



International Clouds Working Group (ICWG) in CGMS

Rapporteur: Dong Wu

CGMS: International group for global coordination of meteorological satellite systems

CGMS Members

The CGMS main goals are to support operational **weather monitoring and forecasting** as well as **climate monitoring**, in response to requirements formulated by WMO and its related programs.

Objectives and High Level Priority Plan (HLPP):

- Coordination of observing systems and protection of assets
- Coordination of data access, contributions to the WMO Information System (WIS)
- Enhance the quality of satellite-derived data and products
- Outreach and training activities
- Cross-cutting issues and new challenges

16 Members and 6 Observers

| Organisation | Website | Accession Year |
|---|-----------------------------|----------------|
| Centre National d'Etudes Spatiales | CNES | 2004 |
| China Meteorological Administration | CMA | 1989 |
| China National Space Administration | CNSA | 2006 |
| EUMETSAT | EUMETSAT | 1987 |
| India Meteorological Department | IMD | 1979 |
| Indian Space Research Organisation | ISRO | 2015 |
| Intergovernmental Oceanographic Commission / UNESCO | IOC/Unesco | 2001 |
| Japan Aerospace Exploration Agency | JAXA | 2003 |
| Japan Meteorological Agency | JMA | 1972 |
| Korea Meteorological Administration | KMA | 2005 |
| National Aeronautics and Space Administration | NASA | 2003 |
| National Oceanic and Atmospheric Administration | NOAA | 1972 |
| Russian Federal Service for Hydrometeorology and Environmental Monitoring | ROSHYDROMET | 1973 |
| Russian Federal Space Agency | ROSCOSMOS | 2003 |
| The European Space Agency | ESA | 2003 |
| World Meteorological Organization | WMO | 1973 |

CGMS Working Groups

Working Groups

WG I: Global issues on satellite systems and telecommunication coordination

WG II: Satellite data and products

WG III: Operational continuity and contingency planning

WG IV: Support for end users

SWCG: Space weather coordination group

International science working groups

International TOVS Working Group: ITWG

International Precipitation Working Group: IPWG

International Radio Occultation Working Group: IROWG

International Winds Working Group: IWWG

International Clouds Working Group: ICWG

Monitoring

Global Space-based Inter-Calibration System (GSICS)

ICWG Interactions with Other WGs

ICWG-IPWG:

- Use of VIS/IR/MW channels for precipitation sensing
- Scattering modeling and microphysics (ice and liquid)
- Cloud-to-precipitation processes

ICWG-IWWG:

- Cloud height assignment
- Cloud inhomogeneity, microphysics, and distribution

ICWG-ITWG:

- Cloud detection and discrimination
- Assimilation of all-sky radiances and fast radxfer models

ICWG-GSICS:

- Clouds as a calibration source
- Cloud climate record

ICWG in CGMS-46

Program

- Annual CGMS meetings (May/June)
- Monday-Tuesday: Breakouts for WG I-IV, SWCG,
- Thursday-Friday: Plenary sessions
- 1-2 working papers from ICWG



3-8 June 2018, Bengaluru, India

Action from CGMS-46

| Actionee | AGN item | Action # | Description | Action feedback/closing document | Deadline | Status | HLPP ref |
|--|----------|----------|---|---|-----------------------|--------|----------|
| CGMS space agencies IROWG IPWG IWWG ICWG ITWG | C.2 | A45.02 | CGMS International Science Working Groups and CGMS space agency members to formulate science questions, including the impact of data latency, in view of the 7th Impact WS 2020 (ref. CGMS-45-WMO-WP-02) and provide these to Iriishojgaard@wmo.int. Questions are needed for CGMS-46 for the analysis to be made and results provided to the workshop in 2020. | 7 Jun 2018: Action remains open following CGMS-46 plenary discussions. WMO expects to provide a formal announcement in the 2nd half of 2018 to which the remaining ISWGs can respond. CGMS-46-IWWG-WP-02 US Polar AMVs latency issues previously discussed. 4 Jun 2018: Reports to CGMS-46 WGII (and plenary) expected to be provided by IPWG, IROWG and IWWG | end 2018 (CGMS-46) | OPEN | 1.3 |

Actions to CGMS Space Agencies

| Open WGII actions from previous plenary sessions following CGMS-46 discussions | | | | | | | |
|--|----------|----------|--|--|-------------------------------------|--------|----------|
| Actionee | AGN item | Action # | Description | Action feedback/closing document | Deadline | Status | HLPP ref |
| CGMS space agencies | WGII/4 | A44.02 | CGMS members to submit data to the ICWG intercomparison: full-disk data at 10 minute temporal resolution, 2 km spatial resolution in the native AHI projection is preferred. The data should be submitted by 1 September 2016. | CGMS-46: Action remains open following WGII discussions. | New: CGMS-47 (1 Sept 2016, CGMS-46) | OPEN | 4.2.4 |

