July-2002	29-Nov-2002
9.4	29-Nov-2002	09-March-2003
9.4	09-March-2003	15-Jun-2003
9.4	15-Jun-2003	10-Sep-2003
9.4	10-Sep-2003	10-Dec-2003
9.4	10-Dec-2003	09-Aug-2004
9.0A	01-July-2002	29-Nov-2002 00:30:00
9.0A	29-Nov-2002	09-March-2003 01:30:00
9.0A	09-March-2003	15-Jun-2003 00:30:00
9.0A	15-Jun-2003	10-Sep-2003 01:30:00
9.0A	10-Sep-2003	10-Dec-2003 00:30:00
9.0A	10-Dec-2003	09-Aug-2004
9.1A	01-July-2002	29-Nov-2002 00:30:00
9.1A	29-Nov-2002	09-March-2003 01:30:00
9.1A	09-March-2003	15-Jun-2003 00:30:00
9.1A	15-Jun-2003	10-Sep-2003 01:30:00
9.1A	10-Sep-2003	10-Dec-2003 00:30:00
9.1A	10-Dec-2003	09-Aug-2004
9.2A	09-Aug-2004	End of mission
9.3A	09-Aug-2004	End of mission
9.4A	01-July-2002	29-Nov-2002 00:30:00
9.4A	29-Nov-2002	09-March-2003 01:30:00
9.4A	09-March-2003	15-Jun-2003 00:30:00
9.4A	15-Jun-2003	10-Sep-2003 01:30:00
9.4A	10-Dec-2003	09-Aug-2004
9.1B	01-Jul-2002	09-Aug-2004

2.2.1 Version 1.0

This is the initial set. Inputs were determined/optimised using MIPAS simulator and assumptions.

2.2.2 Version 2.0

The second set is the result of improvements during the commissioning phase. The following described the main changes.

Modifications done on MIP_MW1_AX file:

- New ILS and spectral calibration microwindows

2.2.3 Version 3.0

The third set is the result of the first improvement cycle of the MIPAS level 1B processor during operational phase. The following described the main changes, for detailed see [AD 2].

Modifications done on MIP_CA1_AX file:

This auxiliary file has been updated with improved non-linearity characterization. The original configuration applied identical non-linearity characterization parameter values to data from forward and reverse interferometer sweeps. This has proven not to be adequate, as oscillations have resulted in the retrieved radiances, propagating into concentration oscillations in the trace gas retrieval. A correction to the reverse coefficients has been derived from the known difference in min/max ADC signal for the two sweep directions and implemented into the new MIP_CA1_AX file.

- Modify non-linearity coefficients for reverse sweep. Coefficients for forward are kept as is
- Neutral equalisation filter for band A

Modifications done on MIP_MW1_AX file:

Originally the processor had been configured to perform its spectral calibration (once per 4 vertical scans), at an altitude of 47 km. The high noise levels present at this altitude have adversely affected the quality of the spectral calibration. In addition, one microwindow (D_H2Ob at 1840.8049 cm-1) has shown deviations from all other microwindows. To avoid these problems, in the updated configuration the spectral calibration microwindow altitude has been lowered to 32 km, and the inconsistent microwindow has been removed. Microwindows for ILS retrieval remain at 47 km until ILS optimization has been completed.

- Removal of band D microwindow D_H20b at 1870.8049 cm-1
- Set spectral calibration microwindow altitude to 32 km

Modifications done on MIP_PS1_AX file:

The processor has been reconfigured to perform a higher number of co-additions because high noise levels affect the ILS retrieval and Spectral Calibration.

- Number of co-additions for spectral calibration was set to 4
- Number of co-additions for ILS retrieval was set to 10

2.2.4 Version 3.1

The fourth set is the result of changing noise level threshold in MIP_PS1_AX [AD 4].

Modifications done on MIP_PS1_AX file:

Interferometer heating (9 January 2004) was activated to prevent frequent instrument unavailability caused by IDU velocity error.

•Changed the threshold to take into account the modified noise level

2.2.5 Version 3.2

The fifth set is the result of changing noise level threshold in MIP_PS1_AX [AD 5].

