

**CGMS WORKING GROUP II (WGII) TERMS OF REFERENCE
SATELLITE DATA AND PRODUCTS**

Endorsed by CGMS-49 Plenary, 2021

1 INTRODUCTION

The Working Group on Satellite Data and Products (WGII) addresses aspects of technical and scientific nature related to satellite data and products.

Today evolution in data assimilation techniques enables the exploitation and integration of much larger volume of satellite data. Satellite all-sky radiances assimilation, coupled data assimilation and sensitivity to the assimilation window represent, among others, good examples of better integration of satellite data into Earth Prediction systems and for reanalysis products. On a shorter time-scale, nowcasting applications are developed to obtain the best possible forecasts for the coming minutes up to the next few hours. These are based on spatially and temporally highly resolved satellite and radar observations, that more and more are combined together using machine learning methods or integrated with very high resolution modelling products (i.e., rapid update cycle of high resolution regional models).

As for its international role, the Working Group on Satellite Data and Products (WGII) fosters the analysis of the status of meteorological satellite systems and future evolutions, and applications of satellite data to key sectors (i.e., agrometeorology, oceanography, greenhouse gases monitoring). It plays an important role in integrating user's needs at the international level and in exploring operational solutions in a fast changing landscape.

The Working Group on Satellite Data and Products (WGII) is guided by few key guiding questions for the future meteorological satellites and applications:

- o Where are the gaps in terms of new observational needs?
- o Where are the synergies? New products have not been considered so far and that can be derived from existing or planned missions.
- o Where are the breakthroughs? Scientific/ technological breakthroughs that will significantly improve the way we measure Earth System variables, that will enhance our capacity to derive new products. Scientific/ technological breakthroughs that will significantly change the way we develop products and we disseminate them.

The Working Group serves as the link between CGMS and the CGMS International Science Working Groups (ISWGs), which provide regular reports and feedback to CGMS through WGII:

- International Clouds Working Group (ICWG)
- International Precipitation Working Group (IPWG)
- International Radio Occultation Working Group (IROWG)
- International Satellite Winds Working Group (IWWG)
- International TOVS working group (ITWG)

WGII is also the primary interface between CGMS and other relevant international initiatives, such as the Global Space-based Inter-Calibration System (GSICS), the CEOS-CGMS Joint Working Group on Climate (WGClimate) and user communities, such as those organised in the WMO Application Areas.

2 TERMS OF REFERENCE

SCOPE OF WGII

CGMS Working Group II meets at the annual CGMS meeting usually held before the plenary session. WGII membership consists of satellite data and products experts drawn from CGMS Members and Observers. It is the CGMS forum where aspects of technical and scientific nature related to instrument calibration and products from satellites are discussed. The agenda is determined by

- a) Papers provided by the CGMS International Science Working Groups (ISWGs) and other international initiatives;
- b) Reports by user communities;
- c) Papers that relate to actions and recommendations from previous meetings and
- d) By any additional submissions of papers. New proposals for actions and recommendations emerging from the discussions at WGII are presented at the subsequent plenary session and, once adopted, are placed as action or recommendation on CGMS Members.

OBJECTIVES

CGMS Working Group II has the following objectives:

1. Provide a scientific forum for CGMS agencies to address global issues and challenges with respect to data and products generation from their specific satellite systems;
2. Address areas of mutual interest and advice agencies on topics related to development and use of satellite data and products, and related coordination activities, including on relevant issues for the implementation of the Vision for the WMO Integrated Global Observing System (WIGOS) in 2040;
3. Provide guidance on questions related to satellite data and products to user communities, such as those organized in the WMO Application Areas;
4. Act as CGMS interface, at expert level, to other groups and organisations in areas of satellite data and products, with respect to science and product development, and instrument calibration activities;
5. Promote common standards and methodologies in the area of product generation (Level-1 and -2) including calibration;
6. Address scientific and operational aspects of the satellite data production systems at international level;

7. Exchange and harmonise, where applicable, user requirements for satellite data and products;
8. Address topics from the CGMS High Level Priority Plan within the scope of WGII;
9. Arrange efficient reporting from the ISWGs and other CGMS-related international initiatives to WGII and CGMS Plenary;
10. Ensure a scientific dialogue at CGMS Member agency level on pertinent issues and high priority scientific challenges;
11. Support the work of the ISWGs and provide actions and recommendations for this purpose;
12. Assess recommendations from the ISWGs and provide guidance to the CGMS Plenary on issues raised;
13. Support the preparation of selected thematic Plenary session.

WORKING ARRANGEMENTS

Members/Participation:

WGII is a permanent working group and is co-chaired by two chairpersons supported by two rapporteurs appointed by the CGMS Plenary. All CGMS members participate in WGII.

Nomination of participants is under the responsibility of each agency but shall promote continuity and foster active contribution. WGII co-chairs, rapporteurs, and the CGMS Secretariat shall be informed by agencies of names of representatives and changes before the CGMS Plenary. The CGMS Secretariat will maintain the list of participants, and the information on WGII on the CGMS web site (www.cgms-info.org).

All CGMS Members participate in the work of WGII, which is of permanent nature, and CGMS Observers are invited to observe.