RECOMMENDATIONS to CGMS-45 Space Agencies

| | | | | |
|------|---|--------|--|--|
| ICWG | 4 | R45.01 | ICWG to liaise with IPWG to explore common interests in the area of cloud microphysics and scattering libraries of hydrometeors (liquid, ice). | <p>Sep 2018: CGMSSEC recommends WGII to close this recommendation, it is covered by the work in the ISWGs and working groups.</p> <p>WGII IS#2 15 Mar 2018: It was agreed to maintain the recommendation, albeit some difficulty in implementing it</p> <p>WGII IS #1 20 Nov 2017:</p> |
|------|---|--------|--|--|

RECOMMENDATIONS from CGMS-45/44

| | | | | |
|---------------------|---|----------|---|---|
| CGMS member, WG III | 4 | R. 45.03 | Recognizing the need for continued enhancements to the baseline precipitation observing system to a broader user community (including hydrology, NWP prediction, RTM modelling), IPWG recommends that CGMS members continue to pursue advanced sensors through close coordination with CGMS ISWG's including IPWG, ITWG and ICWG. | <p>Sep 2018 CGMSSEC: WGII to verify the lead on this recommendation. Most of these are included in the CGMS baseline or HLPP by now. Notably GEO microwave missions are not [yet]. IPWG to specify what their requirements are.</p> <p>WGII IS#2 15 Mar 2018: Included in IPWG report aspects to CGMS</p> |
|---------------------|---|----------|---|---|

| | | | | |
|--------------|--------|--------|---|--|
| CGMS members | WGII/4 | R44.05 | CGMS members to budget a baseline funding for the cloud intercomparison study, given its importance and impacts on global cloud products. | <p>WGII IS#2 15 Mar 2018: For further discussion within ICWG. Co-chair to provide an update.</p> |
|--------------|--------|--------|---|--|

TOWARD GLOBAL HARMONIZATION OF DERIVED CLOUD PRODUCTS

DONG L. WU, BRYAN A. BAUM, YONG-SANG CHOI, MICHAEL J. FOSTER, KARL-GÖRAN KARLSSON, ANDREW HEIDINGER, CAROLINE POULSEN, MICHAEL PAVOLONIS, JÉRÔME RIEDI, ROBERT ROEBELING, STEVEN SHERWOOD, ANKE THOSS, AND PHILIP WATTS

(BAMS, March 2017)

FIRST WORKSHOP OF THE INTERNATIONAL CLOUD WORKING GROUP (ICWG)

WHAT: The first ICWG workshop, or ICWG-I, drew ~85 attendees (including algorithm/product developers, cloud modelers, weather forecasters, and climate scientists) and covered a wide range of topics concerning the remote sensing of cloud parameters; related applications and issues, specifically in cloud detection, cloud modeling for remote sensing, severe weather applications, level 2 retrievals and uncertainties; and the establishment of a decadal cloud record for climate research with well-defined uncertainties.

WHEN: 17–20 May 2016

WHERE: University of Lille, Villeneuve-d'Ascq, Lille, France

RECOMMENDATIONS FROM THE MEETING (CGMS 2016)

- Ensure that convective weather outside of rapid scan areas is sufficiently sampled by adopting a scan strategy that includes full-disk imaging at least every 10 min when satellite and ground station capabilities allow.
- Ensure a minimum set of channels during rapid scan operations: two infrared (IR) windows (three where possible), one visible (VIS, 0.65 μm), and one medium-wave infrared (MWIR, 3.9 μm).
- Standardize requirements and terminology for cloud products.
- Enhance use of satellite cloud products in tandem with nonsatellite data, specifically with ground-based radar and lightning products.
- Stimulate dialogue with cloud product users, such as the atmospheric motion vector (AMV) community of the IWWG, to integrate their requirements in the cloud retrieval algorithms.
- Use heritage sensors to develop cloud climate data records (CDRs) that better characterize calibration errors, dependence on ancillary data, and orbital drift.
- Generate subsampled versions of level 1 (L1) products from historical, current, and future satellite missions to facilitate CDR reprocessing.
- Include uncertainty estimates and associated quality indicators at pixel level 2 (L2) for each inferred cloud property, and evaluate these in future ICWG assessments.
- Maintain use of current, and plan for future, spaceborne lidar/radar measurements for long-term satellite cloud validation.
- Facilitate L2 cloud assessments for near-real-time applications and L3 cloud assessments for regional and climate applications.

CGMS-47

Sochi, Russian Federation, 19-24 May 2019

