



Report of the 41st Meeting of the
Coordinated Group for Meteorological Satellites

Parallel Working Group Sessions: WGI Report

PARALLEL WORKING GROUP SESSIONS

WGI REPORT

Working Group I: Global Issues on Satellite Systems and Telecommunication Coordination

WGI/0 Introduction

As agreed during the plenary session of CGMS-40, Marlin O. Perkins (NOAA) and Joaquin Gonzalez (EUMETSAT) were planned to act as Chairperson and rapporteur, respectively, of Working Group I (WGI) on Global Issues on Satellite Systems and Telecommunication Coordination. Unfortunately, Marlin O. Perkins (NOAA) was unable to attend CGMS-41. Alternatives to chairmanship were discussed prior to the start of the WGI meeting and it was agreed that Charles Wooldridge (NOAA) would act as Chairperson for WGI in this CGMS-41 meeting (assuming Marlin O. Perkins will resume his chairmanship role for WGI in CGMS-42).

WGI comprised representatives of the satellite operators from CMA, CNSA, EUMETSAT, ISRO, JAXA, JMA, KARI, KMA, NOAA, ROSCOSMOS, ROSHYDROMET, WMO (see Annex for the list of participants).

WGI chairmanship difficulties resolved, the Agenda proposed by the CGMS Secretariat prior to the meeting, was discussed and adopted with the following modifications:

- Moved from agenda item I/4: International data collection and distribution and proposed under agenda item WGI/3, Direct broadcast services, the following Working Papers (WPs) were discussed in WGI/3.1 Direct read-out stations:
 - **NOAA-WP-13** Fast delivery initiatives using direct broadcast with extensions wherever possible;
 - **NOAA-WP-09** Recommendations seeking affordable receiving stations; and
 - **EUMETSAT-WP-17** (Presentation) EARS Roadmap (EUMETSAT Advanced Retransmission Service).
- Added to agenda item I/4: International **NOAA-WP-08**: Status of the International Data Collection System (IDCS)

WGI/1 Review of actions from the Previous Meeting

Actions from previous meetings were discussed at the beginning of the working group meeting as summarised below:

Action 39.21. Based on the inputs of the previous action, CGMS members to analyse potential interference issues reporting results of analysis back to CGMS WGI by next CGMS meeting. **Deadline: CGMS-40**

Status: Open. At CGMS-40 a new deadline was proposed for the end of the first quarter 2013 for a specific follow-up WGI inter-sessional e-meeting which had to be postponed to a new e-meeting in May 2013 as key inputs were missing from some of the WGI participants. The second e-meeting was also cancelled due to missing feedback. A new deadline was agreed and the discussion will be held during an inter-sessional meeting in November 2013.

Action 40.10. Interested satellite operators to inform WMO if they identify/designate a representative to be invited to the Satcom forum (WMO point of contact is Etienne Charpentier, Echarpentier@wmo.int). **Deadline: 31.12.2012**

Status: Closed. PoC details provided by NOAA and EUMETSAT.

Action 40.11. CGMS members to provide comments to the draft ToR of the Users of Satellite Data Telecommunication Systems (Satcom) Forum, included in the annex to CGMS-40-WMO-WP-02, by the end of December 2012.

Deadline: 31.12.2012

Status: Closed. EUM input provided in 2012 incorporated in current version, NOAA feedback by e-mail 6 March 2013 to be incorporated in the ToR. Agreed to copy final version of the ToR to all CGMS members (via CGMS Secretariat).

Action 40.12. CGMS members to complete and review interference assessment (in response to action 39.21) by end Q1 2013 (e-meeting).

Deadline: 31.03.2013

Status: Open. At CGMS-40 a new deadline was proposed for the end of the first quarter 2013 for a specific follow-up WGI inter-sessional e-meeting which had to be postponed to a new e-meeting in May 2013 as key inputs were missing from some of the WGI participants. The second e-meeting was also cancelled due to missing feedback. A new deadline was agreed and the discussion will be held during an inter-sessional meeting in November 2013.

Action 40.13. Round-table for reviewing the proposed update to CGMS Global Specification 04 (by end of Q1 2013 - same e-meeting as for action 40.12). **Deadline: 31.03.2013**

Status: Closed. WGI Inter-sessional meeting at end of March 2013 confirmed the support from all CGMS members to the proposed modification to CGMS-04. Discussion during the CGMS-41 meeting also confirmed the unanimous

agreement in WGI to the proposed update. To be reported to the plenary for applying the necessary change control mechanism to the update to the corresponding CGMS global spec.

WGI/2 Frequency management matters: SFCG, ITU and WRC activities

CMA-WP-03 provides supplementary Information on X-band utilisation by FY-3 satellites in response to CGMS-39 action WGI 39.20 (which was closed at CGMS-40). The updated information covered the utilisation of band 7750-7900MHz and CMA has provided X-band details on the FY-3 DB service that plans to cover the duration from 2008 to 2020 (or beyond). In addition to the global L-band AHRPT direct broadcast (DB) service, the FY-3 satellite is able of X-band MPT format direct broadcast service. At present, the FY-3 is programmed to transmit MPT format data within China to avoid interference with other facilities. Because of this, the MPT DB service open outside of China is only possible through specific bilateral arrangements.

The MPT data stream contains the raw data of MERSI instrument measurements. With this report CMA hopes to bring the attention to the utilisation of band 7750-7900MHz by FY polar-orbiting system for X-band DB service that covers the duration from 2008 to 2020 or beyond (ref.: CGMS-40-CMA-WP-02).

