WORLD METEOROLOGICAL ORGANIZATION
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COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

EXPERT TEAM ON SATELLITE UTILIZATION AND PRODUCTS

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Sustained, Co-Ordinated Processing of Environmental Satellite Data for Climate Monitoring (SCOPE-CM)

(Submitted by Marie Doutriaux-Boucher, SCOPE-CM Secretariat at EUMETSAT)

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1. Summary and Purpose of Document

This paper reports on the status of the second phase of the Sustained Coordinated Processing of Environmental Satellite Data for Climate Monitoring (SCOPE-CM). In particular it reports on the 9th SCOPE-CM Executive Panel meeting. Details on SCOPE-CM can be found on a new webpage: http://www.scope-cm.org.

ACTION PROPOSED

The eighth session is invited to:

(a) Take note on the overall SCOPE-CM progress in phase 2.

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Appendix: A. Final minutes of 9th SCOPE-CM Executive Panel meeting.

DISCUSSION

Introduction

SCOPE-CM ("Sustained and coordinated processing of Environmental Satellite data for Climate Monitoring") is a coordination activity under WMO auspices, consisting of a network of agencies and operators of environmental satellite systems and interfaces with WCRP, GCOS, CGMS, CEOS and GEO. It offers its support to coordinate and facilitate international activities to generate satellite-based Climate Data Records (CDR) from multi-agency satellite data, in response to requirements stated by GCOS. Within SCOPE-CM, the contributing organisations coordinate their scientific and technical development activities and cooperate on the basis of shared and distributed responsibilities for the generation of global products.

The first phase of the project has been finalised and enabled the establishment of partnerships and coordinated activities within SCOPE-CM. The second phase of SCOPE-CM has started with 10 new projects.

SCOPE-CM phase 2

The objectives of the phase 2 are:

- To establish a systematic approach to increase the sustainability (maturity) of the CDR generation capabilities;
- To establish structures for sustainable generation of fundamental and thematic CDRs.

The mechanisms put in place to achieve the objective are:

- Projects generate SCOPE-CM CDR products;
- Increased coverage of products in terms of ECVs, time and spatial dimension;
- Extension of the network to additional partners.

The benefit for space agencies and associated institutes will be:

- To ensure their role in the field of climate data stewardship;
- To improve their capability and capacity to deliver data services for global and regional climate services;
- To improve their capability and capacity to serve the scientific community.

Ten new projects were approved for the phase 2. Table 1 lists the projects, the leaders and the various partners involved in the second phase of the SCOPE-CM project. Details on the various projects can be found on the SCOPE-CM new webpage: http://www.scope-cm.org. The projects see much more participation from research organisations, e.g., within the project on radio Occultation data records and users, e.g., JMA and ECMWF participate directly in the project on Atmospheric Motion Vectors. SCOPE-CM is also sustaining activities from WCRP GEWEX shown by the establishment of the project on ISCCP (Project No 9). A new call for projects may be envisaged in 2015 or 2016.

The 9th SCOPE-CM Executive Panel meeting

On the 3rd of March 2014 the 9th SCOPE-CM Executive Panel meeting took place at EUMETSAT headquarter in Darmstadt, Germany. The final minutes of this meeting are provided in Appendix A. During SEP-9, the participating projects presented their plans and activities very well considering the funding constraints around the world. In particular the SEP recommended:

- to all phase-2 projects the application of the CORE-CLIMAX Maturity Matrix to monitor progress;
- to all phase 2 projects to contribute to the CEOS-CGMS WG Climate ECV inventory;

- to the SCOPE-CM Secretariat to create a diagram showing interactions among SCOPE-CM projects and dependencies on other international projects such as GSICS,
- to foster the interaction between the SEP and the CEOS-CGMS WG Climate as elements of the WG Climate work plan are related to SCOPE-CM.

Table 1: List of the 10 projects participating in the phase 2 of SCOPE-CM and the partnership in place.

