## MISSION REPORT : CM-SAF 3rd Workshop, Rostock, Germany from 6-8 Sept 2010

**Introduction**

The aim of the workshop was to allow users to present and discuss experiences and requirements for satellite-based climate monitoring products and the provision of products and services by the Satellite Application Facility on Climate Monitoring during 2012-2017. This suits the work of the task team on national climate monitoring products (TT-NCMP) whereby we have to develop a list of two to six national climate monitoring products we will recommend that Members produce.

**Venue**

The CM-SAF 3rd User Workshop was held at the Radisson Blu Hotel, Rostock, Germany from the 6 to 8 September 2010.

**Participants**

The participants were mainly EUMETSAT, scientists, research institutions, users such as WMO Members, CCL representatives and government agencies, in all about 100 participants.

**Welcome and Opening of the Workshop**

The welcome address and the opening of the CM-SAF 3rd User Workshop were done by the following five personalities:

* M. Werscheck - Head CM-SAF, DWD
* K. Trauernicht -Ministry of Transport; Head of Division, Meteorology, Climate Monitoring, Earth Observation, German Meteorological Services
* G. Adrian - President, DWD
* E. Koenemann - EUMETSAT, Director of Programme Development
* S. Sensoy - TSMS, Vice President of WMO CCL
* B. Ryan - WMO, Director of Space Programme

**Discussions**

CM-SAF data products are classified into two groups, operational monitoring products and retrospectively produced data sets. The full suite of CM-SAF products covers radiation components (at the surface and at the top-of-the-atmosphere), cloud products (e.g., cloud optical depth, cloud phase) and atmospheric humidity. All data are derived based on satellite observations.

Operational monitoring products are disseminated with high timeliness (8 weeks after observation is the limit) to support operational climate monitoring application of National Meteorological and Hydrological Services (NMHS). Other users are research institutions, public institutes and private companies with very different requirements and needs. CM-SAF data can be ordered freely through its website [www.cmsaf.eu](http://www.cmsaf.eu) or via EUMETSAT.

Among the products provided by the CM-SAF, the following is a list of a few satellite products that are available:

* Cloud [cover full MSG disk as from May 2007]
	+ Cloud Fractional Cover (CFC)
	+ Cloud Type (CTY)
	+ Cloud Top Height/Temperature/Pressure (CTX)
	+ Cloud Phase (CPH)
	+ Cloud Optical Thickness (COT)
	+ Cloud Water Path (CWP)
* Surface albedo (SAL) [MeteoSat 8&9 and MetOp AVHRR which cover Europe, the Inner Arctic for AVHRR-SAL and the full MeteoSat disc for SEVERI-SAL
* Incoming Shortwave Radiation at the Surface (SIS) [MeteoSat 8&9 SEVERI, MetOp AVHRR and NOAA AVHRR and the full MeteoSat disc for SEVERI
* Surface incoming solar radiation (SIS)
* Surface downward longwave radiation (SDL)
* Surface outgoing longwave radiation (SOL)
* Surface net shortwave radiation (SNS)
* Surface net longwave radiation (SNL)
* Surface radiation budget (SRB)
* Water Vapour (HOAPS data set – WVPA and SSM/I)
* Vertically integrated water vapour
* Vertically integrated liquid water content
* Wind speed at 10 m height
* Near surface specific humidity
* Precipitation
* Sea surface temperature
* Sea surface saturation specific humidity
* Latent heat flux at sea surface
* Evaporation
* Freshwater flux
* Vertically integrated total (ice + liquid) water
* Sensible heat flux at sea surface
* Difference in humidity
* Latent heat transfer coeff. (Dalton number)
* Long wave net flux at sea surface
* Dust and ash (MSG/SEVERI RGB)

**Data provided**

The following data are provided at present:

