WEATHER CLIMATE WATER

CASE STUDIES FOR THE ARCHITECTURE FOR CLIMATE MONITORING FROM SPACE

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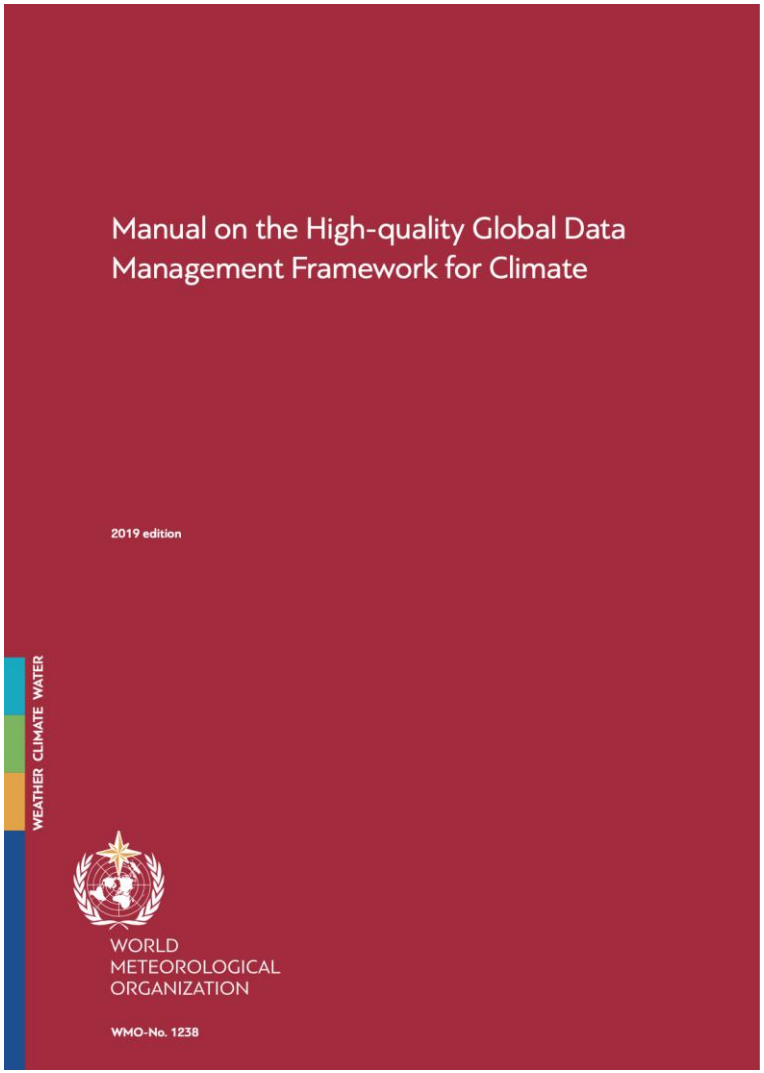
WMO Space Programme Office