ID	Title	Leader	SCOPE-CM Partners	Other Partners
SCM-01	UTH	L. Shi	NOAA, EUMETSAT (CM SAF)	Kiruna Univ. NCAR, Univ. of Miami
SCM-02	Albedo from polar	T. Manninen	EUMETSAT (CM SAF and CF) NOAA	Univ. Massachusetts
SCM-03	Albedo from GEO	A. Lattanzio	EUMETSAT (CF), NOAA, JMA	-
SCM-04	AMVs Monsoons and Cyclones	S. Goyal	*[EUMETSAT]*	Indian Meterological Departement
SCM-05	AVHRR FCDR	K-G Karlsson	EUMETSAT (CM SAF) NOAA	ESA CCI
SCM-06	IOGEO	R. Roebeling	EUMETSAT (CF and CM SAF), NOAA , JMA, CMA	-
SCM-07	L-RWP in GPM era	R. Bennartz	NOAA (CIRA) EUMETSAT(CM-SAF)	CIMSS, University of Wisconsin
SCM-08	RO-CLIM	A. von Engeln	EUMETSAT (CF and ROM SAF)	GFZ, NASA JPL, Moog, UCAR, Univ. of Graz
SCM-09	ISCCP	K. Knapp	NOAA, JMA, CMA, EUMETSAT	INPE , NY City College
SCM-10	AMV/CSR for LEO and GEO	Y. Tahara	JMA, EUMETSAT (CF), NOAA (NCDC, CIRA)	CIMSS, JMA (reanalysis), ECMWF

Conclusions

- SCOPE-CM has successfully implemented Phase 2 with 10 new projects;
- New projects see much more participation from research organisations and users;
- Best practises, e.g. on algorithm implementation at different operational processing centres for climate are continued and extended within the projects;
- Project plans are realistic under the boundary condition of no extra funding, and demonstrate added value through SCOPE-CM coordination;
- Relations to GSICS evolve in much stronger way by adopting responsibility for FCDRs in SCOPE-CM;
- The use of the Maturity Matrix approach updated by the European Union CORE-CLIMAX project is used to monitor progress in the sustainment of the CDR production systems and communicates this to users;
- SCOPE-CM welcomes additional participation during Phase 2 in any existing or new project to further support and sustains global production of CDRs.

Appendix A - Final minutes of 9th SCOPE-CM Executive Panel meeting[1]

SCOPE-CM
Minutes of the
9th Executive Panel Meeting

3 March 2014
EUMETSAT, Darmstadt Germany

Final version
04 April 2014

[1] The sections on Internal Matters of the Group and specific Actions are included in the provided summary.

1. Welcome and Introduction

John Bates opened the meeting and welcomed the participants, in particular the hosting EUMETSAT and the SCOPE-CM secretariat for the preparation of the meeting. Lothar Schüller introduced Marie Doutriaux-Boucher as his successor as the SCOPE-CM secretariat. John Bates thanked Lothar Schueller for his work as a SCOPE-CM secretariat.

John Bates stressed the successfulness of the SCOPE-CM Phase-2 project call for proposals, with a good number of projects participating.

2. Approval of the SEP meeting agenda

The agenda of the meeting was approved.

3. Overall SCOPE-CM status: Recall of Phase 2 concept, status and approach (L. Schüller)

Lothar Schüller gave a presentation to summarize SCOPE-CM project. He recalled the SCOPE-CM concept. He stressed that the Phase 1 of the project was successfully completed. He presented the Phase 2 of the project that will use the concept of a Maturity Matrix to organize development and sustain CDRs into initial, moderate and high maturity to better characterize CDRs for the user community. He reported that 10 projects in total were submitted that is just the right number for being handled within the SCOPE-CM initiative. He reminded that additional participation is welcome for the phase 2.
John Bates raised the question that SCOPE-CM could move to have some role/support in the interim climate data record generation.
Joerg Schulz highlighted the fact that in the context of the maturity matrix development, some tools need to be developed to help choosing the right dataset that could serve best the user requirements.

4. SCM-Projects: Presentation of the SCM projects content, plan and activities

The 10 projects participating in SCOPE-CM were presented by the project leader except SCM-04 that was not presented. Project leaders presented the project plan also expressing the various dependencies with other projects/activities (SCOPE-CM and others) among their projects. A complete description of each of the ten projects can be found at http://www.scope-cm.org/projects/ .

SEP emphasize that within the SCOPE-CM project, an effort could be made to

- reinforce the interactions between the different projects,
- ensure that each project leader provides an assessment of its project based on the maturity matrix system,
- federate the dataset generation (format, ...),
- address the releases mode.

SCM-01 Sustained generations of upper-tropospheric humidity Climate Data Records from multiple sensors with multi-agency cooperation
John Bates presented the SCM-01 project. SEP questioned about the possible dependencies with other projects (e. g. what are the interactions if any with the SCM-08 project).

SCM-02 Albedo polar orbiters

This project was presented by T. Manninen. A good description of the dependencies was presented. T. Manninen clarifies the fact that the BRDF that will be used will be an empirical one based on a high number of observations from AVHRR. The processing could be done at DWD but this is not clear yet. SEP emphasized that contact should be made between SCM-02 and SCM-05 as there is clear partial overlap.

