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MINUTES of
MEETING

date de la réunion	17/18 Mar. 2007	ref./*réf.* SE-R&D-min-17-03-08\CZ	page/*page* 1 / 6

Meeting place *lieu de la réunion*	IAA - Salamanca	Chairman Secretary	C. Zehner C. Zehner
minute's date *dates de minute*	01 April 2008	participants *participants*	Enclosed Listing
subject/objet	**7th MIPAS Science Team Meeting**	copy/*copie*	G. Kohlhammer, S. Briggs, H. Laur, M. Doherty, E. Herland, YL. Desnos

description/description	action/action	due date/date limite
Open ACTIONS		
AI1 on T. Fehr to get in contact as soon as possible with ESOC to check if automatic re-initialisation can be performed during Teresina campaign period to allow detailed MIPAS mission planning in advance	ESA	asap
AI2 on L. D'Alba to plan MIPAS Teresina campaign operations by mid April 2008	ESA	mid April
AI1ST6 on A. Dudhia to provide to M. Laurentis a 1 page description on the measurement scenario for the proposed MIPAS operations observing parallel to the terminator.	Univ. Oxford	open
AI3ST5 on the MIPAS Science Team to define 8 days during 2007 (equinox as starting point) of orbits sideward viewing over the full orbit by providing following input to M. D'Laurentis: • 20 Azimuth Angles (e.g. twice the same 10) • Optimised Tangent Point Altitudes	MST	open
AI6ST5 on M. D'Laurentis to check the feasibility to calculate MIPAS LOS in respect to the terminator as a function of time (for 4 orbits for the 4 seasons) and to provide this input to the MIPAS Science Team.	ESA	ongoing
AI9ST5 to M. D'Laurentis to plan a volcanic measurement scenario over 8 days for a volcano in Afrika (in interaction with the Science Team).	ESA	ongoing

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1. Welcome

M. Lopez-Puertas as organizer of this meeting welcomes all participants.

2. Action Items Status of last Meetings

Zehner (ESA)

All open Action Items (AIs) of previous MIPAS Science Team Meetings have been reviewed and still open AIs were included into the listing of this meeting (see above).

3. MIPAS Instrument Status

Fehr (ESA)

The planned Envisat mission operations are financed up to Oct. 2010 and an extension by Aug. 2014 is being proposed to ESA member states. The MIPAS instrument performance is very good (only 5 interferomter anomalies have been reported since 01/01/2008) and the instrument is operated since 01 Dec. 2007 in 100% duty cycle. Manual recovery (no IMF stop/restart procedure) in order to minimize data gaps and to reduce start-up errors has been established again on March 08.

4. MIPAS Data Processing Status

Fehr (ESA)

The IPF version 5.0 should be implemented by end of April 2008. The start of off-line processing is anticipated by mid 2008 and reprocessing of all MIPAS measurements over instrument lifetime should start during Q3/2008. Level 1 NRT processing has been resumed (based on the good MIPAS instrument performance) during February 2008 and the start of Level 2 NRT processing should start during the second half of 2008. Further Level 1 and Level 2 MIPAS processor upgrades are being planned and details for implementation are already being discussed and defined in detail right now.

5. Overview on executed MIPAS Instrument Operations during the last half year

L. D'Alba (RHEA/ESA)

From 28 Jun. 2007 until Dec.01 the MIPAS instrument has been operated in 80% duty cycle (and since 100%). Most operations since mid 2007 were in NOM mode (followed by MA and UA mode). 2 days including NLC mode have been executed during Jul. 2007 and during August pointing tests (with fixed azimuth) have been performed. AE mode was operated during the days Sep. 9-11 and 31 Dec. 2007 to 2 Jan. 2008. During Oct. 29 alternating NOM and sidewards viewing mode have been tested, which shows improved coverage, which should be tested during the campaign measurements covering at least a period of 1 week.

Problems in differences between the planned and the actual height assignments of rearward and AE mode measurements are still being investigated (either a problem in the mission planning tool or a mistake in the L1 processing).

6. MIPAS Mission Planning for the year 2008

The future planned baseline for MIPAS operations (repeat cycle) is:

8 days NOM + 1 day MA + 1 day UA

During wintertime at least once AE mode over the Atlantic corridor shall be executed. Around Solstice (in Jul. and Jan.) NLC mode shall be included in following way: 7 days NOM + 3 days NLC.

For the year 2008 only **one major campaign** is being planned that should be supported by MIPAS measurements.

The aim of the **TERESINA tropical balloon campaign** is to study the Tropical Transition Layer, the tropical pipe above equatorial Southern America, the chemistry in the tropical UT/LS as well as the sulfate layer, cirrus clouds and cloud microphysics. The campaign will start on May 12 and lasts until Jun. 16; big balloons experiments like TELIS and MIPAS will be operated especially to match MIPAS overpass measurements.

MIPAS operational requirements to support this campaign:

- the planned decontamination (over 10 days) shall be finalized before May 12
- avoidance of any calibration measurements over the Teresina area
- best possible coverage over the Teresina area (shift MA and UA to NOM mode measurements not covering this area and perform additional sideview measurements)
- **AI1** to T. Fehr: get in contact as soon as possible with ESOC to check if automatic re-initialisation can be performed during this campaign period to allow detailed MIPAS mission planning in advance to be provided to H. Oelhaf
- **AI2** to L. D'Alba to plan MIPAS Teresina campaign operations by mid April 2008

7. MIPAS Data Exploitation

A. Dudhia (Univ. Oxford)

Temperature Trends and NRT-Off-line Intercomparison: The Oxford MORSE MIPAS Level 2 Processor (using the same MWs as the ESA processor but an optimal estimation algorithm) has been used to generate MIPAS L2 products based on the recent NRT and off-line L1 data over instrument lifetime - http://www.atm.ox.ac.uk/group/mipas/L2OXF/.

