

WORLD METEOROLOGICAL ORGANIZATION

**AD-HOC MEETING FOR DRAFTING THE SPACE-BASED
WEATHER AND CLIMATE EXTREMES MONITORING (SWCEM)
DEMONSTRATION PROJECT (SEMDP) IMPLEMENTATION
PLAN**

25-29 SEPTEMBER 2017
GENEVA, SWITZERLAND

MEETING REPORT



WMO General Regulations

Regulation 42

Recommendations of working groups shall have no status within the Organization until they have been approved by the responsible constituent body. In the case of joint working groups the recommendations must be concurred with by the presidents of the constituent bodies concerned before being submitted to the designated constituent body.

Regulation 43

In the case of a recommendation made by a working group between sessions of the responsible constituent body, either in a session of a working group or by correspondence, the president of the body may, as an exceptional measure, approve the recommendation on behalf of the constituent body when the matter is, in his opinion, urgent and does not appear to imply new obligations for Members. He may then submit this recommendation for adoption by the Executive Council or to the President of the Organization for action in accordance with Regulation 9(5).

EXECUTIVE SUMMARY

The ad-hoc meeting for drafting the Space-based Weather and Climate Extremes Monitoring (SWCEM) Demonstration Project (SEMDP) Implementation Plan was held in Geneva, Switzerland on 25-29 September, 2017. It was a follow up to the kick-off workshop on SWCEM that took place in February 2017.

The meeting focused on drafting an implementation plan for the project that will begin in 2018 with a duration of two years. The pilot study will focus on WMO regions II and V (Pacific regions) and will infuse satellite data sets into routine use by WMO Regional Climate Centers (RCC), and develop a value-added products for distribution and use by WMO National Meteorological Centers. The two primary RCC's targeted in the pilot are located in Indonesia and the Philippines.

The concept of SEMDP was subsequently endorsed by the WMO Executive Council and the Coordination Group for Meteorological Satellites (CGMS). The ad-hoc meeting consisted of a team of four invited satellite product experts from NOAA/CPC, JAXA and AuBOM, as well participants from WMO.



Ad-hoc Meeting for Drafting the SEMDP Implementation Plan Participants:

From left to right: Yuriy Kuleshov, Takuji Kubota, André Obregón, Pingping Xie, Peer Hechler, Omar Baddour, Toshiyuki Kurino, Ralph Ferraro, Natalia Donoho

1. Welcome

O. Baddour (WMO CLW/DMA) gave a warm welcome to the participants. In his remarks, Mr. Baddour noted a value of the space data and products. He provided an overview of climate monitoring in WMO, including WMO Statement on the State of the Global Climate in 2017 and WMO Climate Watch System, and highlighted the collaboration with 9 UN agencies.

The kickoff Space-Based Weather and Climate Extremes Monitoring (SWCEM) Demonstration Project (SEMDP) Workshop is tentatively planned for 8-10 January 2018 in Jakarta, Indonesia.

Participants introduced themselves in a tour-de-table (see list of participants in Appendix I).

A provisional agenda was developed by the Secretariat. The agenda, as contained in Appendix II, was adopted by the group.

2. Introduction to SEMDP

T. Kurino (WMO OBS/SBOS) presented on SEMDP outline, including scope and background. There is need to better utilize and improve the monitoring of weather and climate extremes from space. Mr. Kurino provided some examples, including IMERG dataset (Integrated Multi-satellite Retrieval for GPM) and JMA CLIMAT report viewer.

O. Baddour inquired about climate products available from the satellite community.

3. Lesson learned from the Sever Weather Forecasting Demonstration Project

A. Soares (WMO WDS/DPFS) reported on Sever Weather Forecasting Demonstration Project and its Cascading Forecasting Process. SWFDP represents a systematic approach for building capacity and for transferring knowledge and skills to operational weather forecasting teams across the NMHS community.

The main goals were:

- Improve collaborative work and international cooperation among operational centres at global, regional and national levels.
- Improve the skill of products from WMO operational centres through feedback.
- Continuous learning and modernization.
- Address the needs of groups of "like-countries".

She provided provided an overview of regional project management and implementation, and some examples of existing and future projects. Ms. Soares also mentioned training activities and lessons learned.

Reference documents, including SWFDP Overall Project Plan and SWFDP Guidebook for Planning Regional Subprojects, were provided to the group.

R. Ferraro noted that this demonstration project would be a great model/example for the group to follow. The framework is very similar.

