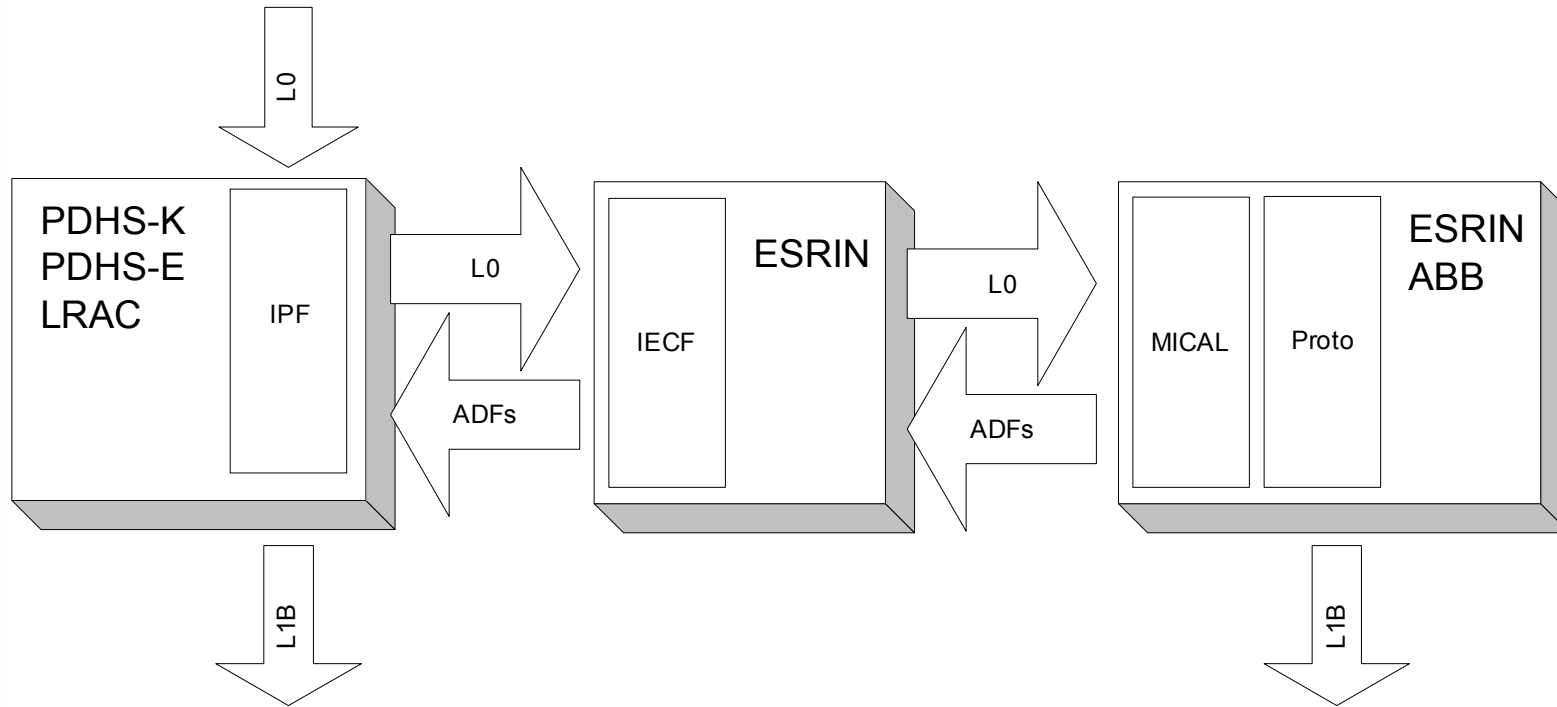


MIPAS Level 1B Changes & Status

Gaétan Perron
ABB Bomem Inc.

MIPAS Level 1B ACVE 2
Frascati - 4 May 2004

L1B Data Processor Overview



- IPF Produces Official L1b Products.
- MICAL Produces Calibration ADFs.
- Proto is Used For Anomaly Investigation and Test Bed for Improvement.