The FY-3 orbital parameters are:

- Nominal orbit height: 836.4Km
- Inclination: 98.753 deg.
- Eccentricity: 0.0025
- Half long-axis: 7207.63Km
- Apogee: 854.42Km
- Perigee: 818.38Km
- Period: 101.603minutes
- Daily flight circles: 14.1728
- Time at descending node: 10:20 am
- Shift Nodal time maintained: 10min (2 years)

Frequency and signal characteristics (as of 20 October, 2012):

Satellite	name	Transmission Point	frequency	(MHz)	EIRP Polarizati	On	Modulatio
FY-3A/-3B	MPT	7775.00	46dBw (EL=5o)	RHC	QPSK	18.7Mbps	S-E
FY-3C	MPT	7780	46dBw (EL=5o)	LHC	QPSK	37.4Mbps	S-E
FY-3D	MPT	7820	46dBw (EL=5o)	RHC	QPSK	60Mbps	S-E

Supplementary information: the FY-3 afternoon orbital parameter
Nominal orbit height: 836.4Km
Inclination: 98.753deg
Eccentricity: 0.0025
Half long-axis: 7207.63Km
Apogee: 854.42Km
Perigee: 818.38Km
Period: 101.603minutes
Daily flight circles: 14.1728
Time at ascending node: 13:30 am
Shift Nodal time maintained: 10min (2 years)

This WP is provided by CMA as complementary information to CGMS-39/-40 actions WGI 39.21 and 40.12.

WGI appreciated the information update provided by CMA and WMO took the opportunity to bring to the attention of WGI members on the availability of the WMO Observing System Capability Analysis and Review Tool (OSCAR). As addressed during CGMS-40, WGI members were encouraged to provide updates and keep WMO informed on frequency information of their respective systems (present and future ones).

EUMETSAT-WP-10 provides an overview on World Radiocommunication Conference 2015 (WRC-15) related issues of relevance to EUMETSAT and MetSat systems/operators in general. WRC-15 agenda items of relevance to MetSat include agenda items 1.1, 1.6, 1.9.2, 1.10, 1.11, and 9.1.1.

Furthermore, MetSat issues not directly related to WRC-15 considered within ITU-R Working Party 7B of ITU-R Study Group 7 are summarised in this document.

WRC-15 Agenda Item 1.1

This agenda item deals with consideration of additional spectrum allocations to the mobile service and identification of additional frequency bands for International Mobile Telecommunications (IMT) and to facilitate the development of terrestrial mobile broadband applications, likely to concentrate on bands below 6 GHz.

The main frequency bands at risk for MetSat systems, the embarked instruments and related services MetSat operators use are expected to be:

- the 1695 – 1710 MHz bands used for meteorological satellite applications;
- the bands 2025 – 2110 MHz and 2200 – 2290 MHz used for earth exploration satellite and space operation (TM/TC and ranging) services. While these bands have been secured in the past by application of RR No. 5.391, the agenda item asks specifically for a review of studies conducted in the past;

- the band 3400 - 4200 MHz used for dissemination of meteorological data in the framework of GEONETCast;
- the active remote sensing band 5250-5570 MHz used for SARs, scatterometers and altimeters.

Agenda Item 1.1: 1695 – 1710 MHz

According to the fast track implementation plans for broadband mobile in the US and Canada, the band 1695 – 1710 MHz will likely be proposed by those countries for a global identification of this band for broadband mobile systems in the framework of WRC-15 agenda item 1.1.

In the framework of the European (European Conference of Postal and Telecommunications Administrations (CEPT)) preparation for WRC-15, this band is noted to be widely used by meteorological satellites systems (Space to Earth), concluding that this use represents a large number of receiving Earth Stations that would not be compatible with typical mobile deployment. In addition, this band is not considered relevant for mobile service due to the limited bandwidth available. CEPT therefore considers as preliminary position that the frequency band is not suitable.

Agenda Item 1.1: 2025 – 2110 MHz and 2200 – 2290 MHz

So far in the ITU-R responsible fora for the preparation for this agenda, namely the Joint Task Group 4-5-6-7, as well as within CEPT, these bands do not play a major/prime role in the consideration/review of candidate bands for mobile broadband systems. However, there are still proponents for these bands in the mobile broadband industry. Thus it is necessary to continue to closely monitor the developments in the discussion on these bands at ITU-R and regional level, in order to ensure that these important bands for MetSat systems are secured for long-term availability for the MetSat operators.

Agenda Item 1.1: 3400 - 4200 MHz

Considering the importance of this band for the dissemination of meteorological data, it has to be noted, that the band 3.4-3.8 GHz is one of the highest priority bands for the broadband mobile proponents. Some parties even go as far as to propose the entire C-Band (3.4-4.2 GHz) for mobile broadband identification.

In view of the incompatibility between both applications such designation of the entire band could be detrimental for the commercial satellite operators, and with this could also negatively affect the dissemination of meteorological data in the long term. With the possibility that the band 3.4-3.8 GHz could be globally designated to broadband mobile at WRC-15, at least the band 3.8-4.2 GHz should be kept available for the deployment of satellite Earth stations in the long term.

Agenda Item 1.1: 5350 – 5470 MHz

Under this agenda item the extension of the current RLAN (WiFi) spectrum (5150-5350 MHz and 5470-5725 MHz) by also allocating the gap in between (5350-5470 MHz) for RLANs is under discussion. Such additional allocation of the band 5350–5470 MHz would affect the POSEIDON altimeters on the Jason satellites and SRAL on Sentinel-3 as well as CSAR on Sentinel-1, all using the targeted frequency spectrum.

