

CASE STUDIES FOR THE ARCHITECTURE FOR CLIMATE MONITORING FROM SPACE

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WORLD
METEOROLOGICAL
ORGANIZATION

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- I. Cg-18 Climate Architecture Resolution
- II. Climate Architecture Case Studies



I. Cg-18 Climate Architecture Resolution



Background

ABRIDGED FINAL REPORT OF SIXTEENTH CONGRESS

Resolution 19 (Cg-XVI) - DEVELOPMENT OF AN ARCHITECTURE FOR CLIMATE MONITORING FROM SPACE

THE CONGRESS,

Noting:

- (1) Article 2 of the Convention of the World Meteorological Organization,
- (2) Resolution 5 (Cg XIV) - WMO Space Programme,
- (3) Resolution 30 (Cg-XV) - Towards enhanced integration between WMO observing systems,
- (4) Paragraph 9.2.5 of the *Abridged Final Report with Resolutions of the Fifteenth World Meteorological Congress* (WMO-No. 1026) reaffirming the Executive Council decisions to provide full support for the GEO process and resulting GEOSS and to support its implementation to the maximum extent possible within the WMO mandate,
- (5) Resolution 3 (Cg-XVI) - Global Observing System,
- (6) Resolution 48 (Cg-XVI) - Global Framework for Climate Services,

Considering:

- (1) The benefits that have been achieved through the coordinated, collaborative and cost-effective approach to the planning and operation of an end-to-end system for weather observations, modelling, analysis and forecasting,
- (2) The increasingly important role that space-based observations are playing in the long-term monitoring of the Earth's environment,
- (3) The substantial investment that Members have made in Earth-observation satellites to monitor and study weather, water, climate and related natural disasters,
- (4) The importance of long-term, sustained and coordinated observations of the Earth's climate, climate change and variability for the world's population, and particularly those at most risk,
- (5) The benefits in efficiency, sustainability and cost-effectiveness that could be achieved through increased coordination of efforts among all parties involved in the planning and implementation of space-based observational capabilities and related operational processing activities for climate monitoring,
- (6) The underpinning role that observations will play in the Global Framework of Climate Services (GFCS),
- (7) The importance of integration of ground-based and space-based observations in the successful implementation of the WMO Integrated Global Observing System (WIGOS),

WMO Resolution 19 (Cg-XVI) of 2011, requested WMO to

- “to develop an architecture ... for climate monitoring as a component of the future WIGOS and GFCS, for consideration by Congress”,
- as a “major initiative of the WMO Space Programme”, and
- “in coordination with satellite operators, CEOS, CGMS, GCOS, GEO and WCRP”.



Resolution 51(Cg-18)



World Meteorological Organization
WORLD METEOROLOGICAL CONGRESS
Eighteenth Session
Geneva, 3 to 14 June 2019

Cg-18/Doc. 6.1(5)
Submitted by:
Secretary-General
26.IV.2019
DRAFT 1

AGENDA ITEM 6: EARTH SYSTEM OBSERVATIONS AND PREDICTIONS

AGENDA ITEM 6.1: WMO Integrated Global Observing System

SPACE-BASED OBSERVATIONS

DRAFT RESOLUTIONS

Draft Resolution 6.1(5)/1 (Cg-18)

IMPLEMENTATION OF THE ARCHITECTURE FOR CLIMATE MONITORING FROM SPACE

THE WORLD METEOROLOGICAL CONGRESS,

Recalling Resolution 5 (Cg-XIV) – WMO Space Programme, which initiated a new major WMO Space Programme as a cross-cutting programme to increase the effectiveness and contributions from satellite systems to WMO Programmes,

Recalling Resolution 19 (Cg-XVI) – Development of an Architecture for Climate Monitoring from Space, which requested WMO to develop the architecture for climate monitoring from space as:

- (1) A component of the future WMO Integrated Global Observing System (WIGOS) and the Global Framework for Climate Services (GFCS), for consideration by Congress,
- (2) A major initiative of the WMO Space Programme and as an important component of WIGOS and in coordination with satellite operators, the Committee on Earth Observation Satellites (CEOS), the Coordination Group for Meteorological Satellites (CGMS), the Global Climate Observing System (GCOS), the Group on Earth Observations (GEO) and the World Climate Research Programme (WCRP),

Recalling further

- (1) The Abridged Final Report with Resolutions of the Seventeenth World Meteorological Congress (WMO-No. 1157), paragraph 4.2.4.16, in which Congress underscored the need for the satellite operators and the Secretariat to pursue the development of the Architecture for Climate Monitoring from Space with a view to ensure seamless continuity of climate monitoring satellite programmes, comparability of measurements, provisions for continuity and contingency, and traceability to reference standards,
- (2) Resolution 1 (EC-68) – WMO support to the Paris Agreement, in which Executive Council decided to further address the provision of reliable, long-term, high-quality observations of global atmospheric composition changes through the revised GCOS Implementation Plan addressing Systematic Observations in support of the United Nations Framework Convention on Climate Change (UNFCCC), the Global Atmosphere Watch (GAW) and