1. SEVERI based (available since May 2007), within the Meteosat disk with a resolution of 15km×15km. Products include cloud products, cloud microphysical products and surface radiation products;
2. ATOVS based (available since January 2004), global coverage with a resolution of 90km×90km. Products include water vapour and temperature profile retrieval;
3. Top of the atmosphere products (available since February 2004), within the extended Meteosat disk, with a resolution of 45km×45km. Products include Total Reflected Solar (TRS), Total Emitted Thermal (TET) and Total Incoming Solar (TIS);
4. AVHRR based (available since November 2004) within arctic area (30-80N, 60W-60E), with a resolution of 15km×15km. Products include cloud products, cloud microphysical products and surface radiation products.
5. Already released:Total column of water vapour (HTW) for the period July 1987 to August 2006 covering global ice-free oceans

**Few cases of users of satellite data**

A few users of the CM-SAF data presented their work during the workshop as listed below:

* The Use of CM SAF Data: Showcase Armenia, *D. Hovhannisyan (ASHMS; Armenia)*
* Comparison of SIS and in-situ Data in Turkey for the Year 2006, *E. Karakoc (TSMS; Turkey)*
* Climate Monitoring and Analysis in the European Context , *G. Verver (KNMI; The Netherlands*
* The Role of Surface Radiation in Climate Monitoring, *M. Wild (ETH; Switzerland*
* Integrating CM SAF Data with Photovoltaic Geographical Information System , *T. Huld (JRC*)
* Use of Surface Solar Radiation for Solar Energy Applications in Belgium, *C. Bertrand (RMIB; Belgium)*
* The Use of CM SAF Radiation Data within the WMO Framework, *H. Nitsche (DWD; Germany)*
* The Use of Satellite Data for Regional Climate Model Evaluation, *B. Ahrens (University Frankfurt; Germany*
* The Use of Satellite Data in Support to the Development and Evaluation of Climate Models, *S. Melo (CSA; Canada)*
* Use of CM SAF Products in the Arctic Region during the International Polar Year, *A. Devasthale (SMHI; Sweden)*
* Evaluation of Model-predicted Top-of-Atmosphere Radiation and Cloud Parameters over Africa with Observations from GERB and SEVIRI, *W. Greuell (KNMI; The Netherlands)*
* Monitoring of Cloud Properties and Atmospheric Profiles using IRSounders (TOVS, AIRS, IASI), *C. Stubenrauch (LMD, France)*
* Use of Satellite-Inferred Water Vapour Transport to understand Atmospheric Circulation Changes, *B. J. Sohn (Seoul National University; Korea)*
* FTH – long-time Series and First Steps towards Global Products from Geostationary Satellites, *R. Roca (LMD; France)*

Most of the presentations will be posted on the CM-SAF 3rd User Workshop website <http://www.cmsaf.eu>.

**Future Plans**

Future planned extensions of the HOAPS data set may include an updated input data base or changes in homogenisation and/or retrieval schemes and will thus be major new releases, carrying version number 4 and onwards, i.e., shifting from HOAPS to HOLAPS.

The release of CM-SAF’s CDOP2 in 2012 with more focus to water cycle which will improve the usefulness of the products, provide a clear sky flux, provide globally balanced product, extend the time period and enlarge the area.

The setting up of the GEO ring to monitor the whole earth.

**Recommendations**

The surface incoming shortwave (SIS) radiation (global irradiation) product has a wide range of applications in for example solar energy, climate monitoring and climate trend analysis. Thus, this satellite based product could be included in our list of the national climate monitoring products.

Moreover, the satellite products could be used to monitor the climate in data sparse areas such as the Oceans (eg Indian Ocean) and some regions in Africa.

**Acknowledgement**

I wish to thank Thomas C. Peterson, Fatima Driouech, Manola Brunet and John Kennedy of the CCL for nominating me and Director Mauritius Meteorological Services and Head of the Civil Service for Mauritius for approving my participation.

I would also like to acknowledge the CM-SAF Head, M Werscheck, DWD to sponsor my participation in this very fruitful workshop.

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