Compatibility assessments carried out so far for altimeters and SARs show the interference potential from RLAN to those instruments, where the interference to SARs constitutes the worst case. In CEPT there is still no common view on this band CGMS-41 (and more fundamentally) whether additional RLAN spectrum should at all be identified in the framework of this agenda item.

WRC-15 Agenda Item 1.6

This agenda item deals under 1.6.1 with consideration of possible additional primary allocations to the Fixed-Satellite Service (Earth-to-space and space-to-Earth) of 250 MHz in the range between 10 GHz and 17 GHz in Region 1.

Agenda item 1.6.2 deals with consideration of possible additional primary allocations to the Fixed-Satellite Service (Earth-to-space) of 250 MHz in Region 2 and 300 MHz in Region 3 within the range 13-17 GHz.

One of the targeted frequency bands for a possible allocation of FSS (Earth-to-space) is 13.25-13.75 GHz, which raises particular concerns with regard to the allocation of this band to EESS (active). This band is used for active remote sensing (altimeters and scatterometers) by missions such as Cryosat, Jason-2, -3, Jason-CS, Sentinel-3, and HY-2.

Studies in preparation to an earlier WRC in 1992 have already proven the incompatibility between these services with the result that the band 13.75-14 GHz got lost to the FSS and was no longer usable for EESS (active). Therefore, a new allocation to FSS (E-s) in the band 13.25-13.75 GHz despite this incompatibility would be detrimental to the long term usability of this band for active sensors.

Work is currently undertaken in the ITU-R in Study Group 7 to follow this agenda item and if necessary, to initiate sharing studies for the affected EESS (active) bands. For this purpose Working Party 7C is working on the Preliminary Draft Revision of Report ITU-R RS.2068: “Current and Future Use of the Band 13.25-13.75 GHz by Spaceborne Active Sensors”.

Within CEPT the need for additional primary allocations of 250 MHz (Earth-to-space and space-to-Earth) to the GSO FSS in frequency bands between 10 and 17 GHz in Region 1 is recognized and supported. However, an allocation can be made only if studies demonstrate the compatibility with the existing

services in these frequency bands. At this stage, based on studies provided, CEPT does not support FSS (E-s) allocation in the 13.25-13.75 GHz band.

WRC-15 Agenda Item 1.9.2

This Agenda Item deals with the possibility of allocating the bands 7 375-7 750 MHz and 8 025-8 400 MHz to the Maritime-Mobile Satellite Service (MMSS) and additional regulatory measures, depending on the results of appropriate studies.

The potentially affected space science service bands under this agenda item are 7450-7550 MHz MetSat (s-E, GSO) and 8025-8400 MHz EESS (s-E). Thus, no new CGMS-41 allocations to the MMSS should be made in these frequency bands unless acceptable sharing criteria with the science services are developed.

Of particular concern is the potential interference to EESS (s-E) operations in 8025-8400 MHz at high latitudes from ships operating in closer proximity. Large exclusion zones may be needed to avoid interference to EESS earth stations. Many EESS earth stations are located near coastal areas (e.g., Svalbard, McMurdo, Maspalomas, Lannion, Wallops) and could be seriously affected by emissions from vessels navigating in the area.

ITU-R Working Party 7B at its September 2012 and April 2013 meetings considered a number of input contributions under WRC-15 Agenda Item 1.9.2, among which several sharing studies to assess the sharing and compatibility aspects under this agenda item.

All compatibility analysis on the two different sharing aspects (MMSS vs. EESS and MMSS vs. SRS) came to similar conclusions regarding the sharing difficulties with EESS and the required separation distances to protect the SRS Earth stations. To summarise the results of these compatibility analysis, ITU-R Working Party 7B developed a Preliminary Draft New Report SA.[MMSS 8-GHz] on compatibility of the possible new MMSS (E-s) allocation in the 8025-8400 MHz band with EESS and the Space Research Service (SRS).

WRC-15 Agenda Item 1.10

This Agenda Item deals with the consideration of spectrum requirements and possible additional spectrum allocations for the Mobile-Satellite Service (MSS) in the Earth-to-space and space-to-Earth directions, including the satellite component for broadband applications, within the frequency range from 22 GHz to 26 GHz.

The main frequency bands at risk for CGMS member agencies are:

- The EESS (passive) band 23.6-24 GHz (purely passive, but to be protected against unwanted emissions taking into account interference

apportionment and the levels contained in ITU Reslution 750 (rev. WRC-12)); and

- The first 500 MHz of the EESS/SRS space-to-Earth band 25.5 – 27.0 GHz.

So far the frequency bands targeted by the proponents of such new allocations to the MSS are not clear. Thus, the developments in preparation for this WRC-15 agenda item needs to be further carefully monitored.

WRC-15 Agenda Item 1.11

This Agenda Item deals with the consideration for a primary allocation for the Earth exploration-satellite service (Earth-to-space) in the 7-8 GHz range, in accordance with Resolution COM6/17 (WRC 12).

Initially proposed by ESA through CEPT, this agenda item calls for the identification of a suitable frequency band for an EESS (Earth-to-space) allocation in the 7-8 GHz range for telecommand operations in order to complement telemetry operations of EESS (space-to-Earth) in the 8 025-8 400 MHz band.

Although there is currently no MetSat system envisaged that would make use of such a new allocation, such spectrum would enlarge the potential evolutions of future MetSat systems and deployment scenarios.

