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CONSULTATIVE MEETINGS
ON HIGH-LEVEL POLICY ON SATELLITE MATTERS

ITEM: 2.2

TWELFTH SESSION

GENEVA, SWITZERLAND, 21 JUNE 2014

Original: ENGLISH

PROGRESS AND FUTURE PLANS FOR THE ARCHITECTURE FOR CLIMATE MONITORING FROM SPACE

(Submitted by John Bates, USA, Chair of the CEOS-CGMS Working Group on Climate)

Summary and Purpose of Document

An architecture describes the structure of a system as reflected in its building blocks and their relationship to each other and to the environment. The descriptive format of the architecture is tailored to the particular needs of the users and stakeholders, in this case the climate community, and makes use of common definitions and standards in its construction. CEOS, CGMS and WMO, have issued a report that outlines the logical view of an architecture for climate monitoring from space. The successful collaboration among CEOS and CGMS on this architecture has led to the formation of a Joint CEOS-CGMS Working Group on Climate which was approved by both organizations in the past year. The working group is now involved in populating the data and creating analysis tools that will allow us to examine how the architecture is actually implemented in various space agencies. This is called the physical view of the architecture. The working group is using an Essential Climate Variable questionnaire to create an inventory that will capture this view. The steps involved in this architecture process, and the work space agencies are performing to contribute essential climate variables, are captured in elements of a work plan for the next 3 years.

ACTION PROPOSED

The twelfth session is invited to:

Endorse the CEOS – CGMS Joint Working Group on Climate work plan.

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DISCUSSION

INTRODUCTION

The CEOS-CGMS Working Group on Climate has adopted for its activities during the 2014-2016 period the Work Plan worked out by CEOS. The *2014 CEOS Work Plan* has been developed by the CEOS Executive Officer (CEO) and the CEOS Chair (European Organisation for the Exploitation of Meteorological Satellites [EUMETSAT]), in consultation with the CEOS Strategic Implementation Team Chair (Centre National d'Études Spatiales [CNES]), CEOS Secretariat, CEOS Working Groups, CEOS Virtual Constellations, CEOS Ad Hoc Teams, the CEOS membership at large, and CEOS's external stakeholders. The purpose of this document is to set forth near-term objectives and deliverables designed to achieve the goals outlined in the *CEOS Strategic Guidance* document. It includes a description of CEOS activities to be executed in the current calendar year (2014), and summarizes anticipated activities for the subsequent two years (2015-2016).

Detailed information, including planned milestones and deliverables, accomplishments, and issues, is available and routinely updated in the CEOS Action Tracking System. This Work Plan will be revised annually; however, the priorities and activities outlined herein are expected to remain fairly consistent from year to year. Therefore, this Work Plan is likely to need only minor revisions each year, as current activities are completed, planned activities are executed, and new initiatives are projected. The Work Plan was recently finalized by CEOS and endorsed at the CGMS Plenary. The specific actions are focused on climate monitoring, research, and services (CMRS).

MAIN THRUSTS

1. Coordinate development of Climate Data Records (CDRs) and related datasets addressing Essential Climate Variables (ECVs) established by the Global Climate Observing System (GCOS).

2014-2016: Through the CEOS-CGMS Working Group on Climate (WGClimate), CEOS and CGMS Agencies will complete the first version of the ECV inventory. This inventory will then form the basis for a gap analysis and the subsequent development of a coordinated action plan to address the identified gaps and opportunities. Guidelines for ECV assessments of both process and scientific metrics will also be developed to support the gap analysis and subsequent development of the action plan. The ECV assessment guidelines will be applied in collaboration with the CEOS Virtual Constellations.

Once a first version of the ECV inventory, gap analysis and action plan have been delivered, the ECV inventory will be further developed with additional records, leading to new versions of the gap analysis and associated action plan to further optimize ECV coverage and depth. This update cycle is anticipated to start in the second half of the three-year period. Linkages will also be put in place between the ECV Inventory and the *GCOS Implementation Plan 2010* reporting. In addition, an effort is underway to collaborate with the in situ community.

2. Continue cooperation with GEO, GCOS, and the World Meteorological Organization (WMO) in the development of a space-based system to support climate information and adaptation

2014-2016: CEOS-CGMS Agencies will continue to cooperate with GEO, GCOS, and WMO by implementing Agency actions to achieve the socio-economic benefits described in the CEOS-CGMS-WMO *Strategy Towards an Architecture for Climate Monitoring from Space*, with emphasis on the strategy's Applications and Decision-Making pillars. WGClimate will consider how to address and contribute to the WMO's Global Framework for Climate Services (GFCS). WGClimate will also broaden CEOS-CGMS reporting to the UNFCCC Subsidiary Body for Scientific and

Technological Advice-Research and Systematic Observation (SBSTA-RSO) in collaboration with GCOS. This reporting should include not only CEOS and CGMS support to the GCOS implementation plan, but also CEOS-CGMS contributions to GFOI and Carbon Strategy, together with any relevant CGMS-specific contributions.

Completion of the ECV inventory, gap analysis, and action plan will allow WGClimate to provide continuous feedback to climate monitoring and research efforts. These actions will allow CEOS-CGMS to be prepared to respond to the GCOS Adequacy Report/Satellite Supplement (or equivalent), when published by GCOS.

