Report of the 42nd Meeting of the
Coordinated Group for Meteorological Satellites

Parallel Working Group Sessions: WGIV Report

WG IV REPORT

Working Group IV (WG IV) on Global Data Dissemination held its session on Monday, 19 May 2014, at 14:40-18:30 and on Tuesday, 20 May, at 08:30-09:00. Vasily Asmus, ROSHYDROMET and Jae-Dong Jang, KMA served as co-Chairs and Klaus-Peter Renner from EUMETSAT as rapporteur. Representatives of the following organisations attended the session: CMA, CNSA, EUMETSAT, IMD, ISRO, JMA, KMA, NOAA, ROSCOSMOS, ROSHYDROMET and WMO, and from Environment Canada, GEO and KARI as Observers (the list of participants is included in the Annex).

The agenda proposed by the CGMS Secretariat was adopted with the following modifications:

The working paper "CGMS-42-EUMETSAT-WP-30" was moved to agenda item WG IV/6. The working paper "CGMS-42-JMA-WP-09" planned for E.2.1 was also presented under WG IV/5.

Two presentations were provided online using WEBEX and were therefore scheduled at fixed times. The sequence of the agenda was therefore interrupted at the times of these WEBEX sessions and resumed afterwards.

WG IV/0 Objectives

The objectives of WG IV were recalled, with the agenda following closely the relevant CGMS HLPP sections.

WG IV/1 Review of actions and recommendations from previous meetings

Actions: After CGMS-41, a total of 17 Actions were open, 10 closed, and seven remain open.

The final status of the list of WG IV actions and recommendations resulting from CGMS-41, following CGMS-42 deliberations is available here.

WG IV/2 Global DVB satellite services

CGMS-42 NOAA-WP-20 NOAA presents future enhancements of the GEONETCast Americas system. The plans for the future include:

- Expansion of the GEONETCast Americas product suite to Include provision of spatial data format imagery files;
- Dissemination of products to support the WMO Coordination Group on Satellite Data Requirements (SDR) for RAIII and RA IV;
- Continued and increased participation in the International Charter Space and Major Disasters as an Alternative Dissemination Method;
- GEONETCast Americas An Alternative Dissemination Method for the ISCS RA-IV RMTN GIFS system;
- Increased use of the training channel and partnership with the VLab; and
- Continued discussion with INPE on increased GEONETCast Americas bandwidth

WMO inquired about user support during the transition to GOES-R using GEONETCast Americas. NOAA explained that it will assess the possibility of including a subset of the GOS-R/S in GNC-A but

must consider the best options or the data format versus the data content. (See also response to WG IV/2 Recommendation 41.2 above).

WG IV/3 Incorporation and dissemination of R&D and pre-operational mission data

CGMS-42-EUM-WP-28 EUMETSAT presented a summary of ongoing activities in the area of Third-Party Data Services. The document is structured in two parts – an assessment of the Third-Party Data Services under consideration, and a summary of the status of currently ongoing Third-Party Data Service implementation activities, excluding those implemented on the request of Copernicus.

ROSHYDROMET recalled that the position of Electro-L №2 will be 77.8° E.

The correction was noted.

CGMS-42 NASA-WP-03 NASA's Land Atmosphere Near real-time Capability for EOS (Earth Observing System) (LANCE) provides global data and imagery from the Atmospheric Infrared Sounder (AIRS), Microwave Limb Sounder (MLS), Moderate Resolution Imaging Spectroradiometer (MODIS) and Ozone Monitoring Instrument (OMI) instruments in less than three hours from satellite observation to meet the needs of the near real-time (NRT) applications community. On an average day, over 2 TB of NRT products (data and imagery) are downloaded from LANCE. Demand for these products comes from applications users, operational agencies and scientists to support NRT research and applications in weather prediction, monitoring of natural hazards, agriculture, air quality, disaster relief and homeland security.

The working paper could not be presented in person due to the absence of NASA participants. Further discussion did not take place.

WG IV/4 Coordinated dissemination services

WG IV/4.1 Disaster mitigation purposes

In **CGMS-42 CNSA-WP-07,** CNSA presented a multi-satellite integrated remote sensing application system. The remote sensing technology is used to produce environment and disaster information quickly and accurately. The report introduces data fusing and subdivision technologies, the processing and analysis system, and particular applications of the remote sensing system.