IPF Updates

IPF 4.57

- Modification of FCE algorithm
- Strong anomalous oscillations
- Modification of NESR reporting
- ADC saturation flagging
- Addition of aliasing spike suppression algorithm

IPF 4.59

- No upgrade on Level 1B processing

IPF 4.61

- Oscillating spectra

Offset Validation Anomaly (Open)

ILS retrieval anomaly in the MIPAS L1B processor (Open)

IPF Activation

Centre	Facility Software	Date
LRAC	V4.61	18-03-2004
PDHS-K	V4.61	17-03-2004
PDHS-E	V4.61	17-03-2004
LRAC	V4.59	20-08-2003
PDHS-K	V4.59	23-07-2003
PDHS-E	V4.59	23-07-2003
PDHS-K	V4.57	22-07-2003
LRAC	V4.57	22-07-2003
PDHS-K	V4.59	21-07-2003
LRAC	V4.59	21-07-2003
LRAC	V4.57	19-03-2003
PDHS-K	V4.57	18-03-2003
PDHS-E	V4.57	04-03-2003

MIPAS Level 1B ACVE 2
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ADF Updates

ADF V3.0

Non-linear channels oscillation between forward and reverse measurements

Spectral calibration variation along the orbit position

Modifications done on MIP_CA1_AX file:

Modify non-linearity coefficients for reverse sweep. Coefficients for forward are kept as is

Neutral equalisation filter for band A

Modification done on MIP_MW1_AX file:

Removal of band D microwindow D_H2Ob at 1870.8049 cm⁻¹

Set spectral calibration microwindow altitude to 32 km

Modifications done on MIP_PS1_AX file:

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

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

ADF V3.1

Modifications done on MIP_PS1_AX file:

Changed the NESR threshold to take into account possible higher noise level

ADF V3.2

Modifications done on MIP_PS1_AX file:

Back to previous NESR threshold

ADF Activation

V3.0

PDHS-K from 8762 (3 November 2003)

PDHS-E from 8760 (3 November 2003)

LRAC from 8587 (21 October 2003)

V3.1

PDHS-K from 10695 (17 March 2004)

PDHS-E from 10690 (17 March 2004)

LRAC from 10510 (18 March 2004)