WG 7B at its September 2012 and April 2013 meetings considered a number of input contributions under WRC-15 Agenda Item 1.11 and dealt with the following compatibility issues:

- Compatibility between EESS (Earth-to-space) and the space research service or the space operation service in the band 7 100-7 235 MHz;
- Compatibility between EESS (Earth-to-space) and the potential Fixed Satellite Service (under agenda 1.9.1) in the 7 100-7 235 MHz; and
- Sharing between the EESS (Earth-to-space) and the fixed service in the 7-8 GHz range.

In addition WP 7B dealt with the determination of the spectrum requirements for a potential new EESS uplink allocation.

The different compatibility and sharing studies as well as the assessments of the bandwidth requirements (45 or 60 MHz are currently under consideration) for the potential new EESS uplink allocation came to similar conclusions. The results of those studies were summarised in corresponding ITU-R Preliminary Draft New Reports.

WRC-15 Agenda Item 9.1.1

This agenda item deals with ITU-R Resolution 205 (Rev.WRC 12) - Protection of the systems operating in the mobile-satellite service in the band 406-406.1 MHz. Cospas-Sarsat space segment providers have developed protection criteria for the search and rescue instruments of Cospas-Sarsat and local user terminals in the 406.0 - 406.1 MHz band in order to protect them against broadband out-of-band emissions and against narrow-band spurious emissions.

These protection criteria have been recognized at the ITU level through ITU-R Recommendation M.1478-1. This recommendation currently covers the protection requirements for SARP repeaters as well as repeaters on all current GSO MetSat satellites carrying SAR repeaters. However, they do not provide protection requirements for repeaters on MEO satellites and generally does not contain the protection requirements against emissions in adjacent bands which could hinder the Cospas-Sarsat system's ability to detect and/or relay signal from beacons. Thus, Cospas-Sarsat with the support of its space segment providers will need to develop the relevant protection criteria for submission to the relevant ITU-R groups and translation into an ITU-R recommendation.

ITU-R Working Party 4C is the responsible group for preparing this agenda item at which an ITU-R Preliminary Draft New Report is under development dealing with the protection of systems operating in the band 406 - 406.1 MHz. ITU-R Working Party 7B provided information on technical characteristics and the degree of deployment of EESS, MetSat and MetAids systems in this range and providing the compatibility analysis with the data collection platforms deployed within the 401-403 MHz band.

MetSat issues (unrelated to WRC-15) currently under discussion within ITU-R

Characteristics, sharing and performance criteria of EESS and MetSat

Since a number of meetings Working Party 7B is performing work towards revising and merging all ITU-R Recommendations dealing with MetSat and EESS systems in terms of characteristics, sharing and performance criteria.

This work now led to the development of the following two new Preliminary Draft New Recommendations (PDNRs):

- ITU-R SA.[EES/MET CHAR]: "Characteristics to be used for assessing interference to systems operating in the Earth exploration-satellite and meteorological-satellite services and for conducting sharing studies".

With a view to reduce the characteristics for each frequency band to typical/representative sets of data for each function, ITU-R Working Party 7B maintained its strong encouragement to Administrations to contribute and

participate to this work at the forthcoming meetings of WP 7B, in particular for providing, verifying and limiting the relevant characteristics of EESS and Metsat systems.

- ITU-R SA.[EES/MET METH]: “Protection criteria for MetSat and EESS services”.

With regard to the PDNR ITU-R SA.[EES/MET METH] words of caution were raised that with the new PDNR it has to be ensured that the same level of protection would have to be ensured as provided with the current set of recommendations and that it has to be assessed carefully that all necessary elements from the existing recommendations have been carried over to the new PDNR.

Currently this PDNR SA.[EES/MET METH] only contains a procedure for determining compatibility of systems in a shared co-allocation or allocated in adjacent bands solely based on a C/N+I criteria requiring the performance of dynamic simulations.

It was agreed to complement the C/N+I criterion currently described in this PDNR by another criterion (still to be included in this PDNR), such as delta T/T, I/N or discrete values as in the current recommendations that can be used for either static or dynamic analysis.

Once the two new recommendations are adopted, the need to retain the current recommendations will be assessed.

Data collection platforms in the 401-403 MHz band

ITU-R Working Party 7B at its September 2012 meeting agreed the following Draft New Recommendations:

- ITU-R SA.[EES/MET DCS INTERF]: “Protection criteria for non-GSO data collection platforms in the band 401-403 MHz”
- ITU-R SA.[EES/METSAT USAGE 401-403 MHz]: “Basic general partitioning and sharing conditions for the band 401-403 MHz for future long-term coordinated use of data collection systems on geostationary and nongeostationary MetSat and EESS systems”

These DNRs are subject for adoption at the next ITU-R Study Group 7 meeting in September 2013. With the adoption of the Recommendation ITU-R SA.[EES/METSAT USAGE 401-403 MHz], the basic general partitioning plan for the band 401-403 MHz, initially developed by SFCG and endorsed by CGMS, will also be ITU-R “stamped”.

WGI thanked EUMETSAT for the detailed report provided on the frequency related topics of interested to CGMS (Europe area).

EUM-WP-11 provides a summary of issues discussed at the 33rd meeting of the Space Frequency Coordination Group (SFCG), held on 25 June - 3 July 2013, which could be of potential interest to CGMS.

WRC-15 issues of mutual interest to SFCG and CGMS

SFCG refined their objectives concerning issues affecting space science services on the agenda of the World Radiocommunication Conference 2015 (WRC-15).