The working group took note of the presentation.

WG IV/4.2 Ocean user community

In **CGMS-42-EUM-WP-29**, EUMETSAT presented a report on the International Ocean Colour Science Meeting 2013 which was held in Darmstadt, Germany, on 6-8 May 2013. The meeting was convened by the International Ocean Colour Coordinating Group (IOCCG), and sponsored by EUMETSAT, NASA, ESA and CNES. During the meeting, a splinter session on "Satellite Data File Formats and Tools for Easy Science Exploitation" was held. This paper presents a summary of the discussions and recommendations formulated for each of the themes covered. It was already presented at CGMS-41 as paper CGMS-41 EUM-WP-14 to WG II. The working group broadly endorsed the conclusions and recommended that the topic be addressed at CGMS-42 in WG IV.

Following the recommendation from the paper, an action was proposed by the working group:

CGMS-42 actions – WG IV						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS members	WG IV/4.2	42.01	CGMS members producing ocean colour products to comment on the 2 recommendations given in CGMS-42-EUM-WP-29: - to adopt netCDF4/CF for their ocean colour data; - to support large volume, batch data access and download (e.g., through established means such as ftp/http), as well as more targeted access through protocols such as REDDS/OpenDAP	CGMS-43	OPEN	HLPP#2.5

WG IV/5 Global data exchange from next generation GEO satellites

CGMS-42 ROSHYDROMET-WP-05 ROSHYDROMET presented an overview of satellite data exchange mechanisms in ROSHYDROMET, including participation in the EUMETSAT Advanced Retransmission Service (EARS) and FTP access to near real-time Electro-L data.

ROSHYDROMET informed the working group that the nominal operation of Electro-L №1 was suspended earlier this year due to satellite problems. It is at the moment unclear when operations can be resumed.

In addition to the agenda, the following presentations were made under this session:

CGMS-42-JMA-WP-9 JMA presented an update on Himawari-8/9. All imagery derived from Himawari-8/9 will be distributed to NMHSs via an Internet cloud service. JMA also plans to start the HimawariCast service, which will disseminate primary sets of imagery to NMHSs via a communication satellite using DVB-S2 technology.

The Internet cloud service will mainly provide Himawari Standard Data which will be used to create all products related to Himawari-8/9 as master data from all 16 bands with the finest spatial resolution. JMA plans to start test operation of the service in Q1 of 2015 with distribution of Himawari-8 in-orbit-test imagery.

The core data of the HimawariCast service will be HRIT files which are compatible with the current MTSAT series HRIT service. These will feature five bands near the current MTSAT observation bands. Dissemination will further include meteorological data other than Himawari imagery in SATAID format. JMA plans to start the service in early 2015 when MTSAT-2 is still in operation. MTSAT-2 imagery will be disseminated through this service in parallel with direct dissemination via MTSAT-1R until Himawari-8 becomes operational in the middle of 2015, after which Himawari-8 data imagery will be disseminated via the service.

An online presentation of the INSAT 3D WEB Portal available at http://www.imd.gov.in/section/satmet/dynamic/insat.htm was given by IMD, showing the complete set of products available from the Internet. Access for users worldwide is possible after registration.

Extract of **CGMS-42-KMA-WP-01** KMA presented the dissemination aspects of Geo KOMPSAT-2A. The baseline data broadcast policy for GeoKOMPSAT-2A is to disseminate from all 16 channels data of meteorological observations in Ultra HRIT (tentatively named UHRIT) and to maintain H/LRIT broadcast corresponding to COMS' five channels. Downlink frequencies in L-band, S-band and X-band are proposed at the moment.

Responding to WMO\s question about which data would be available by what downlink, KMA explained that this will be decided later depending on the response by ITU on the frequency selection.