WGClimate-12, Online Meeting
5-7 May 2020

WORLD METEOROLOGICAL ORGANIZATION

WMO and Climate - Updates

Manual on the High-quality Global Data Management Framework for Climate

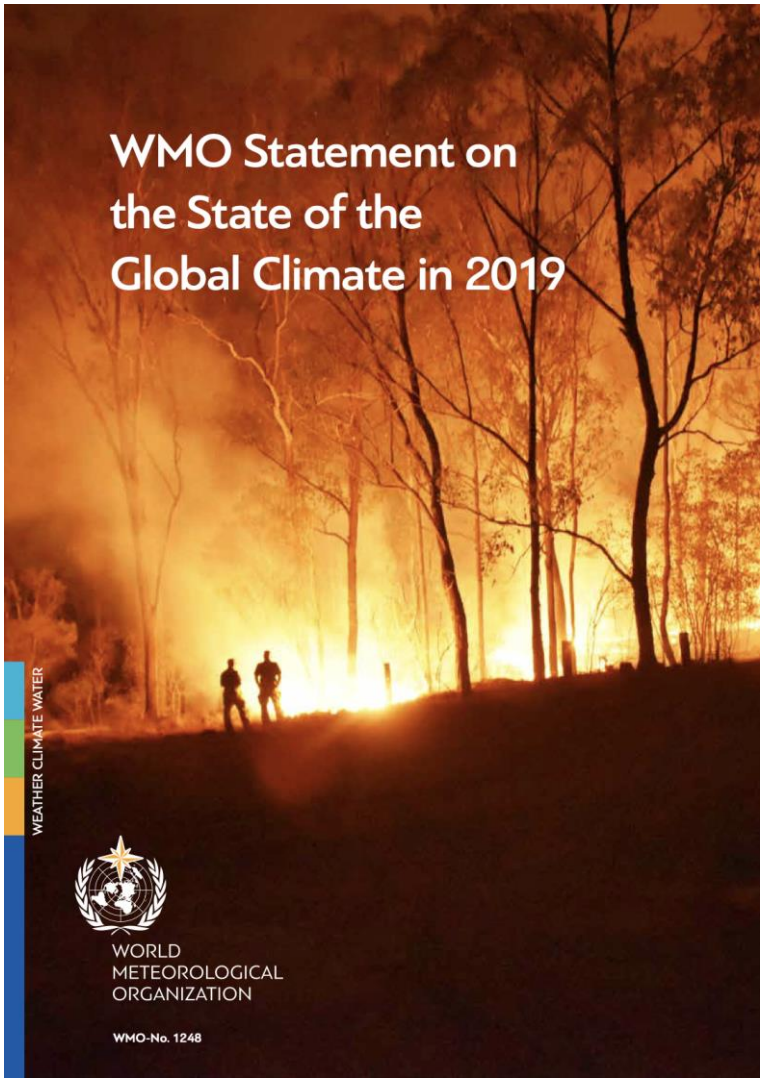


- Part of (Annex to) the WMO Technical Regulations
- The Technical Regulations are determined by the World Meteorological Congress in accordance with Article 8 (d) of the WMO Convention
- Comprising standard practices and procedures, recommended practices and procedures
- Article 9 (a) ,(b) of the WMO Convention requires all WMO Members to do their upmost to implement standard practices and to report on non-compliance
- WMO-No. 1238

Manual on the High-quality Global Data Management Framework for Climate

- The Manual is WMO's key publication regarding data set definitions.
- The related work of the WG Climate is much appreciated and expected to help developing the Manual further.
- Consistency with current definitions in the Manual is important.
- WMO proposes an Expert Team that will, besides others, deal with the Manual and provided that it will be endorsed, its Chair will be the natural counterpart for the WG Climate on data definitions.
- In the interim, Werner Balogh (wbalogh@wmo.int) as well as Omar Baddour (OBaddour@wmo.int) and Peer Hechler (phechler@wmo.int), who liaise with the key Manual experts from the former Commission for Climatology will act as focal points to WGClimate on these matters.

