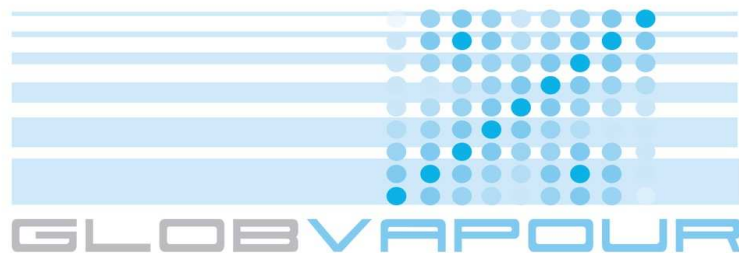




DUE GLOBVAPOUR

Final Project, Acceptance Review and User Consultation Meeting Minutes of Meeting



Issue 1 Revision 0

18 April 2012

Project nr: ESRIN/AO/1-6090/09/I-OL

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Participants

GlobVapour Consortium:

[BB] Bojan Bojkov (ESA)
[JF] Jürgen Fischer (FUB)
[RP] Rene Preusker (FUB)
[NS] Nadine Schneider (DWD)
[TW] Thomas Wagner (MPI-Ch)

[MB] Martin Böttcher (BC)
[DL] Diego Loyola (DLR)
[MR] Mark Ringer (UKMO)
[MS] Marc Schröder (DWD)

GlobVapour User:

[RB] Ralf Bennartz (UWisc)

[AW] Andreas Walter (DWD)

Guests:

[TA] Thomas August (EUMETSAT)
[AD] Angelika Dehn (ESA)
[TF] Thorsten Fehr (ESA)
[SP] Simon Pinnock (ESA)

[SC] Stefano Casadio (ESA)
[SD] Steven Delwart (ESA)
[RH] Rainer Hollmann (DWD)
[MS] Matthias Schneider (KIT)

Agenda

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|------|-------|--|------------------------|
| (1) | 09:00 | Welcome and Opening | Schröder, Bojkov |
| (2) | 09:15 | Actions from last meeting | Schröder |
| (3) | 09:30 | Processing system: achievements and acceptance review | Böttcher |
| (4) | 10:00 | Achievements at DLR and MPI-C (focus on GOME-family products) | Loyola, Wagner |
| | 10:30 | <i>Coffee break</i> | |
| | | <i>Achievements and compliance with proposal</i> | |
| (5) | 11:00 | Achievements at FUB (focus on MERIS and AATSR) | Preusker, Fischer |
| (6) | 11:30 | Evaluation of total column moisture in CMIP5 models | Ringer |
| (7) | 12:00 | RO data for validation | Schröder for Gleisner |
| | 12:15 | <i>Lunch</i> | |
| (8) | 13:45 | Achievements at DWD (focus on products, validation, feedback, last slides on assessment) | Schröder, N. Schneider |
| | | <i>Applications and feedback from users and guests</i> | |
| (9) | 14:30 | IASI water vapour retrievals and feedback to assessment | August |
| (10) | 14:50 | IASI retrieval and IASI-FTIR validation activities | M. Schneider |
| (11) | 14:55 | MWR evaluation and potential future directions | Picard (cancelled) |
| (12) | 15:15 | Evaluating differences between modelled and observed total precipitation over Europe using GlobVapour data | Walther et al. |
| | 15:35 | <i>Coffee break</i> | |
| (13) | 16:00 | The GlobVapor dataset: Initial assessment and research prospects | Bennartz |
| (14) | 16:20 | Acceptance review, 2nd part | Bojkov, Böttcher |
| (15) | 16:30 | Open issues and future | Schröder, Bojkov, all |
| | 17:00 | <i>End</i> | |

| Top | Issue | Com | Cat | Content | Actionee | Ref. | Status | Deadline |
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| 1. | Opening | MS, BB | I | MS and BB opened the meeting and welcomed all participants. Introduction of all participants | | Item 1 | | |
| 2. | Action status | MS | I | Brief discussion of previous actions. See action list. | | Item 2 | | |
| 3. | Presentation | MB | I | Processing system: achievements and acceptance review MB gave an overview about the GV processing system and summed up BC achievements | | Item 3 | | |
| 4. | Discussion | MB, BB, RP, JF | | BB: Evolution in processing system, e.g. MERIS? How long will take the Implementation of the new processor? MB: Implementation is a small part, testing is work for about one week. RP: MERIS processing more I/O BB: How flexible is the process of implementation? MB: Very flexible. JF: 2 nd WV channel has to be implemented in MERIS processing | | Item 3 | | |
| 5. | Action #1 | MB | A | GOME processor 3.02 from DLR to BC | DL | Item 3 | Closed, done during FPM | 24 January 2012 |
| 6. | Presentation | TW | I | Achievements at DLR and MPI-C (1) TW gave an overview about the achievements of MPI- | | Item 4 | | |