WG IV/6 Development of coordinated approach for compression of data, incl. geographical location, from high-resolution imaging instruments

CGMS-42-EUM-WP-30 EUMETSAT presented a paper to accommodate efficient compression of regional LEO satellite data. During the implementation of the EUMETSAT provided VIIRS regional service a need was indentified to develop a Compact VIIRS SDR product format (Level 1) to achieve a cost efficient distribution of the VIIRS data via EUMETCast, EUMETSAT's satellite-based data distribution system.

The main use case is expected to be that VIIRS data distributed via EUMETCast in the compact SDR format is converted back to the original VIIRS SDR format for further processing and visualisation by the service users.

However, tools are currently under development by third parties for visualising and utilising the data directly from the compact VIIRS SDR format without first reconstructing the original VIIRS SDR format. The size of the resulting compact VIIRS SDR product is a third of the original VIIRS SDR product, making the real-time dissemination via EUMETCast affordable.

This paper provides an overview of the Compact VIIRS SDR Product Format and proposes that it be generalised to serve as a compact format for all advanced imagers of current and planned polar-orbiting satellites.

ROSHYDROMET proposed applying the same approach to geostationary data. EUMETSAT replied that the compression characteristics are typical for these instruments and one needed to be cautious before generalising the result, adding that such an approach would need to be analysed.

The following action was proposed by the working group:

CGMS-42 actions – WG IV						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS members	WG IV/6	A42.02	CGMS members are invited to comment on the work done in the context of the EUMETSAT provided VIIRS Regional	CGMS-43	OPEN	HLPP#2.7

			Service, and to provide feedback on the proposal to define a standardised compact product format, generalised to cover the advanced imagers of the current and planned polar orbiting satellites.			

WG IV/7 Contribution to the WIS infrastructure incl. RMDCN

CGMS-42 WMO-WP-18 WMO presented a paper on the WIS. Seven centres are registered in the WIS as specialist satellite centres. Satellite operators, not registered as separate WIS centres, are expected to register the information they publish through, for example, National Meteorological and Hydrological Services.

WIS relies on WIS Discovery Metadata records for users to discover, access, and retrieve information, and for managers of the WIS system to handle information correctly. Although there are over 3,500 satellite-related WIS Discovery Metadata records available through the WIS, the overwhelming majority are still associated with Global Telecommunications Systems bulletins. Satellite operators are therefore strongly encouraged to provide WIS metadata records for the information they provide to users.

WIS, unlike the Global Telecommunications System, is not limited to near real-time exchange of products to fixed distribution lists. WIS also allows data providers to publish details of information that is delivered directly from the data providers' systems, such as interactive downloads or through web services.

The working group recognised the need for and agreed to the recommendation made in the paper:

CGMS-42 recommendations – WG IV						
Actionee	Rec	#	Description	Deadline	Status	HLPP ref
CGMS space agencies	WG IV/7	R42.01	Satellite operators to provide WIS Discovery Metadata Records, compliant to WIS requirements and following the guidance to be provided by the CGMS-WMO Task Force on metadata implementation, in order to facilitate satellite information discovery and access	(CGMS-43)	OPEN	HLPP#2.9

WMO presented a new Integrated Global Data Dissemination Strategy (**CGMS-42-WMO-WP-21)**. A comprehensive overview of the following topics was given:

- IGDDS background and expected benefits to WMO members
- Challenges and opportunities
- IGDDS reformulation (vision and strategic targets)
- IGDDS strategic activities, status and proposed actions

- IGDDS oversight and role of CGMS

Following the recommendation given in the paper, an action was proposed by the working group:

CGMS-42 actions – WG IV						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS members	WG IV/7	A42.03	CGMS members to comment on the IGDDS vision, and to provide feedback to WMO (jlafeuille@wmo.int)	CGMS-43	OPEN	HLPP#2.8

WG IV/8 Coordination of metadata for satellites and instruments

WG IV/8.1 Task force on metadata

In **CGMS-42 EUM-WP-32,** EUMETSAT presented the background and planned activities for the task force on metadata. During CGMS 40, EUM-WP-15 "Facilitation of satellite data exchange under WMO WIS" recommended an increased involvement by satellite data providers in the WMO Information System (WIS).

As a resulting action, it was decided to create a CGMS-WMO Task Force on Metadata implementation allowing satellite providers to provide consolidated views on metadata definition. The main mission of the Task Force is to address and coordinate the development of relevant WIS metadata records authorising users to efficiently discover satellite products in the WIS catalogues.