On WRC-15 agenda items of most common interest to SFCG and CGMS member agencies, namely agenda items 1.1, 1.6.1, 1.6.2, 1.9.2, 1.10, 9.1.1, and 10, the following SFCG objectives, as contained in the corresponding SFCG Resolution 32-1R1 (SFCG WRC-15 Objectives), are quoted below:

WRC-15 Agenda Item 1.1 (frequency spectrum for broadband mobile)

According to the SFCG objective no allocations of spectrum to support mobile broadband systems, IMT or RLAN, should be made in space science service bands unless acceptable sharing criteria and conditions are developed.

The main frequency bands of concern to SFCG member agencies are:

- the 1400-1427 MHz band used for EESS (passive) (e.g. Aquarius, SMOS, SMAP missions), whose adjacent bands 1375-1400 MHz and 1427-1452 MHz have been proposed for IMT identification. Considering current technical studies, SFCG is of the view that any decision made about identification of the bands 1375-1400 MHz and 1427-1452 MHz for broadband mobile will have to be associated with the inclusion of relevant mandatory unwanted emissions limits in the 1400-1427 MHz band in the RR;
- the 1695-1710 MHz band used for meteorological satellite applications. This band is used by all meteorological-satellite systems with Earth stations operated by almost all National Meteorological and Hydrological Services (NMHS) and many other users. This band is essential for providing operational and timecritical meteorological information to the users around the world. For this reason SFCG is opposed to an allocation/identification of the frequency band 1695–1710 MHz for terrestrial mobile broadband applications including IMT except if such allocation/identification ensures the protection of MetSat Earth station operations in that band;
- the 3400-4200 MHz band, used for Galileo Data Distribution Network and the dissemination of meteorological data via EUMETCast, CMACast and GEONETCast;
- the 5350-5470 MHz active remote sensing band used for SARs (e.g. Radarsat, GMES Sentinel-1 satellites), and altimeters (e.g. GMES

Sentinel-3 satellites, HY-2). On the basis of current technical studies, which show that RLANs cannot share the band 5350-5470 MHz with EESS (active), SFCG opposes an allocation to the MS in this band for use by terrestrial mobile broadband applications.

In addition, SFCG opposes any revisiting of the conditions set in RR No. 5.391 pertaining to the bands 2025-2110 MHz and 2200-2290 MHz used for space research, earth exploration-satellite and space operation services and therefore objects to any IMT identification in these bands under agenda item 1.1.

WRC-15 Agenda Item 1.6.1 and 1.6.2 (new frequency allocations for FSS)

SFCG supports the protection of existing space science service allocations. No additional allocation of spectrum to support Fixed Satellite Service (FSS) (E-s or s-E) should be made in space science service bands unless acceptable sharing conditions are agreed. There is particular concern with the possible allocation of FSS (Earth-to-space) in the 13.25-13.75 GHz band allocated to EESS (active). This band is used for active remote sensing (altimeters and scatterometers) by missions such as Cryosat, Jason-2, -3, Jason-CS, Sentinel-3, and HY-2. Prior studies have shown incompatibility between these services. Therefore, SFCG supports no new allocation to FSS (E-s) in the band 13.25-13.75 GHz.

WRC-15 Agenda Item 1.9.2 (new frequency allocation for MMSS)

SFCG supports the protection of existing METSAT and EESS allocations as well as the protection of SRS (s-E) (deep space) allocation from adjacent band interference. No new allocations to the Maritime Mobile Satellite Service (MMSS) should be made in these frequency bands unless acceptable sharing conditions with the science services are agreed. Particular concern is noted with regard to potential interference to EESS (s-E) operations in 8025-8400 MHz at high latitudes from ships operating in proximity.

Large exclusion zones would be needed to avoid interference to existing and future EESS and SRS earth stations.

WRC-15 Agenda Item 1.10 (new frequency allocations for MSS)

SFCG supports the protection of all the space science bands in the range 22-26 GHz considered under this AI. No new allocations to the Mobile Satellite Service (MSS) should be made unless acceptable sharing criteria with the affected space science service are developed. The main frequency bands at risk of common concern to SFCG and CGMS member agencies are:

- The EESS (passive) band 23.6-24 GHz (purely passive, but to be protected against unwanted emissions taking into account interference apportionment and the levels contained in ITU Resolution 750 (rev. WRC-12)); and

- The first 500 MHz of the EESS/SRS space-to-Earth band 25.5-27.0 GHz.

WRC-15 Agenda Item 9.1.1 (Protection of COSPAS-SARSAT)

SFCG supports the development of the studies with a view of having an adequate protection of the MSS in the band 406-406.1 MHz in order to detect and successfully process 406 MHz distress signals while not putting undue constraints to existing and planned systems in the adjacent frequency bands 390-406 MHz and 406.1-420 MHz. Regulatory provisions should be developed accordingly with their possible inclusion into a WRC Resolution.

WRC-15 Agenda Item 10 (Agenda Items for WRC-18)

CNES and EUMETSAT proposed to add to the SFCG objective for WRC-15 an agenda item for WRC-18 for upgrading the secondary allocation to the MetSat (space-to-Earth) in the band 460-470 MHz to primary in order to secure future use of the band for ARGOS-4. Such a proposal for a WRC-18 agenda item will also be introduced in the European preparation process for WRC-15.

The objective of such an agenda item for WRC-18 is to improve the regulatory status of the meteorological satellite (space-to-Earth) service in the frequency band 460-470 MHz while putting relevant constraints on this service in order to protect the existing primary (mobile, fixed) services.

NOAA voiced their support for such an agenda item WRC-18 and announced to put a similar proposal into the US preparatory process for WRC-15.

The proposed agenda item was supported by SFCG and included in the SFCG objectives Resolution SFCG 32-1R1 as an item of interest for a WRC beyond WRC-15 .