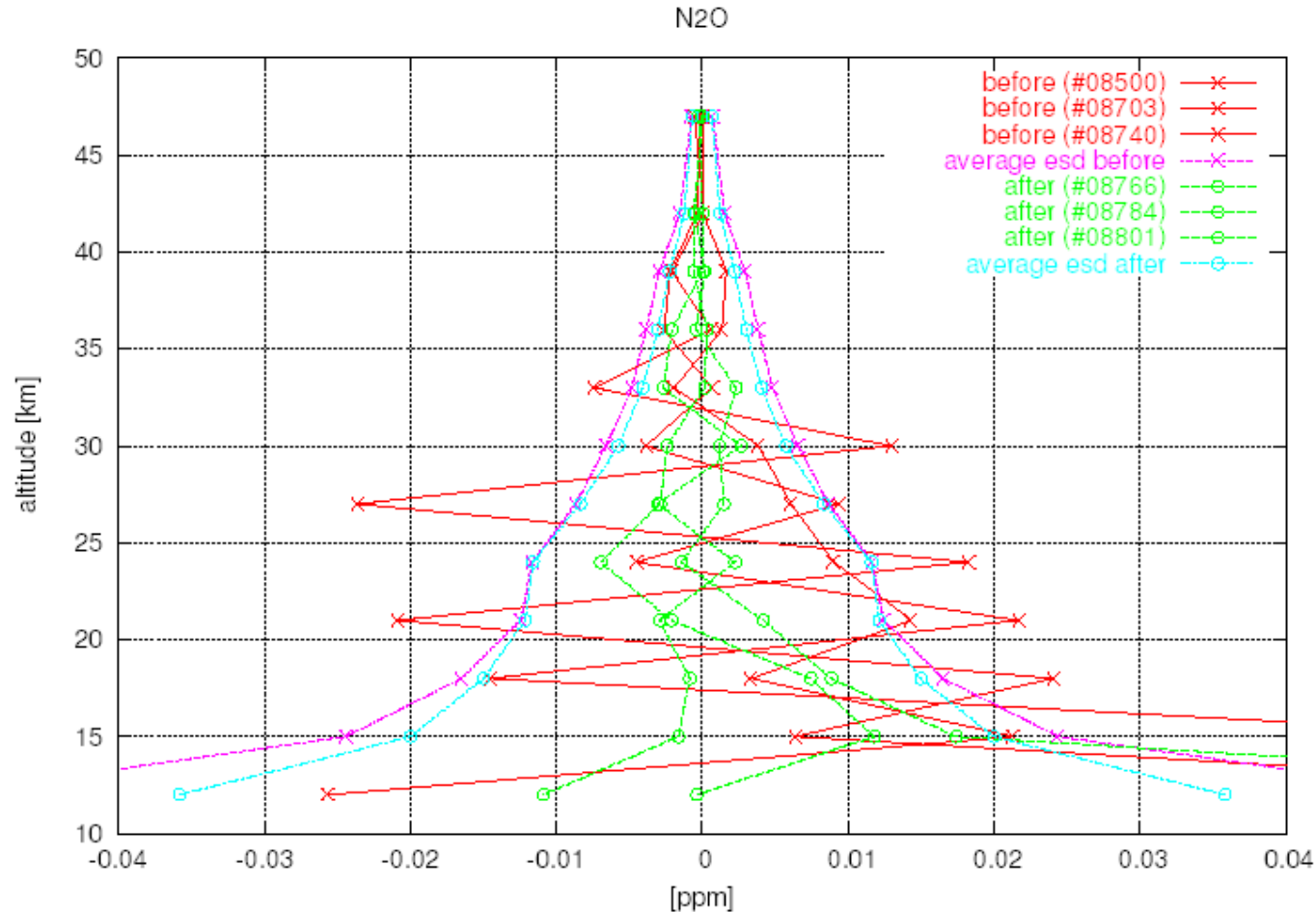
V3.2

PDHS-K (26 March 2004)

PDHS-E (26 March 2004)

LRAC (26 March 2004)

Oscillation Forward/Reverse Anomaly

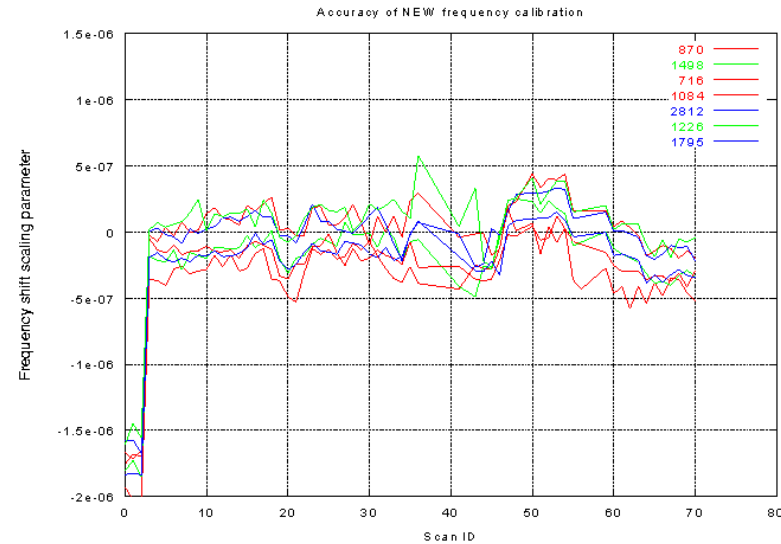
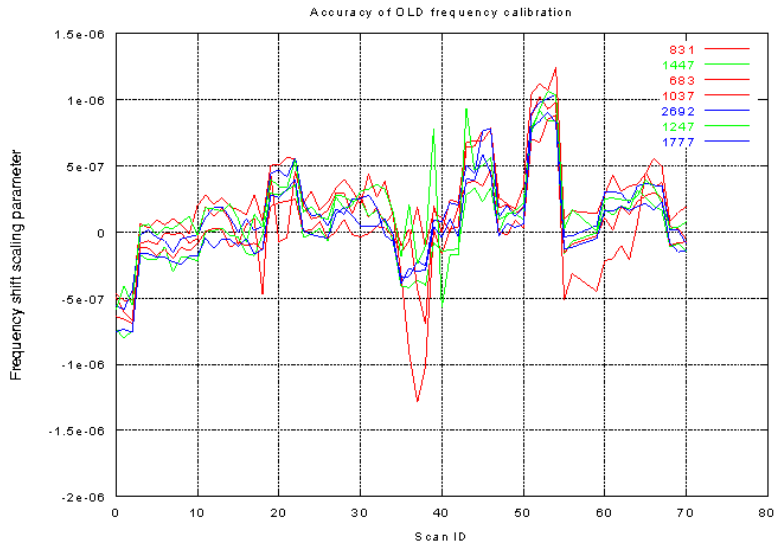