This document presents the Terms of Reference of the CGMS-WMO Task Force as well as its relation with its WMO counter-part, the Inter-Program Expert Team on Metadata and Data Representation Development (IPET-MDRD).

As proposed in the presentation and to allow the immediate start of the task team, the working group elected the co-Chairs, Virendra Singh, IMD, as Chair and Guillaume Aubert, EUMETSAT, as co-Chair.

WG IV/9 Data access portals, harmonisation between different portals

CGMS-42 WMO-WP-10 provides an update on the development of the WMO Product Access Guide (PAG), an online resource maintained by WMO:

- to facilitate access by users to satellite-based geophysical products,
- to enhance the visibility of products, and
- to provide guidance on these products where possible.

A refined PAG concept (v1.0) was endorsed by the WMO Expert Team on Satellite Utilization and Products (ET-SUP) in April 2014. The PAG data model ("tag tree") now also accommodates products from non-satellite sources, such as from ground-based radar and aircraft. This is in line with the WIGOS objective (WIGOS IP Action 7.2.2). The PAG will be registered as a resource in the WIS.

A new online implementation of the PAG, finalised in late 2013, is now available (https://www.wmo-sat.info/product-access-guide) and was shown during the session.

As per Action 41.58, feedback by CGMS is particularly necessary on the criteria stipulated in the PAG concept for online product collections maintained by CGMS members to be visible in the PAG: These require stable URLs pointing to variable-specific product collections, and a minimum set of information (metadata) provided to guide users.

ET-SUP recommended that when fully populating the PAG the CGMS operators should be the first choice to be considered. The overall success of the PAG is dependent on the ability, willingness and technical means of providers (i.e. CGMS operators) to comply with the functional requirements, and to make changes if necessary to achieve such compliance.

A new action was proposed by the working group to support the population of the PAG:

CGMS-42 actions – WG IV						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS members	WG IV/9	A42.04	CGMS members to nominate focal points that would work with the WMO Secretariat in populating the PAG, initially for one year; such nomination could take into account current membership of the WMO Expert Team on Satellite Utilization and Products (ET-SUP). WMO: Stefan Bojinski bojinski@wmo.int	15 Jul 2015	OPEN	HLPP#5.3

CGMS-42 WMO-WP-20 WMO presented a paper on a new Satellite User Readiness Navigator online portal. The new generation of meteorological geostationary satellites being launched by CMA, EUMETSAT, ISRO, JMA, KMA, NOAA and ROSHYDROMET before the end of this decade will provide unprecedented capabilities for key weather applications and for a number of developing application areas, but will also present unprecedented challenges for users worldwide. A major challenge is the order-of-magnitude increase in the amount of data and products that will be generated from the advanced imagers and sounders on-board the satellites. In addition, novel data types drive the need for advanced interpretation and assimilation techniques and implementing these new techniques into operational schemes.

At CGMS-41, CGMS established the following high-level priority cross-cutting area: “5.3 Prepare operational users for new generation of geostationary meteorological satellites through user readiness programmes, with coordinated contributions from CGMS members”

In response to this priority, the WMO Space Programme, with the support of CGMS member agencies, is developing the online portal SATURN (SATellite User Readiness Navigator) to provide a single point of access for all information pertinent to global user community preparations for the new generation of satellites. The support of CGMS members to achieve this goal is essential, and therefore CGMS has established a task team of agency focal points to provide content for the portal. Access to the portal is planned to be opened in June 2014.

A key element of the portal is a Reference User Readiness Project, which is intended as a "best practice" guiding CGMS members to provide content for the SATURN portal. The draft scope and timeline of this project was provided for review by CGMS satellite operators.

