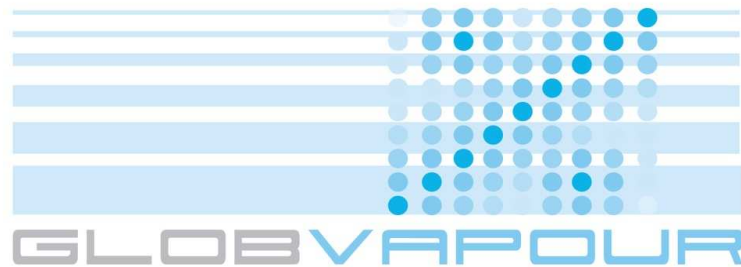




DUE GLOBVAPOUR

Monthly Progress Report

July, August 2010



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ESRIN/Contract No.:

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Monthly Progress Summary - ESA DUE GlobVapour

ESRIN/Contract No.: 22696/09/I-OL

Reporting Period: 01.07.2010 - 31.08.2010

Main Actions: Final versions of PVP, VDD, SVR; first version of the DDS ready; User survey on Requirements; first combined SSM/I and MERIS composites and monthly mean; progress in all development WP

Activities, Achievements and Status - Phase I**Management and Coordination****WP 001 - Management and Coordination (M. Schröder)**

- Roger Saunders sought and received inputs on several issues (merged datasets, overall requirements) from the GlobVapour user group and also some other experts in the field of water vapour climatology. An update to the URD will be proposed at the next progress meeting. Also the ESA CCI - CMUG requirements gathering experience is proving insights which GlobVapour can benefit from.
- The final version of the Minutes of PM-1 have been formulated and distributed among the partners.

WP 010 - Promotion (M. Schröder)

- A poster titled 'The ESA DUE GlobVapour Project' has been designed and will be presented by DWD on the CMSAF User Workshop in September 2010, including the project's objectives and products as well as the first results of the IASI and SSM/I 1D-Var retrieval assessment.
- At the ESA's Living Planet Symposium in Bergen, Norway the projects interests were represented.
- The GlobVapour webpage was updated.
- A GlobVapour project overview abstract has been written and submitted to the AGU Fall Meeting.

Consolidation of Requirements and Specifications**WP 110: Requirements Baseline (R. Saunders)**

- WP completed.

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WP 120: Technical Specifications (M. Schröder)

- The Product Validation Plan was reviewed and updated. It is now available in final version.
- WP completed.

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WP 130: Summary of existing algorithm comparisons (M. Schröder)

- The documentation of different existing algorithms and validation efforts has been reviewed and updated. SVR is now available in final version.
- WP completed.

Creation of Diagnostic Data Set and validation tools

WP 210: Collection and procurement of validation data (M. Schröder)

- At the last Progress Meeting (PM-1) it was decided to present all details related to validation data (satellite and ground-based observations) in a single report - the Validation Data Document. It was reviewed and is now available in final version.
- At PM-1 it was also agreed that the DDS is considered as living data set.
- In general, the acquisition and quality control of validation data and the development of related software is (partly) ongoing. Note, validation of prototype products can be carried out with already acquired validation data.
- Acquisition of AIRS data has been completed for the period 2006-2008.
- Acquisition of MODIS data (both Terra and Aqua) for the period 2006-2008 (in addition to prototype months) is ongoing.
- Processing of L2 AIRS and MODIS data to L3 (0.5 degree squared) grid is ongoing, with July 2007 completed.

WP 220: Collection and procurement of satellite data (M. Schröder)

- IASI L1c data has been retrieved and prepared from the DWD database and initially been quality controlled.

WP 230: Development of validation tools (M. Schröder)

- The validation tool for the IASI assessment has been extended to enable a more comprehensive inclusion of various IASI retrievals.
- Reading and collocation software for AIRS and MODIS data has been extended (monthly mean processing implemented, general widget upgrade, bug fixes).

Development of Prototype Product

WP 310: Development of GOME/SCIAMACHY/GOME-2 retrieval scheme (D. Loyola)

- Improvements and corresponding verification have been made for the H2O retrieval in the UPAS system.

WP 320: Development of MERIS retrieval scheme (R. Preusker)

- The MERIS retrieval scheme was finalised. It uses a single scattering approximation to estimate the surface albedo and subsequently optimises the total column water vapour above land and coastal areas. The ANN forward model approach was discarded. In addition to the Level 2 processor, preliminary Level 3 processors for the production of composites and monthly means were developed.