MIPAS Level 1B ACVE 2
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N2O retrieval in band B, difference between mean odd and even scans, mean esd (plot from IFAC-CNR)

- Solved with ADFs Version 3.0.

Spectral Variation Along Orbit Anomaly



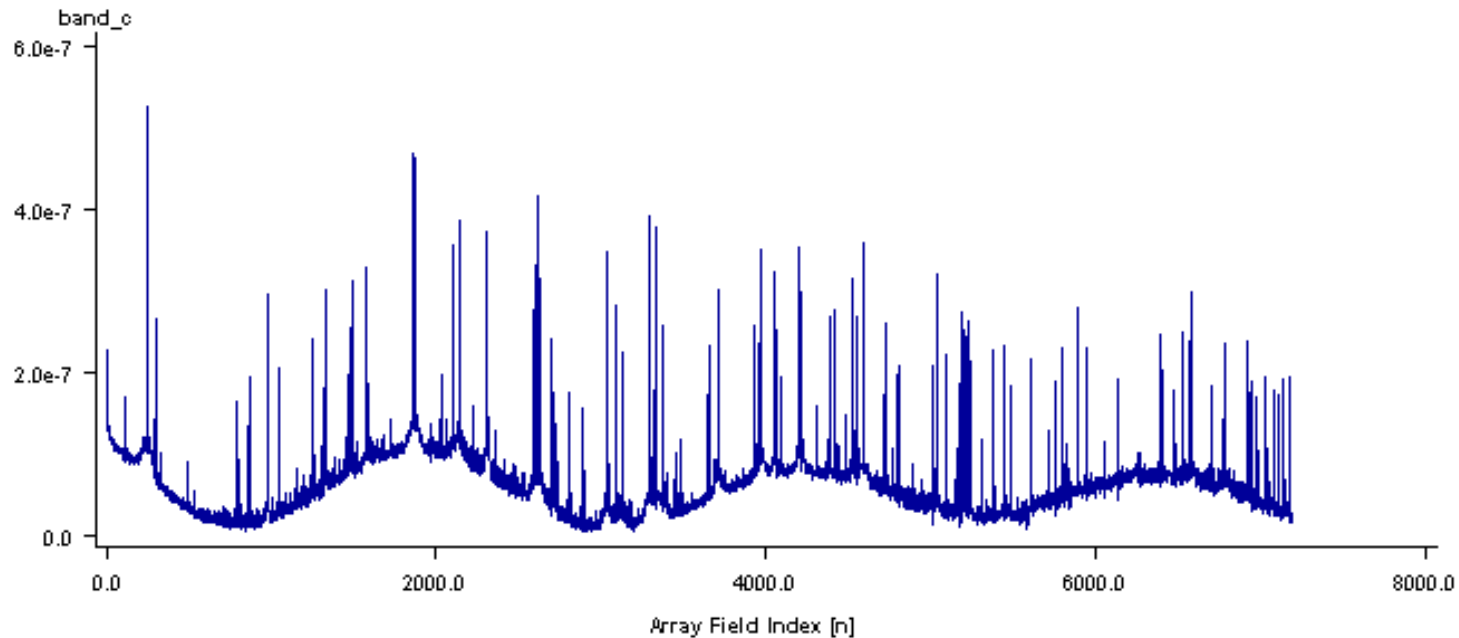
Orbit 2081 before and after modified microwindow ADF
 (plots from IFAC-CNR)

- Solved with ADFs Version 3.0.