SCM-03 Land Surface Albedo from geostationary satellites

The project was presented by A. Lattanzio. A clear project plan was presented for 2014. Link with other international project was presented: this project needs input from GSICS and SCM-06.
T. Kurino stressed the importance of estimating the fraction diffuse/direct to the total downwards flux density. At the moment there is no plan to produce fractions (direct and diffuse) but as this is computed in the algorithm, this could be included in the product with some efforts.

SCM-04 Utility of satellite derived winds for monsoon and cyclone studies over Indian region

This project is still under consideration by partners at IMD, and no details were presented to the session.

SCM-05 AVHRR FCDR (K.-G. Karlsson)

K.-G Karlsson presented the project. The SEP-09 meeting was the starting point of the project.
SEP suggested organising rapidly a workshop with GSICS to discuss AVHRR issues and how to GSICS standards and acceptance procedure.
SCM-05 should correspond with SCM-02. SCM-02 is invited to send their requirement to SCM-05.

SCM-06 Inter-calibration of passive imager observations from time-series of Geostationary satellites (IOGEO)

The project was presented by V. John on the behalf of R. Roebeling who could not attend the meeting. It was reminded to SCM-06 that the original plan was that GSICS provides coefficients and SCOPE-CM project will use it to produce data. If SCM-06 provides coefficients, it has to be sure that it is consistent with the GSICS approach. However, correction coefficients provided by GSICS are for the current sensors derived in near-real time. SCM-06 will compute GSICS corrections for historical data applying GSICS methodology in a slightly different manner (using the concept of future observation instead of only using a backward window). A mechanism could be put in place to allow SCM-06 to feedback to GSICS how correction coefficients suitable for climate data records are best achieved. SEP recommended to SCM-06 to apply correction coefficients to the data and to append the coefficients to the data (in order to enable a reversibility of the correction process).

SCM-07 Liquid water path and rain water path climatology in the GPM era

The project was presented by M. Schröder on behalf of R. Bennartz. The project should make the bridge between the heritage MW imager and the GPM era. Some delays may be experienced in the project due to delay in data availability (e.g. MODIS collection 6 products).

The project informed that the GPM core mission was launched successfully on the 27 February 2014.
SEP expressed some concern because this project is more research oriented compare to the other projects. It was confirmed that format and documentation have been discussed; netcdf-CF will be used for the provided dataset. SEP advised to produce a flow-diagram to identify various contributions to the project and to point out input/outputs.

SCM-08 Radio Occultation based gridded climate data sets (RO-Clim)

The project was presented by A. von Engeln. It was announced that the project lead could be transferred from EUMETSAT to the ROM SAF later on.

John Bates announced that NOAA budget allows for an initial phase of COSMIC-2.

SCM-09 Sustained production of the International Satellite Cloud Climatology Project (ISCCP) cloud products

The project was presented by J. Bates on the behalf of K. Knapp. B. Rossow's software was recently transferred to NCDC. Some test data should be available to users for verification/validation purposes. A more detailed plan should be delivered by K. Knapp by the end of April 2014.
SEP emphasized the fact that discussion could take place with SCM-05 in order to produce full-coverage cloud product (leo+geo).

SCM-10 Atmospheric Motion Vectors and Clear/All Sky Radiances from historical meteorological satellites in geostationary and polar orbit (T. Kurino)

The project was presented by T. Kurino on the behalf of K. Bessho. A clear schedule plan was presented for 2014. First results of reprocessing will be presented at the next International Wind Workshop in June 2014.
T. Kurino announced that CIMSS has reprocessed 18-19 years of GOES AMVs.

5. Interaction with GSICS

T. Hewison presented GSICS and its interactions with SCOPE-CM projects.
GSICS data are organised used a THREDDS-based system. SEP suggested that SCOPE-CM could investigate the possibility of using similar system.
SEP suggested that a table presenting possible/potential interaction between SCOPE-CM and GSICS should be provided.
CSA representative stressed the importance of the continuity in the reference instrument used for the inter-calibration.

6. SCOPE-CM and project organisation, e.g., reporting and application of Maturity Matrix

J. Schulz reports on monitoring completeness/progress of climate data record generation. He presented the maturity matrix concept status from the last CORE-CLIMAX meeting in January 2014.