The working group acknowledged the effort for a "one stop shop" for users regarding the new generation of satellites and proposed the following action:

CGMS-42 actions – WG IV						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS members	WG IV/9	A42.05	CGMS Members to provide detailed comments on the Reference User Readiness Project to WMO (sbojinski@wmo.int)	CGMS-43	OPEN	HLPP#5.3

WG IV/10 User dialogue and interface

WG IV/10.1 Response to region-based requirements for satellite data access and exchange

CGMS-42 EUM-WP-33 EUMETSAT presented its activities on region-based requirements for satellite data access and exchange in WMO RA I, RA II and RA VI. In line with its strategic objective to "Extend the user base for EUMETSAT data, products and services in EUMETSAT Member and Cooperating States and in WMO Members", EUMETSAT undertakes activities related to data access in various WMO regions, in particular WMO RA I and RA VI and to a lesser extent in RA II, RA III and RA IV.

The region-based requirements for these regions are usually discussed through dedicated groups or events. For example, the WMO RA I Dissemination Expert Group plays a key role determining data access requirements within the region. Its recommendations are presented at the biennial EUMETSAT User Forum in Africa, reported on in WMO meetings and taken into account in various collaboration projects. In WMO RA VI (for countries which are not EUMETSAT Member or Cooperating States), requirements are discussed during information days. The requirements gathered are channelled into the user feedback management process.

A number of the activities developed to promote operational data access are implemented through projects, e.g. EU funded AMESD and MESA for WMO RA I and EUMETSAT and partner funded DAWBEE for WMO RA VI and SADCA for the WMO RA II. These projects can encompass infrastructure deployment or maintenance and training activities.

CGMS-42 JMA-WP-03 JMA presented the progress in the RA II WIGOS project to develop support for NMHSs in satellite data, products and training**.** This paper outlines the background and mission of the WIGOS Project to Develop Support for NMHSs in Satellite Data, Products and Training, and also details related recent accomplishments.

CGMS-42 WMO-WP-09 The Coordination Group on Satellite Data Requirements in Region III (South America) and Region IV (North America, Central America and the Caribbean) has made progress in:

- providing consolidated feedback to NOAA on implementing an optimised imager scanning schedule for GOES-13 (GOES-East), mitigating the loss of the decommissioned GOES-South

America; NOAA plans to implement the optimised GOES-13 schedule, ensuring at least hourly temporal geostationary coverage of most of South America, on 6 May 2014 at 16.00 UTC;
- identifying detailed user requirements for data access and exchange and related challenges in the region through a user survey.

Formal endorsement of the group by the WMO RA III, which meets in September 2014, is pending. RA IV endorsed the Group at its 16th session in 2013.

NOAA and EUMETSAT support of the work of this group has been critical and should continue.

WG IV took note and appreciated the progress on the responses to region-based requirements for satellite data access and exchange.

WG IV/11 Review and updating of the HLPP

In **CGMS-42 CGMS-WP-07**, the CGMS Secretariat presented the status and a proposed update of the CGMS High Level Priority Plan (HLPP) as part of the agreed revision cycle of the HLPP. The update is based on the following inter-sessional activities:

Revision of the priorities for part 3: "Enhance the quality of satellite-derived data and products", as elaborated by the co-Chairs and rapporteurs of WG II.

Recommendations from ITWG:

- Refinement of split of responsibilities between WG I and WG IV;
- Establishment of a four-year work plan for climate by the JWGClimate;
- Other revisions identified by WG Chairs and co-Chairs.

The Status of implementation of HLPP 2014-2018 (Version 2) and the proposed updated High-Level Priority Plan 2014-2018 (Version 3, including track changes) are provided as an Annex to the paper.

After discussion the working group concluded that all HLPP items covered by WG IV are still considered relevant and important (none of them are obsolete or complete). The working group also agreed to the updated HLPP.

WG IV/12 Any other business

There were no items.

WG IV/13 Planning of inter-sessional activities/meetings

Two inter-sessional meetings are planned:

Q4 2014: Joint WG I/IV inter-sessional meeting on the analysis of the LRIT/HRIT Global Specification by CGMS members' focal points.

Q1 2015: WG IV inter-sessional meeting to review actions and to prepare the CGMS-43 agenda.

WG IV/14 Review of actions/conclusions, preparation of WG report for the plenary

The final list of WG IV actions and recommendations resulting from CGMS-42 deliberations is available here.

The co-Chairs thanked the participants and the WG IV session was closed at 09:00 on Tuesday, 20 May 2014.