MIPAS Level 1B ACVE 2
 Frascati - 4 May 2004

Spectra Oscillation Anomaly

- Oscillation End-December
- Band AB and C, Whole Orbit (#9451)



Data Set : MIPAS LEVEL-1B MDS

Record : 132

X : Array Field Index [n]

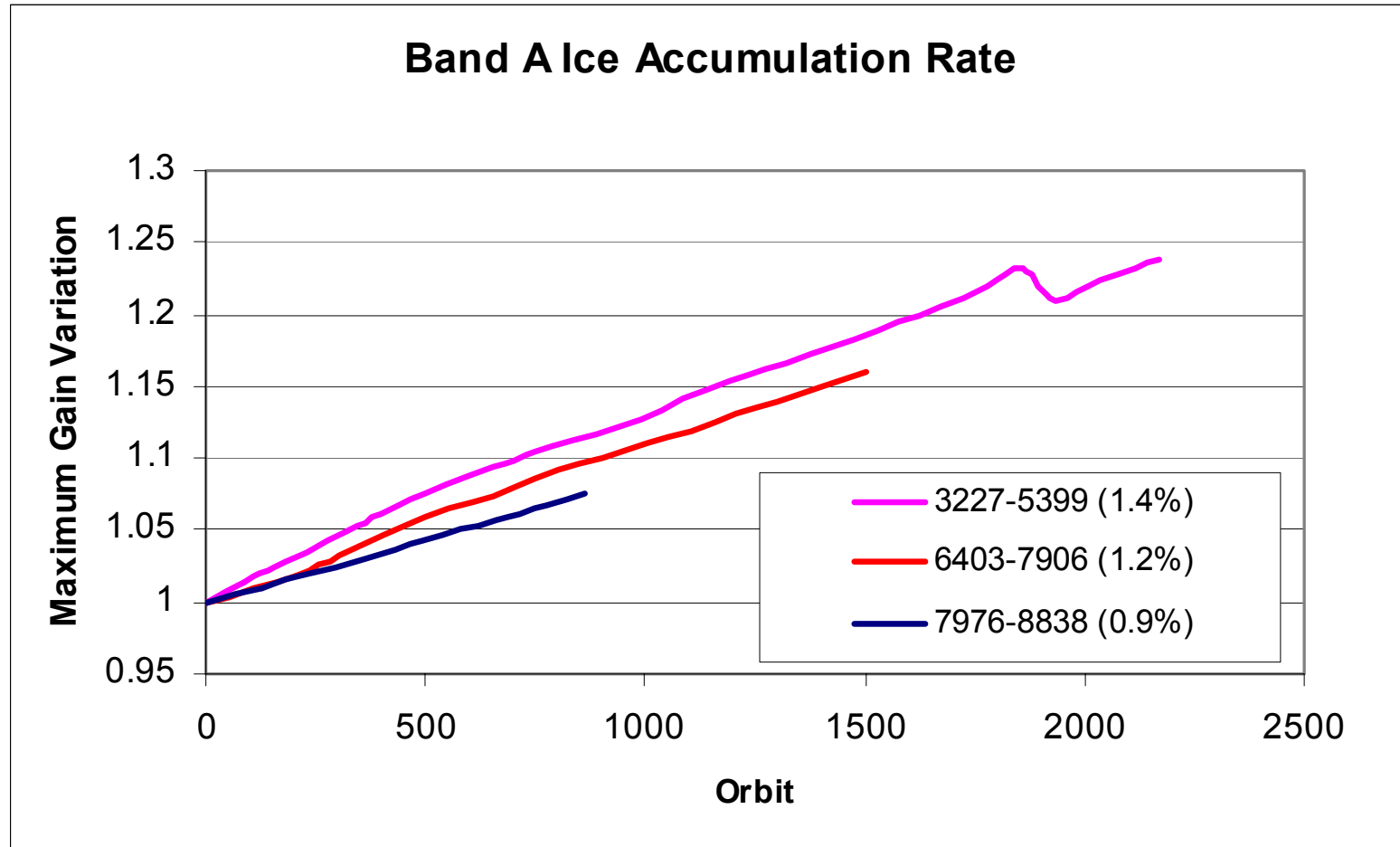
Y : band_c (r.u.) : field 34.

File Title : MIP_NL_1PNPDK20031221_081519_000058852022_00379_09451_0435.N1

MIPAS Level 1B ACVE 2
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- Solved with IPF Version 4.61.