The global mean temperature at 10mb over instrument lifetime is stable. The mean temperature at 10mb for the time period Dec. 07 to Feb. 08 over the area 90-65 deg South is going down for all years in similar way whereas for the same time period and geographical coverage over the Northern hemisphere such a consistent trend is not monitored at all.

Differences of recent NRT and Off-Line data (6 days of overlapping measurements) show small biases but surprisingly large scatter (~noise error). A direct intercomparison of NRT and Off-line L1B radiances performed by A. Dudhia indicates that this discrepancy is caused by the (small) difference in spectral calibration between the two L1B products.

B. Carli presenting for P. Raspollini (IFAC).

How to handle negative VMR values?: The ORM constrains the retrieved VMR values to be not smaller than 10^{-10} after each iteration for all species. When the random error is comparable with the value of the measurement the absence of negative values in the distribution of retrieved values leads to a positive bias in the mean of the measurements. Comparisons of MIPAS measurements with correlative measurements show that MIPAS profiles have a positive bias at 60-70 km w.r.t other instruments.

The MIPAS Science Team agrees that this should be solved in the code (for all species but H_2O) so that the positive VMR constrain is maintained during the iterations, but the non-constrained retrieved profile is provided as an output. Furthermore negative values in profiles shall be clearly flagged.

M. Carlotti (Univ. Bologna)

Two-Dimensional L2 DATABASE of the MIPAS main-targets: Based on full resolution nominal mode MIPAS mission measurements (July 2002 – March 2004) a MIPAS Level 2 database using Geofit Multi Target Retrieval has been established at University Bologna - http://www.mbf.fci.unibo.it/ . In the horizontal domain a vertical profile is retrieved in correspondence of each limb-scan.The profile is at the average position of the tangent points of the corresponding scan. Target species are p, T, H2O, O3 (MTR), HNO3, CH4, N2O, and NO2 being retrieved sequentially (covering the range from 12 to 68 km). The Geofit Multi Target Retrieval approach exploits the independence of the retrieval grid from the geo-location of the observations which allows the generation of a homogeneous database of atmospheric fields at fixed altitudes and latitudes. It is noted that only the usage of the reduced resolution measurements will provide a data set with 1.25 deg resolution and homogeneous coverage being suitable for MIPAS tomography (that could be tested for the future proposed PREMIER mission).

H. Fischer (IMK)

Proposed Earth Explorer Mission PREMIER: A MIPAS follow on instrument is being proposed as an instrument of the Earth Explorer Mission PREMIER. This instrument will have a IR detector array being capable to measure at once the range from 5 to 50 km with a vertical sampling of 500m and a cross track sampling of 25 km and along track sampling of 100 km. A major advantage of this instrument will be to enable tomograhic measurements of the atmosphere. The envisaged instrument lifetime is 5 years.

9. Any Other Business

ESA is organising in co-operation with University Oxford a school on the usage/exploitation of atmospheric ESA missions/data during the period 15-20 Sep. - http://earth.esa.int/atmostraining2008.

Based on the fact that MIPAS is fully operational (100% duty cycle) again only 1 MIPAS Science Team Meeting is necessary per year. In case there is a change of MIPAS operation (e.g. major degradation of instrument performance) an ad-hoc meeting will be organised.

Next MIPAS Science Team Meeting: is planned at ESRIN on Jan. 21-22 2009.

Agenda:

March 17

16.00-16.10	Welcome/Logistics (M. Lopez -Puertas)
16.10-16.30	Agenda/AIs from last Meetings (C. Zehner)
16.30-17.00	MIPAS Instrument Status (T. Fehr)
17.00-17.30	Status on ESA MIPAS Processors (including reprocessing, data delivery to users so far, planned NRT processing) (T. Fehr)
17.30-18.00	Overview on executed MIPAS Instrument Operations during the last half year (L. Alba)

March 18

09.00-10.30	Review of MIPAS (as performed so far) Operations and Definition of future Operations Scenario (including campaigns by end 2008) - Future planning (fully operational again)? (H. Oelhaf) - Scientific campaigns (All) - Needed Frequency of future MST meetings?
10.30-11.00	Coffee Break
11.00-12.00	Any Scientific results or problems found using the new MIPAS Level 1 and Level 2 data sets (low spectral resolution – all

	modes)? (All)
12.00-13.00	AOB

List of Participants:

Carli, Bruno	IFAC
Carlotti, Massimo	Universita Degli Studi di Bologna, Dip. di Chimica Fisica ed Inorganica
Dudhia, Anu	Oxford University, Atmospheric Oceanic & Planetary Physics Clarendon Laboratory
Fischer Herbert; Oelhaf Herman	Institut für Meteorologie und Klimaforschung, Forschungszentrum Karlsruhe
Flaud, Jean-Marie	LISA CNRS/Univ Paris
López-Puertas, Manuel	Instituto de Astrofisica de Andalucia
Claus Zehner, Fehr Thorsten; Livia D'Alba;	ESA