MetSat use in the band 1695 – 1710 MHz

NOAA provided an updated status of the situation in the United States regarding the repurposing of the band 1695-1710 MHz.

Legislation in the United States has authorized an auction intended for spectrum sharing in the band 1695-1710 MHz between U.S. Federal stations in the Meteorological Satellite Service (S-E) with Mobile users for broadband wireless communications.

According to this, the band 1695-1710 MHz will be auctioned still in 2013 with an expected sharing to take place within three years (2015/16).

For the protection of the most important sites at which MetSat Earth stations of federal users are located in the US, 27 coordination zones are identified

with typical coordination zone sizes of 40 km for POES, respectively 10 km for GOES reception.

Earth stations of non-federal users located outside of these zones will not be protected. In order to ensure that broadband mobile users will respect those coordination zones the mobile base stations will authorize the user terminals to operate in the band 1695-1710 MHz. In the US a potential logical pairing of this band is considered to be the band 2095-2110 MHz.

It can be expected that the band 1695-1710 MHz will be proposed by the US for a global identification of the band at WRC-15.

Contrary, CEPT already defined a preliminary position which does not support this band for broadband mobile. CMA, ISRO and EUMETSAT highlighted the importance of the band 1695-1710 MHz for their MetSat systems. Contrary to CEPT, the positions within the Asia Pacific Telecommunity (APT) and also within Russian Commonwealth in the field of Communication (RCC) are not yet determined.

In view of this support for retaining the band 1695-1710 MHz for MetSat Earth stations for providing operational and time-critical meteorological information to the users around the world, SFCG, as detailed in Resolution SFCG 32-1R1, is opposed to an allocation/identification of the frequency band 1695-1710 MHz for terrestrial mobile broadband applications including IMT except if such allocation/identification ensures the protection of MetSat Earth station operations in that band.

In view of this decision in the United States for sharing of the band 1695-1710 MHz with broadband mobile and the adjustment in the spectrum planning required for current and future NOAA geostationary and non-geostationary MetSat systems, NOAA proposed modifications to Recommendation SFCG 11-1R3 concerning the use of the band 1670-1710 MHz for meteorological-satellite services.

However, SFCG considered the proposed changes to this recommendation too premature and adopted an action item instead which asks MetSat operators to consider their present and future planned use of the band and provide recommended changes in time for SFCG-34.

MetSat use in the band 7750 - 7900 MHz

EUMETSAT provided the results of a compatibility assessment between the direct data broadcasts of EPS-SG and FY-3 in the band 7750-7900 MHz. Both systems as well as NOAA's NPP and JPSS satellites operate or plan to operate a direct data broadcast to the users in this band. Due to the bandwidth requirements of all systems planning to use this band for a data broadcast, spectrum overlap will be unavoidable.

The compatibility assessment between the direct data broadcasts of EPS-SG and FY-3 (the considered worst case) showed that there is a very low probability of interference to each other and in general limited to a scenario where both systems deploy high latitude Earth stations. It was considered useful to develop a frequency plan for this band, once the bandwidth requirements and corresponding technical characteristics of all systems planning to use this band are sufficiently mature.

In order to ensure the continued efficient use of this recently enlarged band from 7750-7850 MHz to 7750-7900 MHz at WRC-12, it was considered necessary to review SFCG Resolution 19 7R3 ("Use of the band 7750-7850 MHz by NGSO MetSat") with the view to assist in the most optimum use of this meteorological satellite service band 7750-7900 MHz, providing a guideline to the Metsat operators, which are currently in the phase of planning and developing next generation polar-orbiting systems using this band. For this purpose a corresponding action item was agreed.

Passive Sensor Filter Characteristics

In Report SFCG 32-1 information on passive sensors filter characteristics are compiled to ease the task of SFCG members in discussions pursuant to the definition of protection requirements and the resolution of interference cases with their national radiocommunication authorities.

Adopted at SFCG-32, this report provided information on filter characteristics of passive sensors of SMOS, MHS (on Metop), MWR (on ENVISAT) and AMSU (on Metop). At SFCG-33 passive sensor filter characteristics for ATMS (on NPP) and MWR (on Sentinel-3) were added to a revised SFCG Report 32-1R1.

This SFCG Report is considered to be a living document which will be updated as further information on passive sensor filter characteristics are available. Therefore, SFCG members were still invited to gather information related to their sensors in response to a corresponding agenda item for SFCG-34.

1400-1427 MHz RFI

ESA provided an updated worldwide overview of the interference environment in the 1400-1427 MHz passive band as observed by SMOS mission.

By May 2013, 570 RFI sources distributed worldwide have been detected and 45 % these interferences were suppressed thanks to the cooperation of the national spectrum management authorities. It has been found that some of the strongest RFI sources are masking other weaker RFI underneath, hence it is expected the total number of RFI detected may increase as strong ones are progressively located and switched off. Most RFIs currently active are located in Asia (49 %), and new strong RFI sources are been detected occasionally worldwide. Detecting and flagging contaminated observations and contacting

national authorities to localise and eliminate RFI sources emitting in the protected band present a continuous challenge.

As an approach to improve the situation several strategies have been put in place to improve scientific retrieval of SMOS team under the RFI scenario observed worldwide in order to make most use of the data whilst the RFI situation is attempted to be progressively improved.