State of the Global Climate



WMO-No.1248

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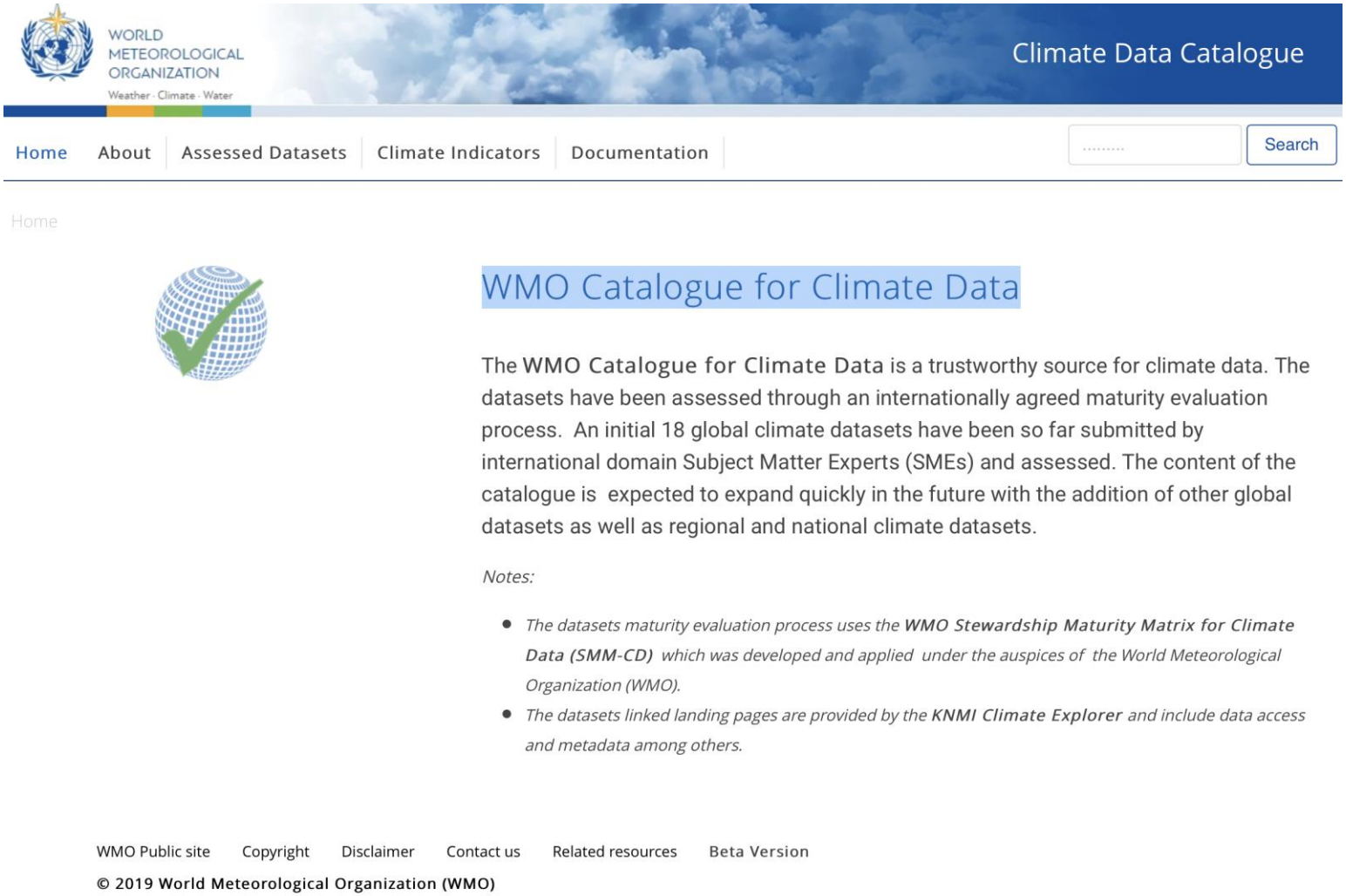
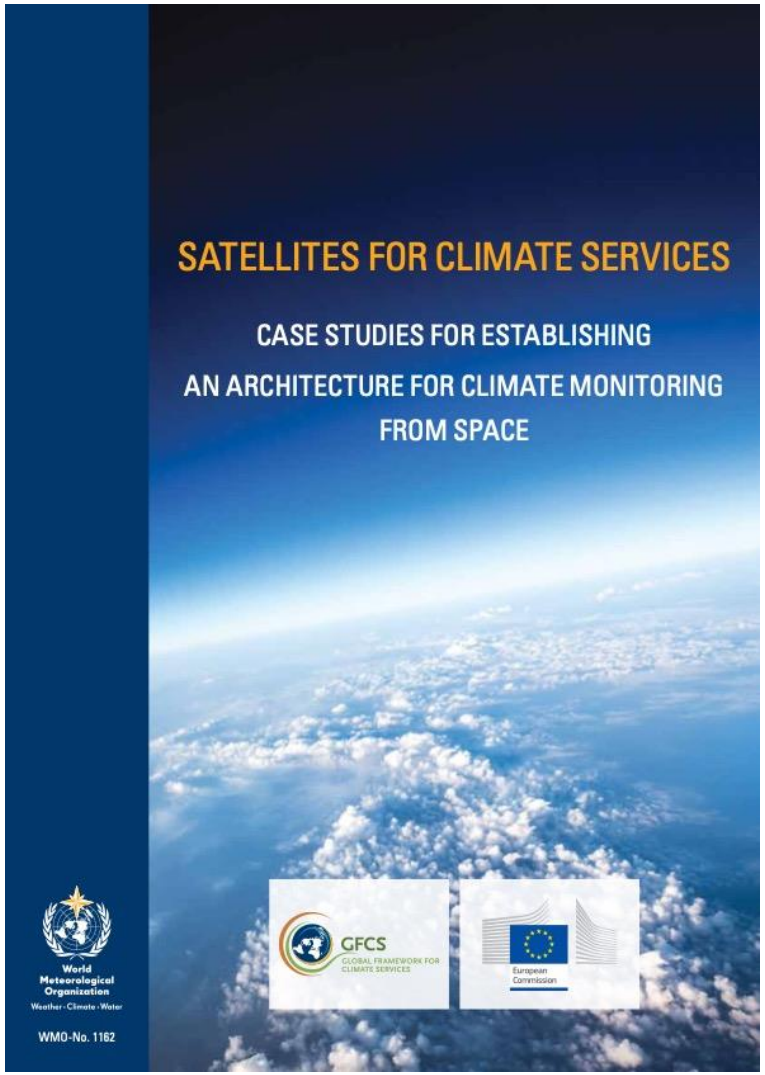
WMO Catalogue for Climate Data