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| | | | | C on GOME/SCIA/GOME-2 processing. He went in detail through the topics cloud screening, correction of albedo effect and the homogenisation/harmonisation of different sensors | | | | |
| 7. | Discussion | TW, all | | The potential reasons for the trend patterns has been discussed in some detail. | | Item 4 | | |
| 8. | Action #2 | BB | A | Replot the graphics from the presentation (e.g. offset). E.g., consider relative biases, pdfs and the offset as function of e.g. latitude. | TW | Item 4 | Closed, 17 April 2012, relative offsets replotted | March 2012 |
| 9. | Presentation | DL | I | <p><i>Achievements at DLR and MPI-C (2)</i></p> <p>DL gave an overview about the achievements of DLR on GOME/SCIA/GOME-2 processing and synergies of GV and O3M-SAF efforts</p> <ul style="list-style-type: none"> - improvement of retrieval (scan angle, etc.) - improvement of merging algorithm - outlook on sentinel | | Item 4 | | |
| 10. | Discussion | DL, JF, MS, BB | | <p>MS asked for the last processor version and if it could be transferred to BC on 24 Jan.</p> <p>DL said, that the processor is available and he will try to call his colleague.</p> <p>DL mentioned that the GOME-2 instrument had some problems which could implicate data changes.</p> <p>The challenges of the processor implementation had</p> | | Item 4 | | |

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| | | | | been discussed by BB, DL. | | | | |
| 11. | Presentation | MS for HG | I | <p>DMI Contribution to GlobVapour Project</p> <p>RO data for validation</p> <p>MS presented some slides of HG about the RO (radio-occultation) data sets of DMI.</p> <p>DMI collected data of CHAMP and COSMIC/FM4 and processed from L1 to L2 data.</p> | | Item 5 | | |
| 12. | Discussion | MS, TF, MR, JF | | <p>MS stated that near surface L2 data from Champ might have reduced quality in near surface layers.</p> <p>Several other aspects regarding the quality of RO had been discussed. E.g., the high quality of RO temperature data in the UTLS but also the ambiguity problem for the retrieval of water vapour.</p> | | Item 5 | | |
| 13. | | | | <i>Coffee break</i> | | | | |
| 14. | Presentation | RP | | <p>Achievements at FUB</p> <p>RP presents the achievements of FUB.</p> <p>L2 Validation of MERIS was successful</p> <p>New MERIS processor (v1.4) is much better than old one (accuracy, flexibility, better physics, extensibility, uncertainty estimate)</p> <p>AATSR Validation -> FUB recommended not to use AATSR retrievals for remote sensing of WV</p> | | Item 6 | | |
| 15. | Discussion | RP | | BB asked for the TN on AATSR validation results. | | Item 6 | | |

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| | | | | RP mentioned that a paper is planned. | | | | |
| 16. | Decision | MS, BB | D | In view of the validation results on AATSR it was decided not to publically distribute the AATSR products. | | Item 6 | | |
| 17. | Presentation | MR | I | <p>Evaluation of TCWV in CMIP models</p> <p>MR presented the results of evaluation (ERA_INT vs SSMI+MERIS (lores) and RSS SSMI), annual Mean climatology 2003-2008, statistics of RMS (vs. ERA-Int and 12 Climate Models) and inter-annual standard deviation.</p> <p>MR mentioned that data jumps over the pacific / Indonesia islands are observable. Spurious contrast in data between Hudson bay an surrounding land.</p> <p>He summed up, that there are differences between GV and models, but in general it agrees.</p> <p>Hir-res models (0.5) exhibit better results.</p> <p>Modellers need vertical water vapour information and an extension of the time series is needed.</p> | | Item 5 | | |
| 18. | Discussion | MR | | <p>MR: stddev in L3 and error information in general needed.</p> <p>RP: L2 Validation shows better results then L3.</p> | | Item 7 | | |
| 19. | | | | <i>Group picture and lunch break</i> | | | | |
| 20. | Presentation | MS | I | <p>Achievements at DWD</p> <p>MS gave an overview about the achievements of DWD.</p> | | Item 6 | | |