This status report of the RFI situation on SMOS shows that it is essential to protect the passive band 1400-1427 MHz from both illegal and excessive unwanted emissions. While the solution of the RFI due to illegal emissions can be achieved with the cooperation of the national authorities, the solution of the excessive unwanted emissions problem requires regulatory action and compliance with the levels adopted in ITU-R Resolution 750 (WRC-07). This effort has to be continued and intensified by raising concern among the different countries and organisations about the impact of RFI in passive remote sensors.

A similar RFI situation is observed by the AQUARIUS scatterometer at 1260 MHz and the AQUARIUS radiometer at 1413 MHz as outlined the global surveys of RFI from EESS (active) sensors performed by NASA.

In view of such an unsatisfactory RFI situation in this spectrum area it was agreed to develop a Draft SFCG Report (EESS L-Band sensors RFI survey) for SFCG-34 which will gather RFI information experienced by both, active and passive remote sensors in L-Band.

Compatibility of SRDs with EESS (passive) at 122 GHz

An overview was provided on the outcomes of a work undertaken within CEPT, the European Conference of Postal and Telecommunications Administrations, leading to the recent adoption of ECC Report 190 on "Compatibility between Short-Range Devices (SRD) and EESS (passive) in the 122 to 122.25 GHz band".

The band 122-123 GHz is identified for ISM applications as per ITU Radio Regulations Footnote 5.138 and, as most ISM bands, is hence considered for SRDs.

In 2011, the European Commission decided to include this band in its Decision on Short-Range Devices with a generic maximum e.i.r.p. of 20 dBm. ESA, EUMETSAT and EUMETNET raised concerns about the compatibility of such generic SRDs with EESS (passive) in the 122-122.25 GHz band and CEPT therefore decided to study this issue.

The ECC Report 190, recently adopted within CEPT, confirms that SRDs operated with 20 dBm maximum e.i.r.p. are not compatible with EESS (passive) sensors operating in the 122-122.25 GHz band and concludes that two additional limitations should be applied to SRDs in the 122-122.25 GHz

band, namely a maximum e.i.r.p. density of 10 dBm/250 MHz (rms) and a maximum e.i.r.p. density above 30° elevation of -48 dBm/MHz (rms).

This ECC Report 190 is considered useful to other SFCG members facing similar compatibility issue at national or regional level.

Impact of RLANs in 5350-5470 MHz

An assessment performed by ESA was presented, providing the results of analyses based on both static and dynamic methodologies to address the compatibility between radio local area networks (RLANs) and EESS (active) in the 5350-5470 MHz band.

The study demonstrates that RLANs cannot share the band 5350-5470 MHz with EESS (active) and that any introduction of RLANs into this band will endanger the operation of current and planned EESS systems, in particular narrowband SAR instruments (such as the ESA Sentinel-1 mission (3 satellites) and the Canadian missions Radarsat-2 and upcoming Radarsat-RCM (3 satellites)).

Triggered by these results and considering recent development under WRC-15 Agenda item 1.1 on possible consideration of the 5350-5470 MHz band for use by RLANs, SFCG revised Resolution 23-2 on the use of Synthetic Aperture Radars (SAR) in the band 5250-5570 MHz. Among others, it resolves that member agencies advocate within their administrations to avoid any allocation to wireless access systems (indoor or outdoor) in the band 5350-5470 MHz for the purpose of maintaining the highest reliability and availability of EESS (active) SAR measurements in this band.

The proposed revisions to the technical resolution are consistent with recent work in ITU-R Working Party 7C that led to a liaison statement to ITU-R Joint Task Group 4-5-6-7 which is the responsible group in the ITU for the preparation of WRC-15 agenda item 1.1.

Consequently, in the SFCG objectives decision 32-1R1, SFCG expresses its opposition to an allocation to the mobile service in the band 5350-5470 MHz for use by terrestrial mobile broadband applications.

WGI thanked EUMETSAT for the detailed report provided on the SFCG activities and to the efforts made, as appointed liaison to SFCG, to make available the outcome of the SFCG meeting 33 (which completed activities on 3 July 2013 (2 days before the CGMS-41 meeting)).

CGMS WGI also wanted to reiterate to SFCG the appreciation of CGMS on the support provided in protecting and preserving the frequency bands assigned or related to the activities of CGMS.

ISRO-WP-01 provides a summary of the operational plans by ISRO regarding INSAT satellites in relation to the Data Collection System and the frequency

plans, derived by the agreements reached within CGMS and SFCG, for sharing the DCS uplink band (401-403 MHz).

ISRO has operated Meteorological satellites from 74 degE, 83 degE and 93.5 degE orbital slots for many years. Currently Kalpana and INSAT-3A satellites are operating at 74 degE and 93.5 degE orbital slots respectively. Hence the INSAT-3D satellite was planned at 83 degE. Due to operational reasons later it was decided to park INSAT-3D satellite at 82 degE. Another advanced Meteorological satellite INSAT-3DR is being built by ISRO, it was initially planned for 400 KHz of DCP band from 402.25 to 402.65 MHz. However after obtaining the responses from various Metsat operators, the band was reduced from 402.25-402.65 to 402.5-402.65 MHz, especially due to overlap with Russian GOMS satellite at 76 degE. Already letters have been written to various Administrations based on their objections to ITU filings made by Indian Administration under the filing names INSAT-MET (74E, 81.5E, 82E, 83E and 93.5E) satellite networks.

Recently coordination agreement has been received from F/ESA providing their concurrence for the completion of coordination in the 401-403 MHz. ISRO needs similar agreement/concurrence from other Metsat operators for the operation of INSAT-3D and INSAT-3DR satellites in this meeting. Because INSAT-3D will be launched in July 2013 and coordination agreement is required urgently for operating at 82 degE ISRO has requested CGMS members to provide feedback on the coordination steps to complete the notification process with ITU.