7. Discussion of cross-cutting issues, e.g. potential project deliverable dependencies, etc.

FOLLOW UP DISCUSSIONS

MATURITY ASSESSMENT

SEP pointed out the importance of the maturity assessment of the produced climate data record. Each product should get more and more mature during the lifetime of the project. SEP recommended having the maturity assessment done very close to the CDR release. As SCOPE-CM has no funding, the assessment should be a self-assessment done individually by each project. SEP meetings could be used as a checkpoint where each project reports on its maturity status.

A table could be produced with the current maturity status of each project.

INTERACTIONS

SEP underlined the usefulness to have a clear view on cross-interactions between SCOPE-CM projects. An interaction matrix should be generated. Dependencies between SCOPE-CM and other international projects/groups (e.g. GSICS, CEOS, CGMS VC, SAFs, CCI) are very important. An overall dependency diagram should be produced.

CONTRIBUTION TO THE ECV INVENTORY DATABASE

SEP decided that every project should contribute to the ECV inventory (http://ecv-inventory.com/).

8. Any other business

No any other business.

9. Date and Place of the next meeting

The SEP plans to have its 10th meeting within a year. Preferably it should be collocated with other relevant meetings and/or conferences. A potential candidate would be a “climate from space week”, for example in Geneva, in 2015 but other places like Asia could also be a suitable candidates.

APPENDIX A AGENDA

SCOPE-CM 9th Executive Panel Meeting ***EUMETSAT Headquarter, Room, Darmstadt, Germany***	
Monday, 3 March 2014 (09:00 – 17:00)	
1.	**Welcome and Introduction** (Bates)
2.	**Approval of the SEP meeting agenda** (Secretariat) SCOPE-CM_SEP09_01
3.	**Overall SCOPE-CM status: Recall of Phase 2 concept, status and approach** (L. Schüller)
4.	**SCM-Projects: Presentation of the SCM-projects content, plan and activities** 4.1 – SCM-01 Tropospheric Humidity (J. Bates) 4.2 – SCM-02 Albedo Polar Orbiters (T. Manninen) 4.3 – SCM-03 Albedo Geostationary (A. Lattanzio) 4.4 – SCM-04 Utility of Satellite derived winds for Monsoon and Cyclone studies over Indian region 4.5 – SCM-05 AVHRR FCDR (K.-G. Karlsson)
Coffee break	
	4.6 – SCM-06 Inter-calibration of Passive Imager Observations from time-series of GEO Stationary Satellites (J. Schulz) 4.7 – SCM-07 Liquid Water Path and Rain Water Path Climatologies in the GPM era 4.8 – SCM-08 Radio occultation based gridded climate data sets (A. von Engeln) 4.9 – SCM-09 Sustained production of the International Satellite Cloud Climatology Project (ISCCP) cloud products 4.10 – SCM-10 Atmospheric Motion Vectors and Clear/All Sky Radiances from historical meteorological satellites in geostationary and polar orbit (T. Kurino)
Lunch break	
5	**Interaction with GSICS** (T. Hewison)
6.	**Discussion of cross-cutting issues, e.g. potential project deliverable dependencies, etc.**
7.	**SCOPE-CM and project organisation, e.g., reporting and application of Maturity Matrix**
8.	**Internal Matters** **8.1** – SEP Chairperson and Representation of member organisations **8.2 –** Action Review from previous meetings **8.3** – SCOPE-CM Secretariat **8.4** – SCOPE-CM Webpage 8.5 – SCOPE-CM Interaction with the Joint WGClimate
9.	**Any other business**
10.	**Date and Place of the next meeting**
Adjourn / social event	

APPENDIX B SEP 09 PARTICIPANTS

Members and Observers:

John Bates	NOAA/NCDC, SEP chair
Stephan Bojinski	WMO Space Programme
Toshiyuki Kurino	JMA
Jörg Schulz	WCRP GEWEX
Lothar Schüller	EUMETSAT
Espen Volden	GEO
Pascal Lecomte	ESA Climate Office (Observer)
Stella Melo	CSA (Observer)

Other Participants:

Terhikki Manninen	FMI/CM SAF
Tim Hewison	EUMETSAT/GSICS
Masaya Takahashi	JMA/MSC
Hans Gleisner	DMI/ROM SAF
Axel von Engeln	EUMETSAT
Marc Schröder	DWD/CM SAF
Viju John	EUMETSAT
Alessio Lattanzio	EUMETSAT
Karl-Göran Karlsson	SMHI/CM SAF
Volker Gärtner	EUMETSAT
Jo Schmetz	EUMETSAT

Secretariat:

Marie Doutriaux-Boucher	EUMETSAT

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