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| | | | | <p>Main project activities were summed up.</p> <p>L3 Validation results of GV final products (SSMI+MERIS, GOME/SCIA/GOME-2, IASI+SEVIRI)</p> <p>Retrieval development for MWR and SSM/I</p> <p>Results and lessons learned from IASI-Assessment</p> <p>Involvement of user group and user consultation meetings as well as feedback from both.</p> <p>Finalise the project</p> <ul style="list-style-type: none"> -final newsletter -update web page - submission of SSMI+MERIS paper and upload of data onto ESG <p>Science Exploitation:</p> <ul style="list-style-type: none"> - CM SAF considers utilisation of the SSM/I retrieval and continuation of SSM/I+MERIS - DLR continues to work with the GOME processor. <p>Chances on a continuation of the GlobVapour project are very low.</p> | | | | |
| 21. | Action #3 | MS | A | Web page need to be updated | DWD, BC, all | Item 8 | Closed | After deliverable acceptance |
| 22. | Discussion | MS | | BB: what is the continental outflow? | | Item 8 | | |

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| | | | | <p>JF: It depends on temperature or WV and wind.</p> <p>MS: Global water vapour transport has been described in Sohn and Park (2010).</p> <p>MS started discussion on potential for publications.</p> <p>Options:</p> <ul style="list-style-type: none"> - GV overview paper ranging from requirements to applications - MR CMIP5 results in paper - GOME/SCIA/GOME-2 paper - MERIS paper already submitted, SSM/I+MERIS paper to be submitted prior to July 2012. <p>BB proposed paper on validation and inter-comparisons.</p> | | | | |
| 23. | | | | <i>Coffee break</i> | | | | |
| 24. | Presentation | TA | I | <p><i>IASI water vapour retrievals and feedback to assessment</i></p> <p>TA gave an overview about the EUMETSAT contribution to the IASI Assessment, including a brief overview about the whole assessment made by DWD.</p> <p>Feedback to the IASI assessment was given.</p> <p>Developments of EUMETSAT IASI retrieval v5.0 have been presented.</p> <p>TA expressed his interest in the collocated data set from the IASI assessment.</p> | | Item 7 | | |

| Top | Issue | Com | Cat | Content | Actionee | Ref. | Status | Deadline |
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| 25. | Discussion | MR | | MS: Do you plan to reprocess the data with the new NN method? MR: yes with a likely start in 2013. | | Item 9 | | |
| 26. | Presentation | MSch | I | IASI retrieval and IASI-FTIR validation activities MSch presented some results of FTIR technique and the project MUSICA. Validation results were shown. | | Item 8 | | |
| 27. | Presentation | RB | I | The GlobVapour dataset: initial assessment and research Only second part of presentation. Start on slide 17. The quality of the SSM/I+MERIS has been highlighted. Other projects like cci should benefit from GV project, and LWP from SSM/I should be investigated also. Dataset is too short for climate diagnostics. Especially over land, the dataset is very unique. | | Item 9 | | |
| 28. | Discussion | | | Discussion on sudden increase in number of valid SSM/I+MERIS TCWV observations over the Artic. | | Item 11 | | |
| 29. | Presentation | AW | I | Evaluating differences between modelled and observed total precipitation over Europe using GlobVapour data COSMO-CLM comparison for EUROPE and SSM/I+MERIS MM lores. BIAS is larger over ocean than land. Observations for DC of 2006 are very different for | | Item 10 | | |

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| | | | | <p>standard region. The most observation over central Europe, same region where bias is largest.</p> <p>It is known that the model has too high precipitation rates. These results indicate that it at least coincides with an overestimation of TCWV.</p> <p>Problem in DC product: spatial coverage due to missing values caused by low sun elevation and clouds.</p> | | | | |
| 30. | Discussion | | | <p>JF: Comment on existing previous studies of FUB on comparisons with COSMO.</p> <p>BB: Different users have different requirements.</p> | | Item 12 | | |
| 31. | Presentation | MS for HG | I | <p>Acceptance review, 2nd part</p> <p>BB: acceptance review passed successfully.</p> | | Item 11 | | |
| 32. | Final discussion and ending | BB, MS | | <p>BB stated that he is very satisfied with the results of the project and that the majority of deliverables have been received, that is, only a few and minor actions are open.</p> <p>MS and BB thanked all guests, speakers, and the team. MS thanked ESA for funding and BB for excellent support.</p> | | Item 12 | | |