https://climatedata-catalogue.wmo.int

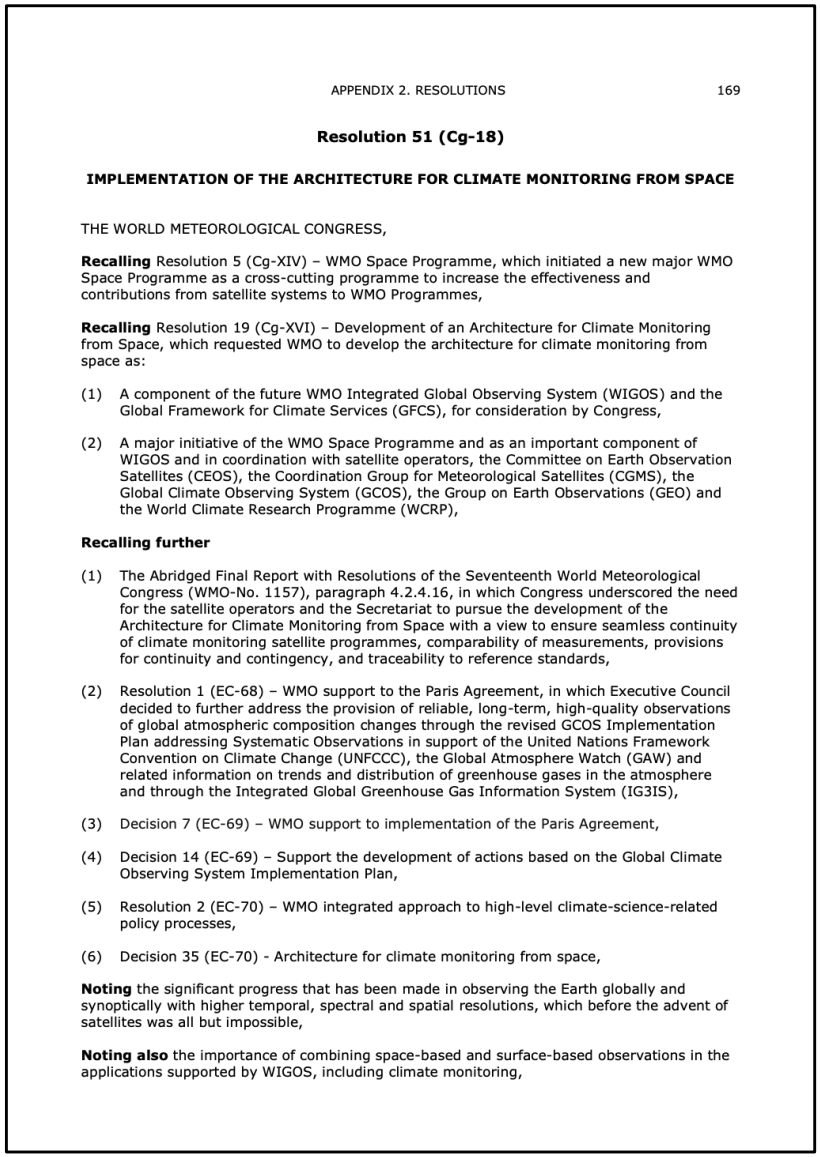
Case Studies

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

WMO Resolution 51(Cg-18)



APPENDIX 2. RESOLUTIONS 169

Resolution 51 (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 related information on trends and distribution of greenhouse gases in the atmosphere and through the Integrated Global Greenhouse Gas Information System (IG3IS),

(3) Decision 7 (EC-69) – WMO support to implementation of the Paris Agreement,

(4) Decision 14 (EC-69) – Support the development of actions based on the Global Climate Observing System Implementation Plan,