O. Baddour inquired about SWFDP – Southeast Asia. A project at Regional Specialized Meteorological Centre in RFSC Na Hoi, Vietnam is still ongoing.

The group recommended to identify an expert from RFSC Na Hoi, Vietnam.

The group wants to encourage Regional Specialized Meteorological Centres to use satellite data. There was a discussion about a relevance and motivation in developing countries...

4. CASE STUDIES

4.1. AuBoM, WMO RA-V Pacific Islands RCC Network

Dr. Y. Kuleshov (AuBOM) provided a preliminary input with particular focus on drought and heavy precipitation monitoring.

Australian Bureau of Meteorology doesn't use satellite products for climate monitoring. There is a great potential for space-based rainfall observations to enhance monitoring of droughts and heavy precipitation - operational service which National Meteorological and Hydrological Services (NMHSs) currently deliver to users based on analysis of surface-based observations.

Current operational products of the Australian Bureau of Meteorology for drought monitoring are derived from surface-based observations and typically focused on identifying rainfall deficits over extended periods (months to years) using percentile (decile) analysis. As for extreme precipitation, it is typically diagnosed on a monthly time scale.

He provided some examples of operational products produced by the Bureau of Meteorology (mainly in a form of maps).

P. Xie asked about drought monitoring with combined analysis from gauge observations. Those products were not developed yet.

4.2. NOAA/CPC, USRCC (Washington, D.C.)

P. Xie (NOAA/CPC) briefed on operational applications of satellite products in climate monitoring at NOAA's Climate Prediction Center. He thanked his contributors, and summarized categories of monitoring.

Satellite Products of Particular Importance to Climate:

- SST
- Outgoing long-wave Radiation
- Precipitation
- SSH
- Soil Moisture
- Atmospheric temperature/moisture

He provided a list of satellite products developed/integrated at CPC, including OLR (Outgoing LW Radiation), CMAP, CMORPH, Gauge-CMORPH Blended, Gauge-OLR Blended (experimental).

O. Baddour stressed his interest in CMORPH. These data is available at:
http://www.cpc.ncep.noaa.gov/products/janowiak/cmorph_description.html

O. Baddour inquired about an assessment of uncertainly of data.

5. Introduction to Space-based rainfall monitoring products for climate monitoring/diagnostics

5.1. CMORPH

P. Xie (NOAA/CPC) introduced space-based rainfall monitoring products for climate monitoring/diagnostics, with focus on CMORPH CPC Morphing Technique. He provided the basic features of the currently operational CMORPH. Mr. Xie noted that the bias exists in the raw CMORPH due to seasonal cycle, year-to-year changes, and sub-monthly variations.

He also provided examples of CMORPH monitoring of Hurricane Harvey (animation of hourly precipitation). Historical precipitation with the mean rate averaged over a 8-day period more than twice of the 99 percentile over wide area over the southern Texas. After bias correction, CMORPH is capable of capturing the hurricane precipitation quite well.

The question was raised about a production of second generation CMORPH. The real-time product is coming in winter of 2018.

5.2. GSMaP

T. Kubota (JAXA) presented on Global Satellite Mapping of Precipitation (GSMaP). A blended PMW-IT product and has been developed in Japan for GPM mission (as JAXA GPM product). He provided an overview of the products, including standard, near real-time, and real-time products.

In summary:

GSMaP application has 3200 registered users from 107 countries (43% Asia, except Japan).

T. Kurino asked about an advantage of the gauge use.

CLIMAT data (provided by JMA under JAXA-JMA agreement).

P. Xie inquired about monthly monitoring.

5.3. Other promising products for monitoring persistent heavy rainfall and draught

R. Ferraro (NOAA/NESDIS) briefed on potential/emerging NOAA/NESDIS products for precipitation and drought monitoring. He presented NESDIS related products related to precipitation and drought that might be of potential use, including precipitation intensity, soil moisture, vegetation indices/health, and land surface temperature. Many NESDIS data sets are used within CMORPH and GSMaP.

He also noted NOAA's Climate Data Records (and its synergy with SCOPE-CM (Sustained and COordinated Processing of Environmental satellite data for Climate Monitoring)).

T. Kurion asked about Soil Moisture product.

6. Use of Remote Sensing Data for Climate Monitoring in WMO RA-II and V

Yuriy Kuleshov (AuBOM) provided update on climate monitoring in WMO RA-II and V.