Conclusions

The ESA DUE GlobVapour final project meeting, the third User Consultation Meeting and the Acceptance Review was held in Frascati, Italy on 24 January 2012. ESA-ESRIN kindly offered facilities and beverages, what is kindly acknowledged by the project. The major objectives of the meeting were the presentations of each consortium member about its achievements within the GV project, the potential ways forward, to gather feedback on the GlobVapour project's products and approaches related to the retrieval, validation and assessment of atmospheric water vapour and to demonstrate the applicability of the processing system. In general, the meeting offered a great opportunity for intense discussions as it brings together the producers and users of water vapour data sets. In total, 19 scientists from various communities attended the meeting.

The project successfully passed the Acceptance Review and presented achievements and compliance with proposal. All partners and ESA stated that the project is considered to be a success with valuable results for the partners and ESA. Therefore, the project will be finalised until 31 March 2012.

The project received valuable feedback from the user community. Together with the outcome from stimulating discussions it led to refinements of the project's activities and might lead to a continuation of GlobVapour activities beyond the projects end. Some users continue to use GlobVapour products. Their feedback is still welcome and can be send to marc.schroeder@dwd.de.

It was stated during UCM3 that the SSM/I+MERIS dataset is a unique product with unprecedented quality and coverage and was considered valuable during first application studies.

Action list

Status O = Open, C = Closed

| # | Agenda # | Issue | Actionee | Ref | Status* | Deadline Date | Response Date | Response |
|---------|----------|---|----------|-----|---------|---------------|---------------|---|
| 1.0 RER | | | | | | | | |
| 1 | RER 13 | FUB and MPI to analyse the albedo effect on water vapour retrievals from MERIS and GOME. MPI will send 630 nm GOME albedo data to FUB for inter-comparison. | JF, TW | | C | 31.08.2010 | 17.06.2010 | Superseded by action PM_1_Action_5 (IDL tool sent to MPI also used for albedo calculation). |
| 2 | RER 16 | ERA Interim data to be made available from DWD to DLR. A IASI assessment plan is to be prepared. | TS, MSt | DAP | C | 15.04.2010 | | No ERA Interim data are needed at DLR. |
| 3 | RER 19 | DMI to clarify the access and property rights of the radio-occultation (RO) datasets used for validation, regarding distribution to external parties. | HG | | C | 01.05.2010 | 28.04.2010 | <p>The RO data that will be used as a part of the validation data within the GlobVapour project is derived from UCAR data using DMI software. The validation data will only be used internally within the project and will not be stored in a publically available data base. For these reasons we do not consider that any formal access rights is required.</p> <p>Note: For reasons explicated in a mail from HG to MS 26/3 2010, it is preferred not to include the RO data as a part of the GlobVapour humidity data set. The RO data should be a part of the validation data set as planned from the start of the project. MS agreed to this view in a mail on 29/3 2010.</p> |

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| 4 | RER 20 | DMI and DWD to clarify the contents of the radio-occultation (RO) data. | HG, MS | | C | 01.05.2010 | 28.04.2010 | The RO data will as a minimum include the following: - temperature profile (K) - specific humidity (g/kg) - pressure and geopotential height - uncertainty estimates and/or quality flags - surface pressure, geopotential height - time - longitude/latitude - units (following a suggestion by MS in mail on 29/3 2010) |
| 5 | RER 27 | UKMO to further investigate/consolidate the user requirements in view of the User Workshop. | RS | | C | 01.05.2010 | 13.11.2010 | RBD V1.1 (13.11.2010) and UF V1.1 (11.11.2010) |
| 6 | RER 34 | Clarify the spectral response function (SRF) of MWR. | BB | TSD | C | 16.04.2010 | 23.04.2010 | SRF delivered. |
| 7 | RER 45 | FUB to purchase the 'globvapour.info' (or .eu) domain, and finalise a draft version (first page) of the GlobVapour website. | JF | | C | 15.04.2010 | 29.03.2010 | Domain purchased, first version available. |
| 9 | RER 48 | Brockmann Consult to send out a questionnaire on the Processor software development details (programming language, hardware constraints, interface description, etc.). | UK | SDP | C | 01.05.2010 | 08.06.2010 | Questionnaire send to DWD. Recommendation from BC: Clarify open issues of the questionnaire in phone calls with developers. |
| 10 | RER 50 | DWD to provide the metadata description of all GlobVapour netCDF output products. Clarify compliance with INSPIRE. | TS | | C | 10.06.2010 | 22.06.2010 | Document "Metadata Definition". |