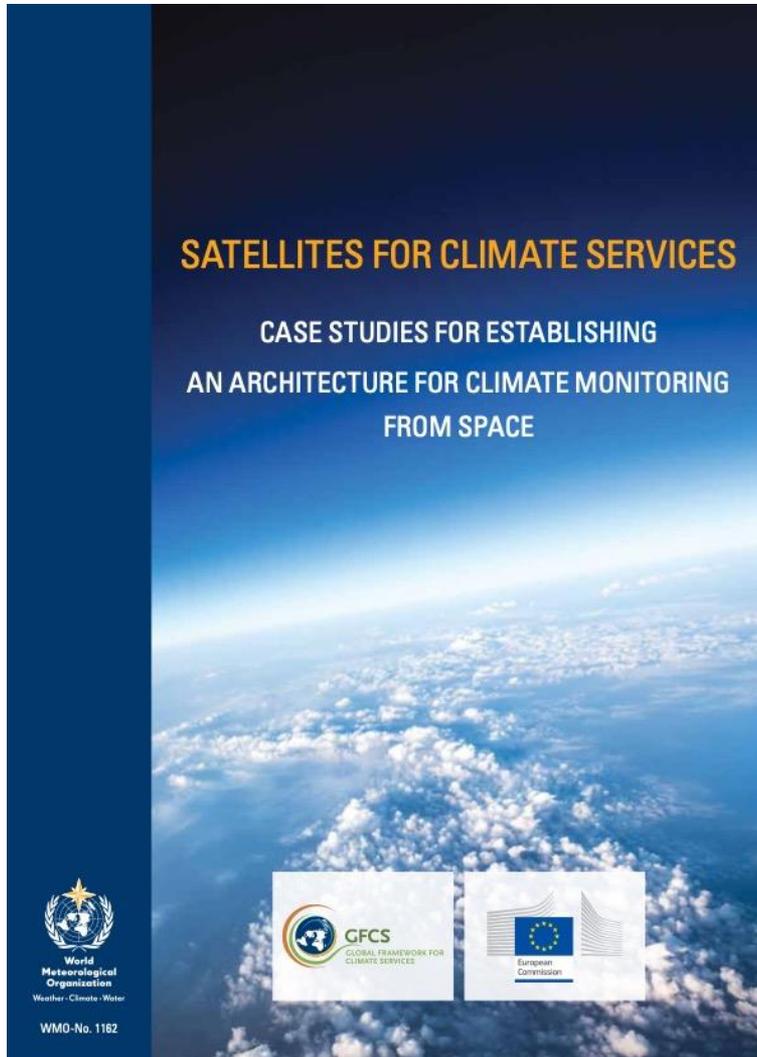
- Developed during WMO Workshop February 2019
- Reviewed by WGClimate-10
- Acknowledged by CEOS-SIT-34
- Acknowledged by CGMS-47
- Endorsed by Cg-18 in June 2019
- [Resolution 51 \(Cg-18\)](#)
[“Implementation of the architecture for climate monitoring from space”](#)



II. Climate Architecture Case Studies



2015 Report “Satellites for Climate Services”



- In 2015, WMO with GFCS and EC published a report on “Satellites for Climate Services – Case Studies for Establishing an Architecture for Climate Monitoring from Space”
- [WMO-No. 1162](#)



2015 Report - Purpose and Contents

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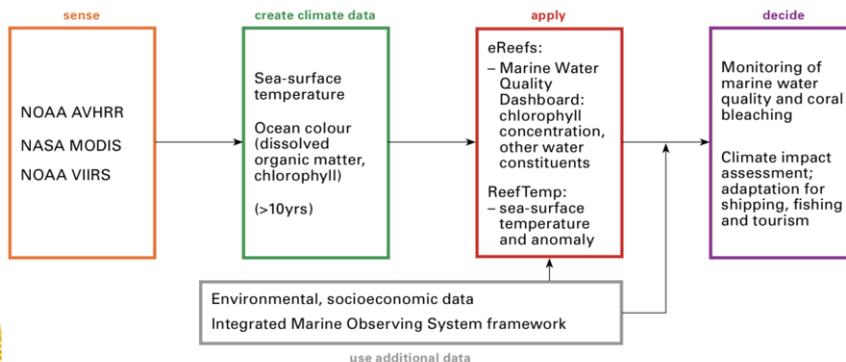
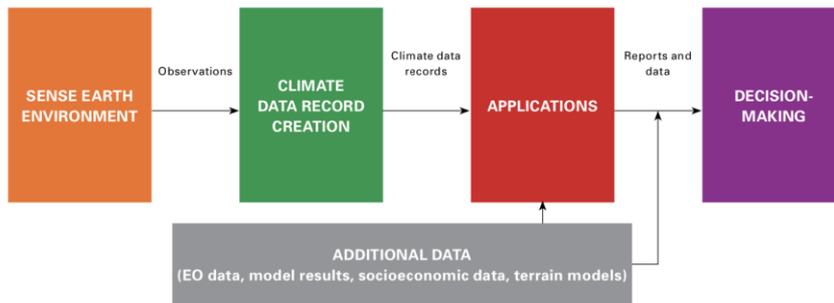
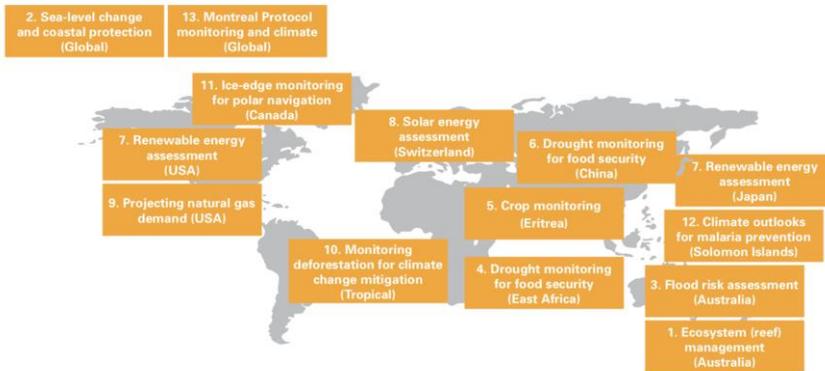
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- To demonstrate the direct or indirect value of Earth observation satellites for climate services
- Contents
 - Executive summary
 - Introduction and context
 - 13 case studies
 - Concluding findings and remarks
 - Appendix



