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COMMISSION FOR BASIC SYSTEMS
OPEN PROGRAMME AREA GROUP ON INTEGRATED OBSERVING SYSTEMS

INTER-PROGRAMME EXPERT TEAM ON SATELLITE UTILIZATION AND PRODUCTS

ITEM: 11

FOURTH SESSION

GENEVA, SWITZERLAND, 26 FEBRUARY – 1 MARCH 2018

Original: ENGLISH

Space-Based Weather and Climate Extremes Monitoring (SWCEM) Demonstration Project (SEMDP)

(Submitted by Secretariat)

Summary and Purpose of Document

The outline of the initial steps and the key elements of the SEMDP were presented. The 2-year SEMDP in 2018-19 will focus on Region II and V , and 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.

ACTION PROPOSED

The session is invited to note the information provided.

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DISCUSSION

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 in May 2017 (See ANNEX).

Here it is instructive to recall the definition an extreme weather and extreme climate events as provided in the IPCC 5th Assessment Report (WG 1 Glossary):
`An extreme weather event is an event that is rare within its statistical reference distribution at a particular place. Definitions of `rare` vary, but an extreme weather event would normally be as rare as or rarer than the 10th or 90th percentile. By definition, the characteristics of what is called extreme weather may vary from place to place. An extreme climate event is an average of a number of weather events over a certain period of time, an average which is itself extreme (e.g. rainfall over a season)`.

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 RCCc. A couple of RCCs have already volunteered to pursue individually such demonstration projects over a period of two years. After the demonstration phase the results and the performance of satellite products will be evaluated and can also be reported to WMO EC.

WORKSHOP ON OPERATIONAL SPACE-BASED WEATHER AND CLIMATE EXTREMES MONITORING

A workshop on Operational Space-based weather and climate Extremes Monitoring was held from 15-17 February 2017 at WMO in Geneva. The aim of the workshop was to foster a dialogue among satellite operators and WMO RCCs, NMHSs and relevant institutes to stimulate the utilization of space-based observation data and products for monitoring selected 'Weather and Climate Extremes' on a routine basis ("in operations"), in response to current and future user requirements. Several recommendations were issued by the workshop including in particular to set up a SEMDP and to draft an implementation plan for SEMDP in the East Asia-Western Pacific region; the Project should demonstrate the use of existing and newly developed satellite-derived products in quasi real time operations; products should consist of time series of measurements specific to the regional and national levels, along with related in-situ and/or model reanalysis data, and incorporating relevant research. The report is available from: http://www.wmo.int/pages/prog/sat/documents/SAT-GEN_Workshop- Monitoring-Extremes-Space-Feb2017.pdf

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

The ad-hoc meeting for drafting the 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 RCCs, 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. The report is available from:

http://www.wmo.int/pages/prog/sat/meetings/SEMDP_Workshop/documents/AD-HOC%20MEETING%20FOR%20DRAFTING%20THE%20SEMDP%20IMPLEMENTATION%20PLAN.pdf

OUTLINE OF THE SWCEM DEMONSTRATION PROJECT (SEMDP)

The outline of the initial steps and the key elements of the SEMDP are as follows:

- WMO Secretariat was invite experts from WMO RCCs and satellite operators for planning the SEMDP workshop and drafting an Implementation Plan (IP) for the SEMDP in September 2017. Experts from CBS and CCl was requested to review the IP and provide comments.

- The draft SEMDP Implementation Plan was finalized by WMO Secretariat in January 2018.

- The SEMDP will be conducted by WMO RCCs in East Asia and Western Pacific regions and those will also be asked to review and endorse the implementation plan.
  The draft SEMDP Implementation Plan is available from:
  http://www.wmo.int/pages/prog/sat/meetings/SEMDP_Workshop/documents/20180206_draft_SEMDP%20Implementation%20Plan.docx

- WMO will call for a workshop as kick-off for the SEMDP in March 2018.
  The report is available from:
  http://www.wmo.int/pages/prog/sat/meetings/SEMDP_Workshop/SEMDP_Workshop.html

- During the SEMDP the WMO RCCs will validate satellite derived products with CLIMAT and/or SYNOP data for monitoring persistent heavy precipitation and drought. It is a goal to do the monitoring over relatively short periods from pentads (5-day) up to a month. It is noted that currently extreme events are diagnosed on monthly basis by most of RCCs.

The 2-year SEMDP will concentrate on products at national and regional levels. Items to be worked on include:

(v) monitoring persistent heavy precipitation and droughts;
(vi) making best use of existing and newly developed satellite derived products and time series of measurements;
(vii) making best use of products that combine satellite information with in-situ and/or model reanalysis data;
(viii) 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.

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