Modifications done on MIP_PS1_AX file:

To avoid having a mechanical blockage within the instrument, ESA took the decision to interrupt temporarily the regular instrument operations on 26 March. The Interferometer heating was switched-off (26 March 2004).

•Changed the threshold to take into account the modified noise level

2.2.6 Version 4.0 draft

The sixth set is the result of running MIPAS instrument at a optimized resolution setting [AD 6].

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file:

- OPD set to 8.2 cm
- Channel A set to 4561 points
- Channel AB set to 2401 points
- Channel B set to 4561 points
- Channel C set to 2881 points
- Channel D set to 9441 points
- Number of co-additions for ILS retrieval was set to 5

2.2.7 Version 4.1 (TDS 6)

The seventh set is the result of generating the MIPAS Test Data Set at a optimized resolution setting.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file:

- OPD set to 8.2 cm
- Channel A set to 4561 points
- Channel AB set to 2401 points
- Channel B set to 4561 points
- Channel C set to 2881 points
- Channel D set to 9441 points
- Number of co-additions for ILS retrieval was set to 5
- Set standard deviation threshold to 5 for Scene measurement quality

2.2.8 Version 5.0 draft

The eighth set is the result of running MIPAS instrument using slide 2 backup mode.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file:

- OPD set to 10 cm
- Channel A set to 5701 points
- Channel AB set to 3001 points
- Channel B set to 5701 points
- Channel C set to 3601 points
- Channel D set to 11801 points
- Set standard deviation threshold to 5 for Scene measurement quality

2.2.9 Version 6.0

The ninth set is the result of changing thresholds for spike detection and for scene validation.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file:

- OPD set to 20 cm
- Spike detection standard deviation threshold set to 10
- Spike detection number of points per block set to 256
- Set standard deviation threshold to 5 for Scene measurement quality

2.2.10 Version 6.1

The tenth set is the result of changing thresholds for spike detection and for scene validation.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file:

- OPD set to 8.2 cm
- Spike detection standard deviation threshold set to 10
- Spike detection number of points per block set to 256
- Set standard deviation threshold to 5 for Scene measurement quality
- Channel A set to 4561 points
- Channel AB set to 2401 points
- Channel B set to 4561 points
- Channel C set to 2881 points
- Channel D set to 9441 points

2.2.11 Version 7.0

The eleventh set is the result of adding a flag to process L0 product using a restituted attitude mode for full resolution data. This version is adapted to NRT since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file, compared to Version 6.0

- OPD set to 20 cm
- Attitude flag set to 0

2.2.12 Version 7.1

The twelfth set is the result of adding a flag to process L0 product using a restituted attitude mode for full resolution data. This version is adapted for OFL processing since the restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file, compared to Version 6.0

- OPD set to 20 cm
- Attitude flag set to 1

2.2.13 Version 7.2

The thirteenth set is the result of adding a flag to process L0 product using a restituted attitude mode for optimized resolution data. The OPD is set also to 8.0 instead of 8.2 cm. This version is adapted to NRT since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file compared to Version 6.1

- OPD set to 8 cm
- Attitude flag set to 0

2.2.14 Version 7.3

The fourteenth set is the result of adding a flag to process L0 product using a restituted attitude mode for optimized resolution data. The OPD is set also to 8.0 instead of 8.2 cm. This version is adapted for OFL processing since the restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file compared to Version 6.1

- OPD set to 8 cm
- Attitude flag set to 1

2.2.15 Version 8.0

This set is the result of changing the pitch, roll and yaw bias taking into account the alignment matrix correction introduced in the planning for full resolution data. This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file, compared to Version 7.0

- att[0]=-0.012541, att[1]=-0.040711, att[2]=0.004011

2.2.16 Version 8.1

This set is the result of changing the pitch, roll and yaw bias taking into account the alignment matrix correction introduced in the planning for full resolution data, with an additionnal roll bias of -20 mdeg. This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file, compared to Version 7.1

- Attitude flag set to 0
- att[0]=-0.012541, att[1]=-0.060711, att[2]=0.004011

2.2.17 Version 8.2

This set is the result of changing the pitch, roll and yaw bias taking into account the alignment matrix correction introduced in the planning for optimized resolution data. The OPD is set also to 8.0 instead of 8.2 cm. This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file compared to Version 7.2