7. Utilization of outcomes from SEMDP for social benefits

André Obregon (GEO) briefed on a possible utilization of outcomes from SEMDP for social benefits. He mentioned 8 societal benefit areas and priorities. He mentioned disaster risk reduction, disaster resilience, and UN-GGIM Global Geospatial Information Management.

8. Discussion on the workflow for drafting the implementation plan

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Geneva, Switzerland, 25-29 September 2017

LIST OF PARTICIPANTS

FERRARO, Ralph	NOAA/NESDIS/STAR 5825 University Research Court, 4001 College Park, MD 20740 Tel: +1 301 405 0893 Email: ralph.r.ferraro@noaa.gov
KUBOTA, Takuji	Earth Observation Research Center (EORC) Japan Aerospace Exploration Agency (JAXA) 2-1-1 Sengen, Tsukuba-shi, Ibaraki 305-8505, JAPAN Tel.: 050-3362-3637 Email: kubota.takuji@jaxa.jp
KULESHOV, Yuriy	Bureau of Meteorology (BoM) GPO Box 1289 Melbourne VIC 3001 Australia Tel.: Email: yuriy.kuleshov@bom.gov.au
XIE, Pingping	NOAA/NWS/NCEP/CPC 5830 University Research Court, Bldg. NCWCP College Park, MD 20740 Tel.: +1 301 683 3388 Email: pingping.xie@noaa.gov

WMO Secretariat

BADDOUR, Omar	Chief, Data Management Applications Division (DMA) Climate Prediction and Adaptation branch (CLPA) Climate and Water Department (CLW) World Meteorological Organisation (WMO) Geneva, Switzerland Phone: +41227308268 Email: obaddour@wmo.int
DONOHO, Natalia	Seconded Expert from NOAA World Meteorological Organization,

	<p>7 bis, Avenue de la Paix 1211 GENEVA 2 Switzerland Tel.: +41 22 730 8531 Fax: +41 22 730 8021 Email: ndonoho@wmo.int</p>
HECHLER, Peer	<p>Scientific Officer Data Management Applications Division Climate and Water Department World Meteorological Organization 7 bis, avenue de la Paix Case postale 2300 CH 1211 Genève 2 SUISSE Tel.: +41 (0)22 730 8224 Email: phechler@wmo.int</p>
KURINO, Toshiyuki	<p>Chief, Space-based Observing System Division WMO Space Programme Observation and Information Systems Department World Meteorological Organization, 7 bis, Avenue de la Paix 1211 GENEVA 2 Switzerland Tel.: +41 22 730 8228 Fax: +41 22 730 8181 Email: tkurino@wmo.int</p>
OBREGÓN, André	<p>Technical Expert for Climate GEO Secretariat 7 bis, avenue de la Paix • Case postale 2300 CH-1211 Geneva 2, Switzerland Tel: +41 22 730 84 84 E-mail: aobregon@geosec.org</p>

A provisional agenda for
the ad-hoc meeting for drafting

the Space-based Weather and Climate Extremes Monitoring (SWCEM)

Demonstration Project (SEMDP) Implementation Plan

Geneva, 25-29 September 2017

Day 1 (25 September) 9:00 – 17:00

1. Welcome (CLW/DMA, OBS/SBOS)
2. Introduction to SEMDP (OBS/SBOS Toshiyuki Kurino)
3. Lesson learned from the Sever Weather Forecasting Demonstration Project (SWFDP) (WDS/DPFS Alice Soares)
4. Case Study
 - AuBoM, WMO RA-V Pacific Islands RCC Network (Yuriy Kuleshov)
 - NOAA/CPC, USRCC Washington DC (Pingping Xie)
5. Introduction to Space-based rainfall monitoring products for climate monitoring/diagnostics
 - CMORPH (NOAA/CPC Pingping Xie)
 - GSMaP (JAXA/EORC)
 - Other promising products for monitoring persistent heavy rainfall and draught (NOAA/NESDIS Ralph Ferraro)
6. Use of Remote Sensing Data for Climate Monitoring in WMO RA-II and V (TT-URSDCM Yuriy Kuleshov)
7. Utilization of outcomes from SEMDP for social benefits (GEO André OBREGÓN)
8. Discussion on the workflow for drafting the implementation plan

Day 2-4 (26 – 28 September) 9:00 – 17:00

Drafting SEMDP implementation plan

Day 5 (29 September) 9:00 – 15:00

1. Reviewing the draft implementation plan
2. Reviewing the concept note for the workshop on SEMDP, 8-10 January 2018, Jakarta, Indonesia