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| 1 | PM1 05 | Perform tests with background fields other than ERA-Interim as input to the retrieval, in order to investigate the effect of different temperature profiles. | MSt | | C | 31.10.2010 | 04.03.2011 | Internal email with attached figs MSt 17.11.2010 & 03.12.2010. Cleanup & regenerated figs 10.02.2011. Merged into Word doc TS 10.02.2011. (TS) Doc 'GlobVapour_L2_Validation' sent to ESA & FUB 04.03.2011. |
| 2 | PM1 10 | A consequence of TOP 9 is that no gaps will be filled. It was consensus that gap filling should be avoided for MERIS and for consistency reasons also for SSM/I. However, the User Group will be contacted and asked what their opinion about this issue is. If gap filling is considered useful the User Group is asked to propose a method on how gap filling should be done and how uncertainties should be assigned. This will be send to UKMO (Roger Saunders) for discussion within the User Group. | MS, RS | | C | 15.07.2010 | | It has been decided in PM2 that no gap filling will be done. |
| 3 | PM1 16 | Provide input to website in order to have updated webpage ready until ESA Living Planet Symposium. | All | | C | 18.06.2010 | 18.06.2010 | Input received and forwarded by NS. Updated page presented on 21.06.2010. |
| 4 | PM1 19 | Provide Lidar NDACC data. | BB | | C | 15.07.2010 | 07.07.2010 | Email BB with link. |
| 5 | PM1 26 | Send the formula for calculation of sun-glint affected areas to MPI-C. | RP | | C | 18.06.2010 | 17.06.2010 | IDL module 'calc_glint_ana.pro' sent by MSt. |
| 6 | PM1 27 | Provide comments to the DUE GlobVapour website. | BB | | C | 18.06.2010 | 15.06.2010 | Emails BB received and implemented. Continuous updates with a.o. Newsflashes. |
| 3.0 PM2 | | | | | | | | |
| 1 | PM2 07 | Report on adjacency effects in the User Workshop in Frascati (March 2011). | RP | | C | 10.03.2011 | 07.03.2011 | Presentation RP. New Action /PM_3) on ATBD update. |
| 2 | PM2 08 | Compare new algorithm for MERIS retrieval | RP | | C | 30.06.2011 | | See MoM from FPM |

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| | | with the operational one. | | | | | | |
| 3 | PM2 10 | Explain pixel filling details in current version of ATBD. | MSt | | C | 10.12.2010 | 21.03.2011 | (NS) Doc 'GlobVapour_D07_ATBD_L3_SSMI_MERIS_V1.0' updated/finalised. |
| 4 | PM2 18 | Preparation of a detailed WP for AATSR investigations with defined milestones. To be discussed with ESA (RP/BB) in Frascati next week. | RP | | C | 15.11.2010 | | AATSR WP |
| 5 | PM2 20 | PVRs: Better explain the term 'difference' used in the tables; update statistics in tables (break down the MERIS/SSMI validation to land/sea/coast; only use collocated observations of intercomparisons for all instruments; apply a weighting function to compensate for the latitude effect). Cross-comparison of SSMI-MERIS vs GOME etc. are to be put into the next major version of PVRs. | TS | | C | 10.12.2010 | 18.01.2011 21.02.2012 | - SSMI+MERIS PVR - GOME+SCIAMACHY PVR - IASI+SEVIRI PVR done. Cross-comparison done. |
| 6 | PM2 21 | ATBDs: Issue of albedo for GOME to be added. Theoretical uncertainties are to be put in the next major version of the ATBDs. | TW, RP | | C | 10.12.2010 | 12.01.2011 03.03.2011 | - GOME: Email TW 12.01.2011 with info for ATBD, implemented by TS 24.01.2011. ATBD Update (V1.1) approved by TW 25.01.2011. - SSMI: (NS) Doc 'GlobVapour_D07_ATBD_L2_SSMI_V1.0' updated/finalised. (MSt) Doc on L3 see Action #3 |
| 7 | PM2 23 | Input to NL form partners. | All | | C | 19.11.2010 | 19.11.2010 17.11.2010 | TW (MPI) Marc Ringer (UKMO) RP (FUB) & TS, MSt (DWD) already there. |
| 8 | PM2 24 | Generate the next Newsletter. | NS | | C | 10.12.2010 | 07.12.2010 | NL #2. |
| 2 | PM2 26 | Compare new algorithm for MERIS retrieval | RP | | S | 30.06.2011 | | Superseded with PM_4 Action #1. |

