

Prepared by WMO
Agenda Item: C.16
Discussed in Plenary

**WMO SPACE-BASED WEATHER AND CLIMATE EXTREMES MONITORING
(SWCEM) DEMONSTRATION PROJECT (SEMDP)
IN EAST ASIA AND WESTERN PACIFIC**

In response to CGMS action: Plenary-A45.05, Plenary-A45.06, Plenary-A45.07,
Plenary-A45.08

The workshop on Space-based Weather and Climate Extremes Monitoring (SWCEM) Demonstration Project (SEMDP) was held 19-22 March 2018 in Jakarta, Indonesia. It was a kick-off workshop on SEMDP to be implemented in East Asia and Western Pacific Region.

The SEMDP was conducted by WMO RCCs with NMHSs in East Asia and Western Pacific regions. During the SEMDP, the WMO RCCs will validate satellite derived products with CLIMAT and/or SYNOP data for monitoring persistent heavy/little rainfall and drought. It is a goal to do the monitoring over relatively short periods from pentads (5-day) up to a month.

The Workshop report with the SEMDP Implementation Plan is available from:
http://www.wmo.int/pages/prog/sat/meetings/SEMDP_Workshop/SEMDP_Workshop.html

Action/Recommendation proposed:

CGMS Members and Observers to review the SEMDP Implementation Plan.

1 INTRODUCTION

It is recognized that there is a need to better utilize and improve the monitoring of weather and climate extremes from space. Stakeholders to pursue this objective include satellite operators, WMO Regional Climate Centres (RCCs), National Meteorological and Hydrological Services (NMHSs) and other relevant institutes. The pivotal role to be played by WMO was the reason to give visibility of the Space-based Weather and Climate Extremes Monitoring (SWCEM) to WMO member states by requesting endorsement and decision from the WMO EC-69 in May 2017.

High-resolution products, potentially useful for the SWCEM, are available, often on a quasi-real time basis, e.g. for monitoring precipitation, land surface temperatures, soil moisture and vegetation. The existence and adequacy of such products provides opportunities to evaluate the products for monitoring weather and climate extremes on a short-term (pentad or weekly) basis. Although it is likely that current satellite products alone may be not fully adequate from the beginning, the quasi-operational use of the satellite products in a demonstration phase will, in conjunction with surface base observations, help to improve quality and contributions of the satellite products themselves.

To this end it is proposed to begin the SWCEM with Demonstration Projects called SEMDP to be conducted by WMO RCCs. A couple of RCCs have already volunteered to pursue individually such demonstration projects over a period of two years. The Status and progress in the demonstration phase and the performance of satellite products will be evaluated and can also be reported to WMO EC-70 in June 2018, and also WMO Cg-18 in 2019.

2 WORKSHOP ON SPACE-BASED WEATHER AND CLIMATE EXTREMES MONITORING (SWCEM) DEMONSTRATION PROJECT (SEMDP) IN EAST ASIA AND WESTERN PACIFIC REGIONAL SUBPROJECT

The workshop on Space-based Weather and Climate Extremes Monitoring (SWCEM) Demonstration Project (SEMDP) was held from 19-22 March 2018 at Badan Meteorologi, Klimatologi, dan Geofisika (BMKG) in Jakarta, Indonesia, with the participation of RCCs (Australia, China, Indonesia, NOAA/NWS/CPC, Philippines, Singapore), NMHS (Vietnam) and satellite operators (CMA, JAXA and NOAA/NESDIS). It was the kick-off workshop on SEMDP to be implemented in East Asia and Western Pacific. The workshop participants were asked to review and endorse the SEMDP Implementation Plan. The finalized Plan and also the workshop report is available from:

http://www.wmo.int/pages/prog/sat/meetings/SEMDP_Workshop/SEMDP_Workshop.html

In responding to the action items A45.05 and A45.06 by CGMS-45;

A45.05: NOAA/NESDIS to support the Space-based Monitoring of Weather and Climate Extremes project by providing satellite observations of heavy precipitation events, and land surface parameters for monitoring droughts. The

observations are required with a short latency of about one day. Furthermore the project requires the creation of climate reference data sets which will be used by the RCCs to classify observations as extreme event or not.

A45.06: JAXA to support the Space-based Monitoring of Weather and Climate Extremes project by providing a shortterm (from 5-day up to monthly) climate normal from GSMaP data archives as a reference precipitation data set for the initial SEMDP areas, i.e. East Asia and Western Pacific regions. JAXA is also requested to set-up the on-line environment to provide GSMaP data with short latency to be utilized in the SEMDP.

the SEMDP Workshop extracted the following recommendations;

Recommendation 1: NOAA/CPC to provide “rain gauge calibrated” CMORPH via Internet with users’ guide (deadline: August 2018)

Recommendation 2: JAXA to provide “rain gauge calibrated” GSMaP via Internet with users’ guide (deadline: August 2018)

Recommendation 3: NOAA/CPC, JAXA and CMA/NSMC to decide the data format for the SEMDP satellite derived products (deadline: June 2018)

Recommendation 4: CMA/NSMC to propose the list of satellite products related to drought monitoring (deadline: August 2018)

In responding to the action items A45.08 by CGMS-45;

A45.08: CEOS/CGMS Working Group on Climate to provide feedback on the proposed definition for ICDR.

The 9th Session of CEOS-CGMS Working Group Climate was held in March 27-29, 2018 in Geneva, Switzerland. The definition was discussed and the proposed update is as follows:

Definition: *An Interim Climate Data Record (ICDR) regularly extends in time a Fundamental or Thematic Climate Data Record using a system having optimum consistency with and lower latency than the system used to generate the FCDR or TCDR.*

The action item A45.07 by CGMS-45;

A45.07: IPWG co-chairs and rapporteur to provide guidance on the estimation of uncertainties and representativeness of the short-latency precipitation products related to the Space-based Monitoring of Weather and Climate Extremes Project

will be discussed in the 9th Session of IPWG in November 5-9.

3 EXPECTED OUTCOMES OF SEMDP

During the SEMDP, the WMO RCCs will validate satellite derived products with CLIMAT and/or SYNOP data for monitoring persistent heavy/little precipitation and

drought. It is a goal to do the monitoring over relatively short periods from pentads (5-day) up to a month.

The 2-year SEMDP will concentrate on products at national and regional levels.

Items to be worked on include:

- (i) monitoring persistent heavy/little precipitation and droughts;
- (ii) making best use of existing and newly developed satellite derived products and time series of measurements;
- (iii) making best use of products that combine satellite information with in-situ and/or model reanalysis data;
- (iv) recommendations as to which products should be transitioned from research to operations, including an assessment of those products.

A final report of the SEMDP will be compiled and reviewed. The next steps will then be based on the outcome of the demonstration phase.