- att[0]=-0.012541, att[1]=-0.040711, att[2]=0.004011

2.2.18 Version 8.3

This set is the result of changing the pitch, roll and yaw bias taking into account the alignment matrix correction introduced in the planning for optimized resolution data, with an additionnal roll bias of -20 mdeg. The OPD is set also to 8.0 instead of 8.2 cm. This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- None

Modifications done on MIP_MW1_AX file:

- None

Modifications done on MIP_PS1_AX file compared to Version 7.3

- Attitude flag set to 0
- att[0]=-0.012541, att[1]=-0.060711, att[2]=0.004011

2.2.19 Version 8.4

This set is the result of changing the Rejection Threshold percentage to 100% in the NESR Assessment processing [AD 10]. This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- Change stop validity time

Modifications done on MIP_MW1_AX file:

- Change stop validity time

Modifications done on MIP_PS1_AX file, compared to Version 8.0

- Rejection Threshold NESR assessment = 1.0

2.2.20 Version 8.4a

The MIP_PS1_AX file was incorrect in version 8.4. The number of data points for scene measurement spectrum was set for optimized resolution and not for full resolution. This set replaces version 8.4.

Modifications done on MIP_CA1_AX file:

- same as version 8.4

Modifications done on MIP_MW1_AX file:

- same as version 8.4

Modifications done on MIP_PS1_AX file, compared to Version 8.4

- Number data points in band A = 11401
- Number data points in band AB = 6001
- Number data points in band B = 11401
- Number data points in band C = 7201
- Number data points in band D = 23601

2.2.21 Version 8.4b

Modifications done on MIP_CA1_AX file:

- same as version 8.4

Modifications done on MIP_MW1_AX file:

- same as version 8.4

Several MIP_PS1_AX files are provided to apply a different pitch,roll,yaw bias correction at specific start/stop validity time during the full resolution mission

- **1-Jul-2002 / 29-Nov-2002** att[0]=-0.02654, att[1]=-0.060711, att[2]=0.00402
- **29-Nov-2002 / 09-Mar-2003** att[0]=-0.012541, att[1]=-0.060711, att[2]=0.004011
- **09-Mar-2003 / 15-Jun-2003** att[0]=+0.00545, att[1]=-0.060711, att[2]=0.003998
- **15-Jun-2003 / 10-Sep-2003** att[0]=-0.012541, att[1]=-0.060711, att[2]=0.004011
- **10-Sep-2003 / 10-Dec-2003** att[0]=-0.03354, att[1]=-0.060711, att[2]=0.004026
- **10-Dec-2003 / 09-Aug-2004** att[0]=-0.012541, att[1]=-0.060711, att[2]=0.004011

- Rejection Threshold NESR assessment = 1.0

2.2.22 Version 8.5

This set is the result of changing the Rejection Threshold percentage to 100% in the NESR Assessment processing [AD 10]. This version is adapted for OFL processing since the restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- Change stop validity time

Modifications done on MIP_MW1_AX file:

- Change stop validity time

Modifications done on MIP_PS1_AX file, compared to Version 8.1

- Rejection Threshold NESR assessment = 1.0
- Attitude flag set to 1

2.2.23 Version 8.5a

The MIP_PS1_AX file was incorrect in version 8.5. The number of data points for scene measurement spectrum was set for optimized resolution and not for full resolution. This set replaces version 8.5.

Modifications done on MIP_CA1_AX file:

- same as version 8.5

Modifications done on MIP_MW1_AX file:

- same as version 8.5

Modifications done on MIP_PS1_AX file, compared to Version 8.5

- Number data points in band A = 11401
- Number data points in band AB = 6001
- Number data points in band B = 11401
- Number data points in band C = 7201
- Number data points in band D = 23601

2.2.24 Version 8.6

This set is the result of changing the Rejection Threshold percentage to 100% in the NESR Assessment processing [AD 10]. This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- Change stop validity time

Modifications done on MIP_MW1_AX file:

- Change stop validity time

Modifications done on MIP_PS1_AX file compared to Version 8.2

- Rejection Threshold NESR assessment = 1.0

2.2.25 Version 8.7

This set is the result of changing the Rejection Threshold percentage to 100% in the NESR Assessment processing [AD 10]. This version is adapted for OFL processing since the restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

- Change stop validity time

Modifications done on MIP_MW1_AX file:

- Change stop validity time

Modifications done on MIP_PS1_AX file compared to Version 8.3

- Rejection Threshold NESR assessment = 1.0
- Attitude flag set to 1

2.2.26 Version 9.0

This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

• Addition of alignment matrix, mispointing commanding and non-linearity scan mirror corrections

Alignment matrix:

+0.9999997427 +0.0000697013 -0.0007105313

-0.0000699291 +0.9999999978 -0.0001720573

+0.0007105465 +0.0002174480 +0.9999997087

Mispointing commanding:

_MIS_COM_PITCH_BIAS = -0.025

_MIS_COM_PITCH_DERIV = 1

_MIS_COM_PITCH_NHARM = 3

_MIS_COM_PITCH =

! PITCH cosinus:

0.001095 , 0, 0

! PITCH sinus:

-0.006914, 0, 0

! PITCH frequency:

0.059642, 0, 0

Non-linearity scan mirror correction:

_NLS_MIRROR_COR = -0.014, 0.006

_NLS_MIRROR_ELEV = 111, 120

Modifications done on MIP_MW1_AX file:

• reduce 2 MW width for spectral calibration :

AB_O3C left limit = 1128.6815 right limit = 1128.8115

C_H2Oa left limit = 1642.35 right limit = 1642.5

Modifications done on MIP_PS1_AX file:

Several MIP_PS1_AX files are provided to apply a different pitch,roll,yaw bias correction at specific start/stop validity time during the full resolution mission

- **1-Jul-2002 / 29-Nov-2002** att[0]=-0.013999, att[1]=0.0, att[2]=0.00001
- **29-Nov-2002 / 09-Mar-2003** att[0]=0.0, att[1]=0.0, att[2]=0.0
- **09-Mar-2003 / 15-Jun-2003** att[0]=+0.017991, att[1]=0.0, att[2]=-0.000013
- **15-Jun-2003 / 10-Sep-2003** att[0]=0.0, att[1]=0.0, att[2]=0.0
- **10-Sep-2003 / 10-Dec-2003** att[0]=-0.020999, att[1]=0.0, att[2]=0.000015
- **10-Dec-2003 / 09-Aug-2004** att[0]=0.0, att[1]=0.0, att[2]=0.0md

- Attitude flag set to 0
- Standard Deviation Threshold NESR assessment = 20
- Spectral Calibration, offset since ANX = 6036 seconds
- Spike Detection standard deviation threshold = 5
- Spike Detection number of points per block = 40
- IRAY model = 10

2.2.27 Version 9.1

This version is adapted for OFL processing since the restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

• Addition of alignment matrix, mispointing commanding and non-linearity scan mirror corrections. Same as version 9.0.

Modifications done on MIP_MW1_AX file:

• same as version 9.0

Modifications done on MIP_PS1_AX file:

• **1-Jul-2002 / 29-Nov-2002** att[0]=-0.039, att[1]=0.0, att[2]=0.0

• **29-Nov-2002 / 09-Mar-2003** att[0]=-0.025, att[1]=0.0, att[2]=0.0

• **09-Mar-2003 / 15-Jun-2003** att[0]=-0.007, att[1]=0.0, att[2]=-0.0

• **15-Jun-2003 / 10-Sep-2003** att[0]=-0.025, att[1]=0.0, att[2]=0.0

• **10-Sep-2003 / 10-Dec-2003** att[0]=-0.046, att[1]=0.0, att[2]=0.0

• **10-Dec-2003 / 09-Aug-2004** att[0]=-0.025, att[1]=0.0, att[2]=0.0

• Attitude flag set to 1

• Standard Deviation Threshold NESR assessment = 20

• Spectral Calibration, offset since ANX = 6036 seconds

• Spike Detection standard deviation threshold = 5

• Spike Detection number of points per block = 40

• IRAY model = 10

2.2.28 Version 9.2

This version is adapted to NRT or reprocessing since no restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

• Addition of alignment matrix, mispointing commanding and non-linearity scan mirror corrections. Same as version 9.0.