Detector Ice Monitoring

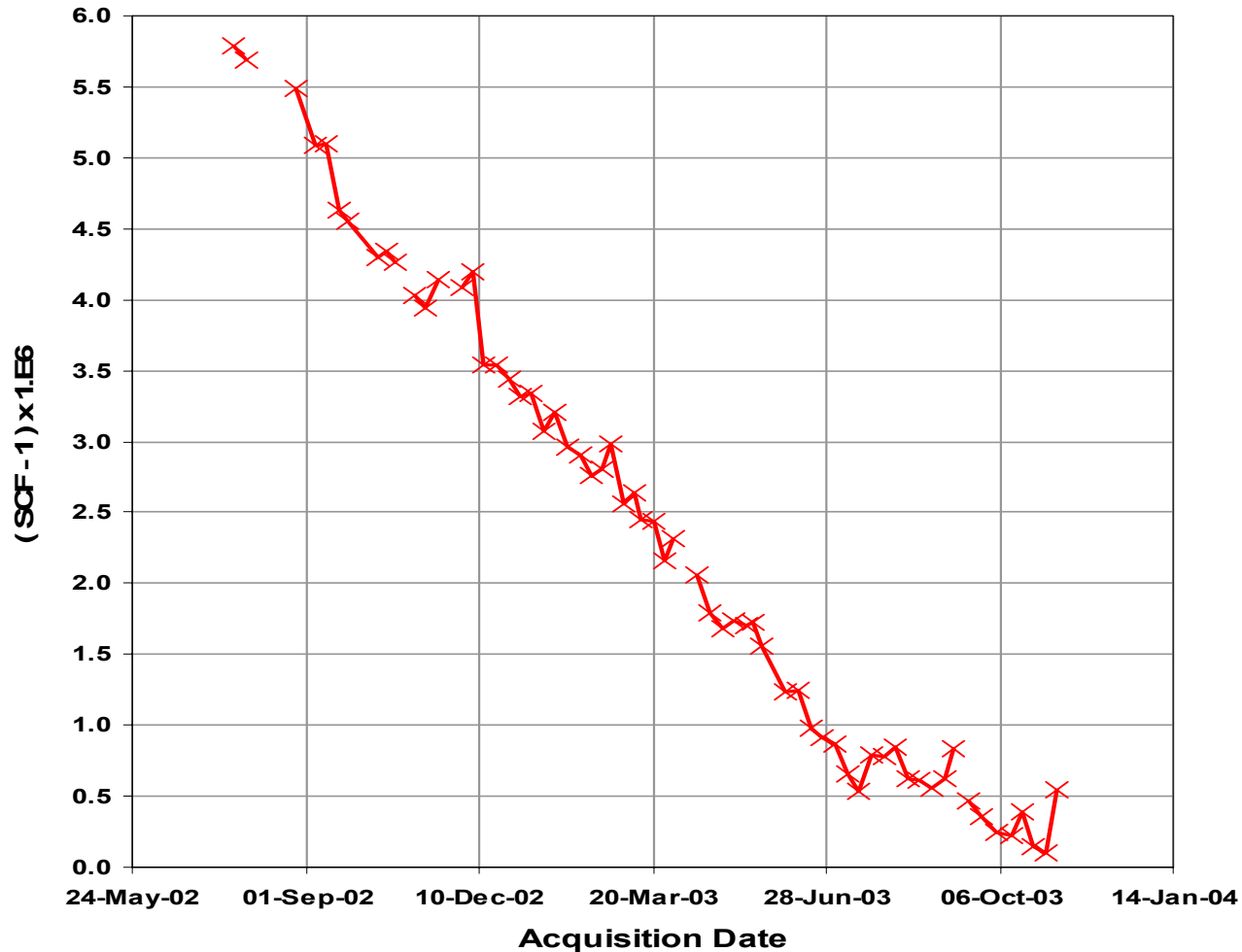


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(%) is the gain variation rate per 100 Orbits (or per week)