WGII meets during the annual CGMS meetings with an agenda covering the objectives of WGII and the relevant parts of the CGMS High Level Priority Plan, which shall be updated as necessary.

WGII is co-chaired by two Chairs supported by two rapporteurs, all appointed by the CGMS Plenary. One of the two co-chairs is selected from the Asia-Pacific region. The other co-chair is provided by WMO. NOAA and EUMETSAT provide each one of the rapporteurs. WGII representatives are nominated by each CGMS Member who shall promote continuity and foster active contribution. WGII chairs, WGII rapporteurs and CGMS Secretariat shall be informed by CGMS Members of the names of WGII representatives and any changes prior to the respective CGMS Plenary meetings. CGMS Secretariat shall maintain an updated list of WGII representatives in the corresponding WGII CGMS web page.

The WGII co-chairs, with the support of the rapporteurs, shall compile a report on the outcome of the meeting of the working group, including proposals for relevant CGMS actions and recommendations. These will be reported to CGMS Plenary and will highlight aspects of relevance and/or identify topics needing high-level approval or guidance at the Plenary.

As required, WGII will also convene inter-sessional meetings to address inter-sessional work, including topics of interest and the implementation of its actions and recommendations.

Meetings:

WGII will meet during the annual CGMS plenary session with an agenda covering the objectives of WGII and shall also assess the status of implementation of the CGMS High Level Priority Plan and propose updates to it as necessary. The WGII rapporteur compiles a report on the outcome of the meeting of the group, including consensus proposals for relevant CGMS actions and recommendations. This will be reported to the CGMS Plenary and will highlight aspects of relevance and/or identify topics needing high-level approval or guidance at the plenary.

The group convenes inter-sessional meetings for addressing topics of interest or to complete actions and tasks identified at the annual WGII meeting and plenary session.

WGII and other CGMS groups:

CGMS Working Groups

WGII activities are in many cases not self-standing and often linked to discussions in other CGMS groups, including, but not limited, to interactions with:

- WGIII "Operational continuity and contingency planning" on the CGMS baseline, and with the;
- Space Weather Coordination Group (SWCG) on space weather related data and product matters.

CGMS International Science Working Groups

The Working Group serves as the link between CGMS and the CGMS International Science Working Groups (ISWGs), which provide regular reports and feedback to CGMS through WGII:

- International Clouds Working Group (ICWG)
- International Precipitation Working Group (IPWG)
- International Radio Occultation Working Group (IROWG)
- International Satellite Winds Working Group (IWWG)
- International TOVS Working Group (ITWG)

Exchange and coordination between CGMS and its ISWGs are realised through a rapporteur nominated by each ISWG who regularly participates in CGMS meetings as a member of a CGMS delegation. The rapporteur is also obliged to participate in the separate meetings of the ISWGs.

The two co-chairs of the ISWGs are the interface between the rapporteur and the ISWG meetings. It is the task of the co-chairs to provide summaries and recommendations resulting from the ISWG

meetings to the rapporteur for further discussion at the CGMS meetings. The rapporteur provides feedback and guidance to the co-chairs on how to best address relevant issues at CGMS meetings.

WGII is also the interface between the ISWGs and other CGMS groups and in this role coordinates the transfer of actions and recommendations between ISWGs and other CGMS groups.

Some guidance for the close interaction between CGMS and ISWGs is given in the Annex.

Other international initiatives

WGII is also the primary interface between CGMS and other relevant international initiatives and science groups, such as the Global Space-based Inter-Calibration System (GSICS) and SCOPE-CM, and user communities, such as those organized in the WMO Application Areas.

ANNEX

1. There is a strong commitment by CGMS and WMO to support the ISWGs, and vice versa;
2. ISWG co-chairs should attend CGMS meetings in person and CGMS Members should support their participation through appropriate funding;
3. Designated ISWG rapporteurs should be maintained, nominated among regular CGMS attendees, to ensure regular communication between CGMS and ISWGs, and to serve as back-up in case co-chairs cannot attend CGMS meetings;
4. ISWG co-chairs should liaise either in person or virtually on a regular basis, in particular (two months) before CGMS sessions, (i) to discuss experiences within WGs and share ideas, and (ii) to prepare and synthesize messages for attention by CGMS;
5. ISWGs should synthesize their recommendations to CGMS and limit their number to a maximum of 10 (preferably 5 or less) per WG;
6. Cooperation and dialogue among ISWGs should be fostered, through mutual participation in workshops/meetings;
7. CGMS can allocate tasks to the ISWGs. For tasks with non-negligible resource implications, a mechanism should be found by CGMS, including funding options by CGMS Members;
8. ISWGs may consider forming a sub-group on international issues and future systems, following the ITWG model;
9. The process for nominating rapporteurs and co-chairs should be clarified, while preserving the ISWGs' autonomy over their rules of procedure (length of service, rotation etc); a healthy balance between renewal and continuity in co-chairpersons should be maintained;
10. CGMS, WMO and ISWG co-chairs to explore options for sufficient, sustained and efficient funding of ISWG meetings;
11. The possibility of a common web presence and maintenance across all ISWGs should be explored.