WAY FORWARD

The following Work Plan elements have been identified for action over the 2014-2016 period.

Climate Monitoring, Research, and Services Objectives/Deliverables: 2014-2016			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible Entity**
CMRS-1: ECV inventory (first version)	Q2 2014	The ECV inventory provides the foundation for the fulfillment of the three main objectives assigned to the Joint WGClimate. At the first meeting of the Joint Working Group in March 2014, the current status of the inventory will be reviewed in the three domains (land, ocean and atmosphere) and the actions needed to achieve "Version 1" status of the inventory will be identified.	Joint WGClimate with support from VCs
CMRS-2: Gap analysis (first version)	Q4 2014	Also, at the first meeting of the Joint Working Group, the reference process will be defined for the gap analysis (including guidelines for ECV assessments), together with the necessary tools to support the implementation of this process. The gap analysis activities will commence once (a) Version 1 of the ECV inventory is available, and (b) the reference process for the gap analysis and supporting tools are available.	Joint WGClimate with support from VCs
CMRS-3: Action plan (first version)	Q1 2015	Once the gap analysis has been completed, a coordinated action plan will be developed to: • Create the conditions for delivering further climate data records from existing observational data by targeting processing gaps/shortfalls/opportunities (e.g., cross-calibration, reprocessing) • Optimize the planning of future satellite missions and constellations to expand existing and planned climate data records, in terms of both coverage and record length, and to address gaps with respect to GCOS requirements	Joint WGClimate with support from VCs

Climate Monitoring, Research, and Services Objectives/Deliverables: 2014-2016			
Objective/Deliverable	**Projected Completion Date**	**Background Information**	**Responsible Entity**
CMRS-4: Case studies linking CDRs to societal applications and informed policy decisions	Q1 2015	To provide a connection between the availability of climate data records and the socio-economic benefits that could accrue, particularly from a policy-making perspective, case studies will be performed to characterize the link between the *capability to make informed policy decisions* and the *availability of climate data record information*. These case studies will make use of the CEOS-CGMS-WMO climate monitoring architecture and are expected to involve drilling down within the Applications and Decision-making pillars of the architecture. One of the case studies will be in an application area of the Global Framework for Climate Services (GFCS)—see CMRS-5.	Joint WGClimate
CMRS-5: Contributions to the Global Framework for Climate Services (GFCS)	Q4 2014	The Joint Working Group will examine the most effective means of contributing to the GFCS from the viewpoints of (a) ensuring adequate representation of the capabilities and plans of CEOS and CGMS agencies, as represented by the ECV inventory, gap analyses and action plan, and (b) formalization of the relationship between the GFCS and the Joint Working Group, including possible GFCS representation in working group meetings.	Joint WGClimate
CMRS-6: Report to UNFCCC Subsidiary Body for Scientific and Technological Advice-Research and Systematic Observation (SBSTA-RSO) at COP-20	Q3 2014	This report will address CEOS and CGMS support to the GCOS Implementation Plan, as well as CEOS contributions to GFOI and *GEO Carbon Strategy*. In addition, relevant CGMS-specific activities may also be included. Furthermore, in preparation for COP-21, a set of actions will be identified at the SIT Technical Workshop in September 2014 for subsequent consideration at the CEOS Plenary in October 2014.	Joint WGClimate with support from GFOI and future CEOS carbon entities
CMRS-7: CEOS Response to the GCOS IP and Satellite Supplement for submission (via GCOS) to COP-21	Q2 2015	The draft CEOS response to the GCOS IP and Satellite Supplement will be presented for endorsement at SIT-30 in Spring 2015. Following endorsement, it will be integrated into the GCOS Progress Report in August/September 2015 for submission to COP-21.	Joint WGClimate
CMRS-8: Incorporation of in situ data holdings within the ECV inventory	Q4 2015	To extend the benefits of the infrastructure of the ECV inventory to climate-relevant in situ data holdings, in January 2013 it was agreed to assess the feasibility of incorporating such information within the scope of the ECV inventory. At the first meeting of the Joint Working Group, progress on this objective will be assessed.	Joint WGClimate
CMRS-9: Update of ECV inventory, gap analysis and action plan (Version 2)	Q2 2015 to Q4 2016	Once the first full cycle has been completed (see CMRS-1 to CMRS-3), resulting in Version 1 of the ECV inventory, gap analysis and action plan, a new cycle will be triggered by the availability of an updated ECV inventory, leading to Version 2 of these deliverables.	Joint WGClimate with support from VCs

ISSUES

The work plan is grouped into three themes:

1) further progress on the physical architecture (CMRS-1, 2, 3, and CMRS-8, 9),
2) ensuring relevance of climate data records to societal applications and decision making (CMRS- 4 and CMRS-5), and
3) reporting progress of CEOS and CGMS agencies in climate monitoring to the UNFCCC and GCOS (CMRS-6 and CMRS-7).

This is an aggressive work plan that relies on the volunteer time contributed by Member representatives to the working group. The engagement of Agencies and Members in this effort is greatly appreciated.

CONCLUSIONS AND RECOMMENDATIONS

The Joint CEOS-CGMS Working Group on Climate held a successful first meeting and has developed an ambitious work plan for activities over the next 3 years.

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