(5) Resolution 2 (EC-70) – WMO integrated approach to high-level climate-science-related policy processes,

(6) Decision 35 (EC-70) - Architecture for climate monitoring from space,

Noting the significant progress that has been made in observing the Earth globally and synoptically with higher temporal, spectral and spatial resolutions, which before the advent of satellites was all but impossible,

Noting also the importance of combining space-based and surface-based observations in the applications supported by WIGOS, including climate monitoring,

- Developed during WMO Workshop February 2019 to review the implementation of the architecture for climate monitoring from space
- Reviewed by WGClimate-10
- Acknowledged by CEOS-SIT-34 and CGMS-47
- Endorsed by 18th World Meteorological Congress in June 2019
- Resolution 51 (Cg-18) "Implementation of the architecture for climate monitoring from space"

Case Studies for Climate Monitoring from Space

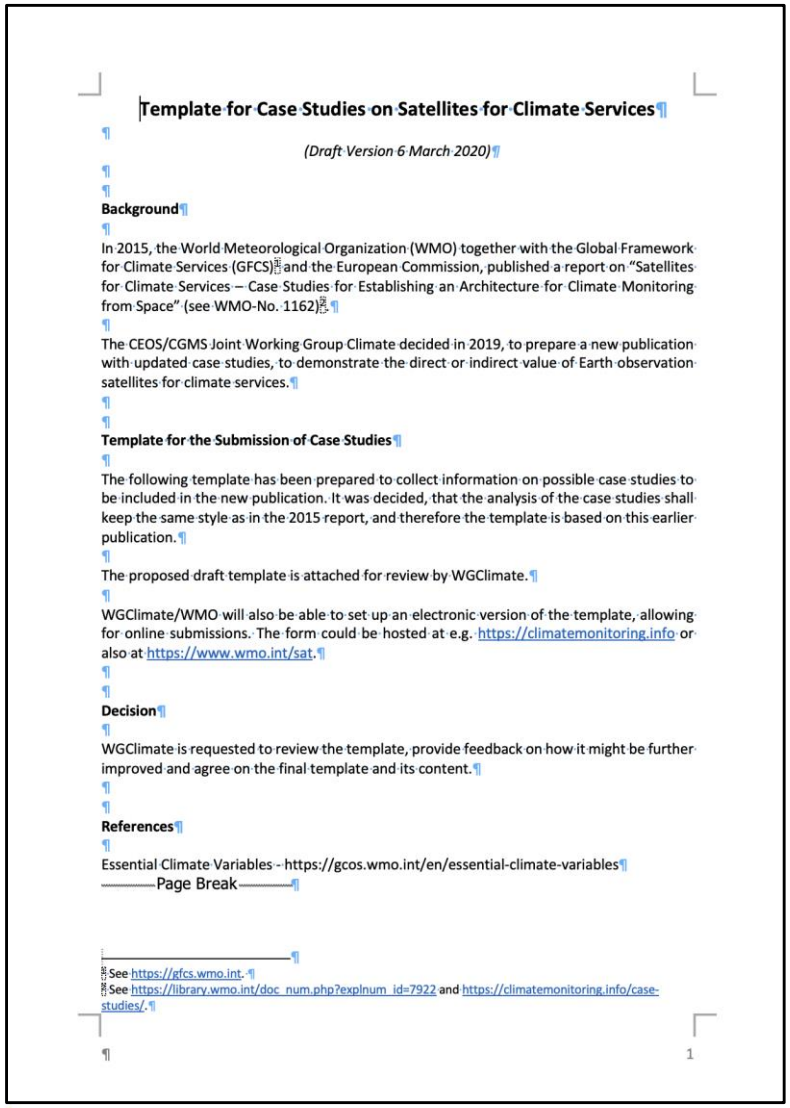
- WGClimate-10 decided to collect and publish new case studies, demonstrating the use of ECVs and climate monitoring from space
- WMO Space Programme Office agreed to lead the effort
- WG-Climate-11 in its action WGClimate11-5 tasked WMO to prepare a template for case studies for review by WGClimate

WGClimate11-5	Prepare template for case studies and send for review	Werner Balogh	31.10.2019