Spectral Calibration Monitoring

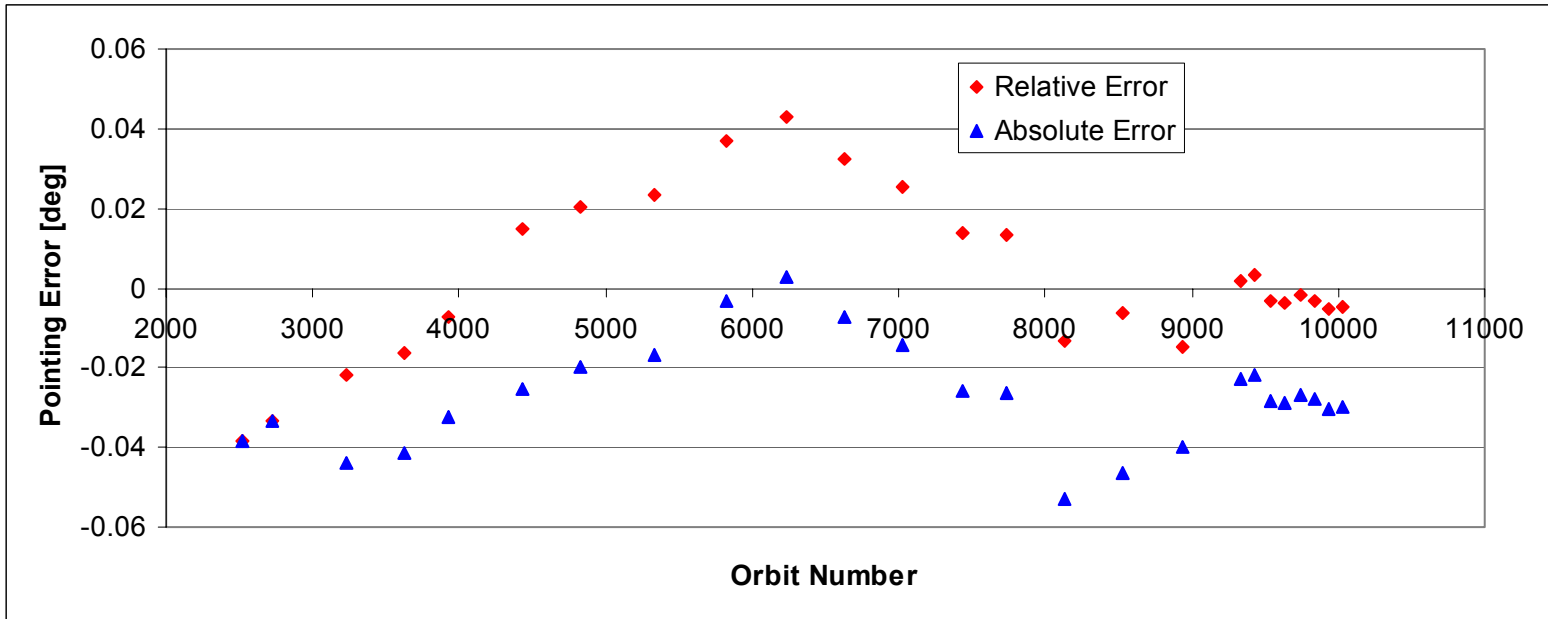
- Spectral Correction Factor Trend Over Last Year



MIPAS Level 1B ACVE 2
Frascati - 4 May 2004

LOS Pointing Monitoring

- Since January After Satellite Attitude Control Improvement, MIPAS Pointing is Very Stable Within the Requirement $\pm 1\text{km}$ ($\pm 0.017\text{ deg}$)



MIPAS Level 1B ACVE 2
 Frascati - 4 May 2004

Second L1B Improvement Cycle

- Modifications to MIPAS Operation Mode (Highest Priority) May Changed/Delayed Second Improvement Cycle

IPF

- Improve ILS Retrieval Approach (IMK)
- Improve Spectral Calibration Approach
- Residual Phase Error Correction
- Improve Spike Correction Algorithm (DLR)
- Noise Filtering of Gain in Band D

ADF

- Improve Detector Non-linearity Characterization (DLR)
- Improve ILS Retrieval Microwindow and Parameters (IMK, LPPM)
- Optimise Calibration Scenario (IMK)

Data

- Report LOS elevation and azimuth angles in topocentric co-ordinates
- Report Instrument Temperatures