WP 330: Development of SSM/I - MWR retrieval scheme (M. Schröder)

- A Level 2 to Level 3 processor for netCDF files has been developed. It is variable on input data (time, grid, instrument, output format (Level 2 or composites, monthly means). E.g. output files of SSM/I 1D-Var scheme can be read and converted to Level 3 products on global grid.
- A library, based on the netCDF library, has been developed and implemented in the input/output modules of the SSM/I 1D-Var scheme and Level 2 to Level 3 processor.
- One prototype month has been processed. The SSM/I 1D-Var output (SSM/I onboard DMSP-13) is available for July 2007, including composites and monthly mean with updated GlobVapour metadata information in netCDF format following the CF-1.4 standard.
- Besides the inclusion of netCDF I/O modules, further optimisation of the SSM/I 1D-Var code has been done.

- First sensitivity studies regarding the impact of different dependence have been performed.

WP 340: Establishment of consistency of MERIS and SSMI (M. Schröder)

- At PM1 it was decided to provide monthly averages and composites. In bilateral discussions between DWD and FUB it was decided on how to combine the single sensor products and on how to establish consistency.
- The 1D-Var retrieval schemes resulting from WP320 and WP330 were used to produce a first test month (July 2007) of the blended MERIS-SSMI-product. A bias correction scheme based on the comparison of ocean cases, using the MERIS TCWV product above sun glint areas, was tested. The SSMI TCWV values were found to be 1.5 kg/m² larger than those of MERIS. A preliminary version of the bias correction and product blending software was developed.
- A first test product of composites and monthly mean for July 2007 has been produced.

WP 350: Development of ATSR/AATSR retrieval scheme (R. Preusker)

- The achievement of the required accuracy will be difficult but work is ongoing.

WP 360: Assessment of existing IASI retrieval schemes (M. Schröder)

- Most of the July/Aug 2007 period has now been processed through the operational Met Office NWP assimilation system. A sample IASI dataset for July 2007 was made available to DWD at the end of Aug. Retrievals for Dec 2008 are now being processed with June 2008 to follow.
- DLR provided IASI retrieval results for one month for the Lindenberg site. These results have initially been evaluated by DWD.
- The inter-comparison of IASI retrieval results from EUMETSAT and DWD has been performed at collocated ARM sites (Barrow, Lemont) and GUAN sites (Lindenberg, Sodankyla). The DWD 1D-Var has further be run with different set-ups with respect to background/first-guess information and different channel selections.
- The calculation of bias correction coefficients for the DWD IASI retrieval has been initiated.

WP 370: Development of merged IASI/SEVIRI profile product (M. Schröder)

- The processing of a full month of the SEVIRI and IASI EUMETSAT product is nearly finished in order to carry out a first validation with more collocations. Some changes to the Kriging have been implemented. Note, that the biases among SEVIRI and IASI as well as MODIS and GUAN radiosondes are not consistent which complicates final design decisions. Also, the application of the Kriging is computationally very expensive.

WP 380: Production and validation of prototype data sets (M. Schröder)

- Starts September 2010

WP 390: Development of processing environment (U. Krämer)

- The development of the processing environment is ongoing.
- A draft version of a filename convention document was prepared and is currently discussed within the project.

Next Steps and Schedule

- Extensive runs of the DWD 1D-Var to calculate the radiance bias correction coefficients for the IASI retrieval.

- The SSMI/MERIS combined product will be processed for the remaining three prototype months (August 2007, January 2008, and August 2008) and validated. The validation might trigger improvements to the retrieval schemes and/or combination approach.
- Continue acquisition of data for validation and continuous development of tools for validation.
- Continuous development on all WP.

Achievements

- First combined SSMI/MERIS Prototype month ready.
- Final version of VDD, SVR, and PVP available.

Problems encountered and solutions proposed

- Finalisation of the IASI assessment will be delayed.
- DWD is currently testing if a change of background data from reanalysis to climatology would be beneficial. The additional work load requires more time. However, the independency from models is considered to be advantageous.
- Merging SEVIRI and IASI products is a challenging task and computationally very expensive. Delays in development (in particular a change from EUMETSAT IASI products to the above IASI retrieval) and processing might occur.