Other WGClimate-11 Decisions

- Taking 2015 Report as initial guideline and clearly establishing a link to the ECV Inventory
- Logos of CEOS, CGMS and WMO on front cover
- Logos of supporting entities (GFCS, GCOS, others) on back cover
- Printed and online publication
- Case studies should
  - Ideally focus on contributions to decision-making
  - Possibly include private sector examples
  - Include economic (cost-benefit) considerations
  - Demonstrate benefit of space-based data, especially if it is the sole source of data
  - Provide local, regional and global use examples

Case Studies Template



Template for Case Studies on Satellites for Climate Services

(Draft Version 6 March 2020)

Background

In 2015, the World Meteorological Organization (WMO) together with the Global Framework for Climate Services (GFCS)[1] and the European Commission, published a report on "Satellites for Climate Services – Case Studies for Establishing an Architecture for Climate Monitoring from Space" (see WMO-No. 1162)[2].

The CEOS/CGMS Joint Working Group Climate decided in 2019, to prepare a new publication with updated case studies, to demonstrate the direct or indirect value of Earth observation satellites for climate services.

Template for the Submission of Case Studies

The following template has been prepared to collect information on possible case studies to be included in the new publication. It was decided, that the analysis of the case studies shall keep the same style as in the 2015 report, and therefore the template is based on this earlier publication.

The proposed draft template is attached for review by WGClimate.

WGClimate/WMO will also be able to set up an electronic version of the template, allowing for online submissions. The form could be hosted at e.g. https://climatemonitoring.info or also at https://www.wmo.int/sat.

Decision

WGClimate is requested to review the template, provide feedback on how it might be further improved and agree on the final template and its content.

References

Essential Climate Variables - https://gcos.wmo.int/en/essential-climate-variables

Page Break

[1] See https://gfcs.wmo.int.

[2] See https://library.wmo.int/doc_num.php?explnum_id=7922 and https://climatemonitoring.info/case-studies/.

1

- Provided to WGClimate-12 in document "Item 6 - Template for Case Studies on Satellites for Climate Services.docx"
- Online submission, using Surveymonkey
- Survey A to obtain case-study proposals (1st step for selection of case studies):
  - https://www.surveymonkey.com/r/ClimateA
- Survey B to upload full case-study text and images (following selection under 1st step above):
  - https://www.surveymonkey.com/r/ClimateB

Survey A – Submission of Case Study Candidates

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WGClimate

The joint CEOS/CGMS Working Group on Climate

CEOS

CGMS

CEOS/CGMS WGClimate - WMO Publication on Case Studies for the Architecture for Climate Monitoring from Space

Submission of Case Study Candidates

1. Organization/entity proposing the Case Study:

2. Name and email contact details of focal point for the Case Study:

Name

Country

Email Address

3. Title of the Proposed Case Study:

https://www.surveymonkey.com/r/ClimateA

Survey B – Submission of Full Case Study

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WGClimate
The joint CEOS/CGMS Working Group on Climate

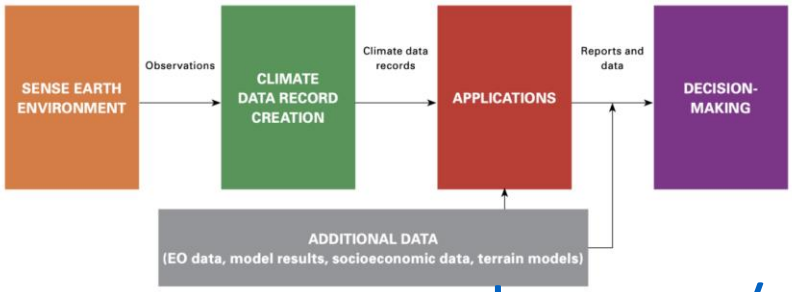
CEOS
CGMS

CEOS/CGMS WGClimate - WMO Publication on Case Studies for the Architecture for Climate Monitoring from Space

Submission of Additional Information for Selected Case Studies

1. Please copy below the description of your case study, including its title (600-1000 words) (publishable, for examples see https://library.wmo.int/doc_num.php?explnum_id=7922):