2015 Report – Case Studies

- Case Study Structure
 - Structured Summary
 - Information Flow (based on climate architecture logical view)
 - Description
- Typical length: 3-6 Pages



2015 Report – Structured Summary

1.	Title
2.	Service
3.	End users
4.	Intermediate users
5.	Application(s)
6.	Models used
7.	Climate data records used
8.	Satellite observations used
9.	Agencies that produce records
10.	Sustainability of Service (demonstration or ongoing)



Proposal for a New Report

- WGClimate-10 Discussions
 - “The discussion was focused on the provision of further case studies on the usage of climate data records in applications to further promote the architecture for climate monitoring from space.”
 - “The analysis shall keep the same style as in the 2015 WMO report (Bojinski et al.).”
 - “WGClimate #11 will carefully review the proposed case studies and decides which will be included in the report.”



Relevant WGClimate-10 Actions

- **WGClimate10-12:** Confirmation of availability of resources within WMO to lead and publish a report on case studies illustrating the use of climate data records in climate applications (Werner)
- **WGClimate10-13:** Pre-selection of case studies to be part of the case studies report (Simon Pinnock, Selma Cherchali, EC, All)



Status as of WGClimat-11

- WMO is ready – in cooperation with other relevant entities – to lead the development and publication of the proposed report
- GFCS is supportive of the initiative and will be happy to publicize the report through its network and have its logo on it.
- GFCS is not in a position to provide human or financial resources, but could help identify cases in Latin America and the Caribbean and possibly in the Pacific and could review other case studies.



Status as of WGClimat-11

- GCOS is ready to support the initiative as case studies like this support the use and development of ECV.
- However, resources are very limited in GCOS at present and there is no possibility for financial support for this in the near term.
- GCOS should be able to help with staff time for editing and can suggest case studies and points of contact for them.



Identification of Contributors

- With their logos
 - GFCS (case studies and review)
 - GCOS (case studies and review)
 - EC (confirm)
 - Others?
- Branding?
- Other support?



Identification of Possible Case Studies

- Shall we revisits 2015 Case Studies?
- Possible new Case Studies:
 - Proposed by GFCS
 - Proposed by GCOS
 - Case studies by ESA, NASA, Climate Observatory, EC and others
 - NOAA Case Studies
 - CM-SAF Case Studies
 - SEMDP (preliminary only)
 - Annual WMO State of the Climate and other products to inform policy- and decision makers



New Report – For Discussion

- Do we need to revise the overall 2015 Report structure?
- Introduction:
 - Evolution of the climate architecture
 - Reference to Cg-18 resolution, WIGOS 2040
 - Updates on relevant GCOS, GFCS, CEOS activities
 - Role of WGClimate and ECV Inventory
- Do we need to revise the case studies structure?
- Other?



Proposed Timeline

Date	Activity
4-6 September 2019	<ul style="list-style-type: none"> • Coordinate with WGClimate/decision to go ahead • Establish editorial/reviewing board (EC, ESA, GCOS, GFCS, ...) • Identify possible case studies and lead authors
October 2019	<ul style="list-style-type: none"> • Develop case study template
October/November 2019	<ul style="list-style-type: none"> • Confirm case studies and lead authors • Provide case study template
Mid-January 2020	<ul style="list-style-type: none"> • Deadline for submission of written case study drafts by lead authors
Mid-March 2020	<ul style="list-style-type: none"> • Review of case studies by the editorial/reviewing board • Review of draft publication by WGClimate-12
End March 2020	<ul style="list-style-type: none"> • Compile/final editing of publication by WMO
April 2020	<ul style="list-style-type: none"> • Publication (as .pdf and, funds permitting, in print)
Jun 2020	<ul style="list-style-type: none"> • Presentation at CM-15 and EC-72



Thank you

<http://www.wmo.int/sat>



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