Modifications done on MIP_MW1_AX file:

• Same as version 9.0

Modifications done on MIP_PS1_AX file compared to Version 8.6

• att[0]=0.0, att[1]=0.0, att[2]=0.0

• Attitude flag set to 0

• Standard Deviation Threshold NESR assessment = 20

• Spectral Calibration, offset since ANX = 6036 seconds

• Spike Detection standard deviation threshold = 5

• Spike Detection number of points per block = 40

• IRAY model = 10

2.2.29 Version 9.3

This version is adapted for OFL processing since the restituted attitude information is used.

Modifications done on MIP_CA1_AX file:

• Addition of alignment matrix, mispointing commanding and non-linearity scan mirror corrections. Same as version 9.0.

Modifications done on MIP_MW1_AX file:

• Same as version 9.0

Modifications done on MIP_PS1_AX file:

• att[0]=-0.025, att[1]=0.0, att[2]=0.0

• Attitude flag set to 1

• Standard Deviation Threshold NESR assessment = 20

• Spectral Calibration, offset since ANX = 6036 seconds

• Spike Detection standard deviation threshold = 5

• Spike Detection number of points per block = 40

• IRAY model = 10

2.2.30 Version 9.4

This version is adapted to reprocessing only. It is intended to produce OR L1 products from FR L0 products.

NOTE: When using this ADF 9.4 set, the MIP_CO1 and MIP_CG1 ADFS available for the FR period cannot be used. New MIP_CO1 and MIP_CG1 ADFs must be recalculated to have the same number of points as defined in the ADF9.4 MIP_PS1 files.

Modifications done on MIP_CA1_AX file:

• Addition of alignment matrix, mispointing commanding and non-linearity scan mirror corrections. Same as version 9.0.

Modifications done on MIP_MW1_AX file:

Same as version 9.0.

Modifications done on MIP_PS1_AX file:

Several MIP_PS1_AX files are provided to apply a different pitch,roll,yaw bias correction at specific start/stop validity time during the full resolution mission

• **1-Jul-2002 / 29-Nov-2002** att[0]=-0.013999, att[1]=0.0, att[2]=0.00001

• **29-Nov-2002 / 09-Mar-2003** att[0]=0.0, att[1]=0.0, att[2]=0.0

• **09-Mar-2003 / 15-Jun-2003** att[0]=+0.017991, att[1]=0.0, att[2]=-0.000013

• **15-Jun-2003 / 10-Sep-2003** att[0]=0.0, att[1]=0.0, att[2]=0.0

• **10-Sep-2003 / 10-Dec-2003** att[0]=-0.020999, att[1]=0.0, att[2]=0.000015

• **10-Dec-2003 / 09-Aug-2004** att[0]=0.0, att[1]=0.0, att[2]=0.0md

Same as ADF9.0 except:

- OPD set to 8.0 cm
- Channel A set to 4561 points
- Channel AB set to 2401 points
- Channel B set to 4561 points
- Channel C set to 2881 points
- Channel D set to 9441 points

2.2.31 Version 9.0A to Version 9.4A

In version 9.0, 9.1 and 9.4, the 7 PS1 ADF files have different start/stop validity times but no overlap of validity coverage between consecutive PS1 files. To allow processing orbits crossing the midnight on those specific days, the start/stop validity times were changed in filenames and MPH record.

To make a coherent data set of PS1 files, the creation date was also changed for a version 9.0A, 9.1A, 9.2A, 9.3A and 9.4A. See Table 2–3 for PS1 ADF filenames.

2.2.32 Version 9.1B

In version 9.1A the 4 PS1 ADF files are no longer necessary since only one pitch, roll, yaw bias correction is required for the FR period when using restituted attitude.

Modifications done on MIP_PS1_AX file:

- **1-Jul-2002 / 09-Aug-2004** att[0]=-0.025, att[1]=0.0, att[2]=0.0

See Table 2–3 for PS1 ADF filename.

— End of document —