2. For the graphical depiction of the Information Flow, please provide text for the the following information boxes:



https://www.surveymonkey.com/r/ClimateB

Proposed Timeline

Date	Activity
May 2020	• Provide feedback to Case Studies Template, https://www.surveymonkey.com/r/ClimateA and https://www.surveymonkey.com/r/ClimateB to ghe@wmo.int and wbalogh@wmo.int • Finalize, set-up and distribute online submission webpage
June – July 2020	• Case study submissions accepted (using Template ClimateA) • Review and confirmation of selected case studies • Request additional materials for selected case studies (full text, images) (using Template ClimateB)
August – September 2020	• Deadline for provision of additional information for selected case studies • (Ongoing submission/identification of additional case studies)
August-December 2020	• Drafting, editing and finalization of print and online publication [Action WGClimate11-6]
January-February 2021	• Compile/final editing/issuing of publication by WMO (under WMO-NO. xxxx) [Action WGClimate11-6]
March-June 2021	• Dissemination and presentation at suitable events (e.g. EC, Cg, CM) [Action WGClimate11-7]

Note: The proposed timeline is very optimistically forward looking and in line with the CEOS Work Plan Climate 2020-2022 might be delayed into 2022.

Proposed WGClimate-12 Actions

- WGClimate-12 to review the template, provide feedback on how it might be further improved and agree on the final template content.
- WGClimate-12 to review and comment on the proposed timeline
- Following this, WMO proposes to set up a case studies submission webpage with links to the template, will disseminate it widely and open it for submissions

WEATHER CLIMATE WATER

Thank you

http://www.wmo.int/sat

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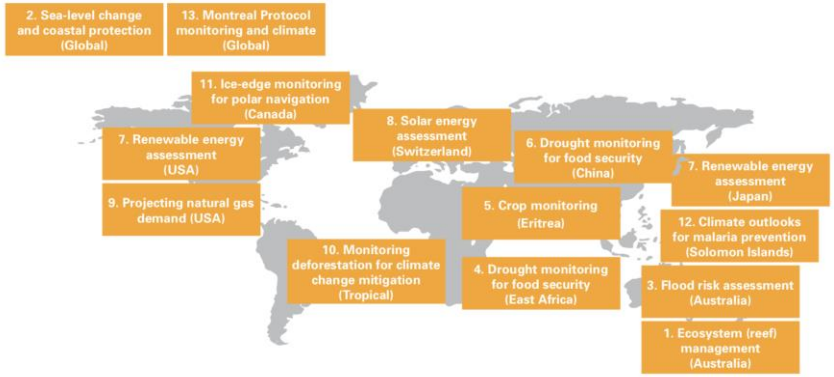
Background

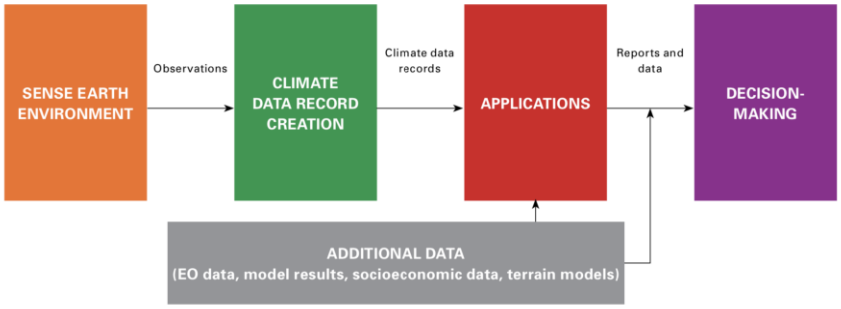
2015 Report - Purpose and Contents

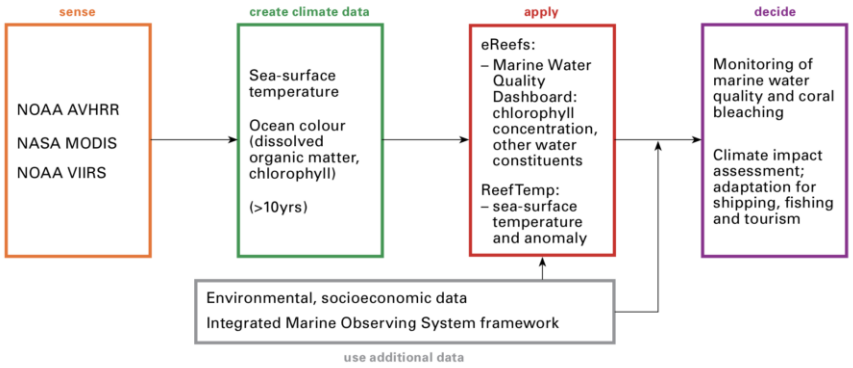
CONTENTS

- 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)