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| | | with the operational one. | | | | | | |
| 10 | PM2 30 | Update the PMP, considering: - AATSR report from RP on next steps. - Proposal on next steps related to IASI+SEVIRI. - IASI assessment plan and comparison protocol. | MS | | C | 10.01.2011 | 10.01.2011 | (MS) Doc '20091021_GlobVapour_pmp_v2.0' finalised. |
| 11 | PM2 31 | Update the User Info for MS. | BB | | C | 19.11.2010 | | |
| 12 | PM2 32 | Contact NOAA & KIT for the IASI Assessment. | MSt | | C | 17.12.2010 | | Still awaiting answer from NOAA & KIT. |
| 13 | PM2 33 | Provide MWR comparisons. | MSt | | C | 30.11.2010 | 07.07.2011 | Presentation by BP, will be extended. |
| 4.0 PM3 | | | | | | | | |
| 1 | PM3 03 | Update L2 MERIS ATBD on adjacency effects. | RP | | C | 30.04.2011 | 07.07.2011 | No adjacency effects; the new Aerosol scattering term, which improves the retrieval, was added to the ATBD. |
| 2 | PM3 08 | Contact FMI on snow/ice behaviour, that could possibly be used for the SSM/I retrieval. | MSt/BB | | C | 15.04.2011 | 07.07.2011 | Email BB 07.03.2011 to Finish group. The products from FMI cover land only. An extension to oceans is foreseen but after GlobVapour end. |
| 3 | PM3 14 | Clarify the L3 processing system for GOME, and report on this to BC. | BB/DL | | C | 01.04.2011 | 28.03.2011 | Diego will provide the L3 processor to BC for implementation. |
| 4 | PM3 17 | Provide input for the next Newsletter. | RP/RL/ MS | | C | 15.06.2011 | 01.08.2011 | NL #3 was published. |
| 5 | PM3 22 | Check with the Contract Officer to change the User Consultation to Test Data set as Payment Milestone. | BB | | C | 01.04.2011 | 28.03.2011 | Test Data as Payment Milestone confirmed. |
| UCM2 | | | | | | | | |
| 1 | UCM2 04 | Metadata of GOME should contain in field 'comment' that it is a daylight only product. | TW | | C | 15.10.2011 | 02.11.2011 | DLR delivers end product V1.0, which contains the mentioned information. |
| 2 | UCM2 08 | Use also percentage for model evaluation | RS/MR | | C | 15.11.2011 | 24.01.2012 | See presentation on FPM |

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| 3 | UCM2 09 | Initiate communication with CMIP5 community with the aim to provide the SSM/I+MERIS data set for CMIP5 evaluation. | RS/MS | | C | 15.10.2011 | 05.11.2011 | Discussions started and contact has been established. The actual upload is ongoing. |
| 4 | UCM2 12 | Produce a cloud-free SSMI product. | MS/NS | | C | 10.10.2011 | 04.11.2011 | Email NS 04.11.2011, DWD provided data to FUB |
| 5 | UCM2 13 | To compare GlobVapour MERIS TCWV product with operational ESA Meteo product to make the case for updates to the ESA operational retrieval | RP | | C | | | See presentation on FPM |
| 6 | UCM2 21 | New IASI product from MetOffice | KL | | C | 30.09.2011 | 01.09.2011 | Data received |
| 7 | UCM2 22 | Report on IASI assessment approaches and results | MSt/NS/MS | | C | 30.11.2011 | 19.01.2012 | See Technical Note on IASI Assessment |