CGMS-41 actions – WGI						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS space agencies	WGI/2	41.16	CGMS members (satellite operators) to indicate to ISRO concerns regarding the frequency and operational plans for INSAT 3D, INSAT-3DR and INSAT-future as presented in ISRO-WP-01. Namely: <ul style="list-style-type: none"> • 402.65-402.85 MHz for INSAT-3D which will be located at 82degE instead of the originally notified 83 degE; • 402.5-402.65 MHz for INSAT-3DR (planned in 2015); • 402.25-402.5 MHz for INSAT-future. 	30-Aug-13	OPEN	-

NOAA-WP-06 presented the Spectrum Status and Issues from the NOAA perspective, confirming that implementation of the 2010 President's Broadband Initiative remains a U.S. government priority.

Sharing of 1695-1710 MHz:

The U.S. National Telecommunications and Information Administration (NTIA) established a government-industry working group to revalidate assumptions and conclusions in the NTIA Fast Track Report, which identified the 1695-1710 MHz band for sharing between POES, MetOp and commercial broadband providers. Industry representatives provided details about their

planned operations which are currently being analysed for impacts to exclusion zones and previously-predicted interference levels.

Interference at critical locations and at hundreds of unprotected POES and MetOp High-Resolution Picture Transmission (HRPT) direct broadcast locations outside exclusion zones remain NOAA issues that we are working with our operations personnel and customers.

NOAA presented details about polar satellite operations at command and control sites and the characteristics of HRPT reception at protected and unprotected user sites. Based on combined analysis, NOAA believes that the original sizes of exclusion zones will change because the original calculations used very conservative assumptions about industry operations characteristics. Further, NOAA is advocating creation of coordination zones outside exclusions zones. Any commercial provider proposing to operate inside a coordination zone would be required to coordinate with NOAA.

Depending upon the results of interference analysis, reasonably-priced modification such as filtering to commercially-available L-Band receivers may be possible. When available, NOAA will suggest approaches to CGMS members and worldwide customers and equipment vendors.

The working group recommendations will be used by NTIA and the Federal Communications Commission as they proceed towards an auction of the 1695-1710 MHz spectrum auction. No target date has been identified for the auction.

LightSquared Interest in 1675-1680 MHz.

LightSquared, whose proposal to operate in the spectral bands adjacent to GPS and other Positioning, Timing, and Navigation (PNT) was denied earlier in the year, continues to explore spectrum options. They have approached NOAA about sharing 1675-1680 MHz.

Systems potentially impacted if this were approved include:

- In-band interference with the GOES back-up operations at the Goddard Space Flight Center (GSFC);
- In-band interference with NOAA's radiosonde operations; and,
- Adjacent band interference with both legacy GOES and GOES-R rebroadcasts.

This discussion is in the preliminary stages and we expect that a decision will be made within 6-9 months.

Routine and Other Spectrum Management Work:

NOAA continues to coordinate domestically and internationally on numerous issues involving existing and future satellite systems. Significant work included:

- Emergency and permanent filings to permit a back-up downlink for NPP at Fairbanks in response to numerous instances of severed leased transatlantic cables carrying NPP data;
- Resolution of potential X-Band interference at Fairbanks between NPP and Landsat Data Continuity Mission. As expected the probability of interference was calculated to be less than 1/10,000; and
- Routine ITU filings for DSCOVR and Jason-3.

The world-wide commercial desire for additional spectrum is increasing and the competition is intense. NOAA and our CGMS partners must apply adequate resources to respond to new initiatives and to develop new and innovative ways of operating meteorological satellites and distributing data to users and customers. It is critical that CGMS members engage in frequent formal and informal dialogue in order to ensure continuity of operations in the future.

WGI thanked NOAA for the report provided on the frequency related topics (NOAA area) and noted the progress made on the implementation of the 2010 President's Broadband Initiative and the efforts made to ensure that operational systems and the services provided to users by these systems are not affected by the results of the Broadband initiative.

NOAA-WP-07 provides a description of current and future NOAA satellite networks as well as a list of radio frequencies used/to be used by these networks.

WMO reiterated the ready availability of the WMO Observing System Capability Analysis and Review Tool (OSCAR), encouraging WGI members to provide and maintain updated WMO with the frequency information of their systems (present and future ones).

WMO-WP-01 provides the preliminary position of WMO, as adopted by the WMO Steering Group on Radio-frequency Coordination (SGRFC) in January 2013, on the relevant agenda topics of the next World Radiocommunication Conference (WRC) 2015.

The WMO WP includes details on ten agenda items which are related to frequency bands or issues of prime interest for meteorology and related fields, and identifies a further eight agenda items that have potential impact on WMO interests. The SG-RFC collaborates closely with the Space Frequency Coordination Group on matters related to satellite operations. The output from

SFCG-32, including, SFCG Resolution 32-1 “SFCG Objectives for WRCs” formed a valuable input to the development of this preliminary position paper.

Recognising the importance of radio-frequency spectrum for WMO, the 2013 session of the WMO Executive Council stated that WMO members “should maintain close coordination with their national telecommunication authorities to register their frequencies for adequate protection, and to defend the availability of frequencies for Meteorology, Climatology and Earth observations, influencing positively the national delegations to the World Radiocommunication Conferences (WRC)”.

The Council, in its Resolution 4.4/1 (EC-65) “Preserving Radio-Frequency Spectrum for Meteorological and Related Environmental Activities at the ITU World Radiocommunication Conference 2015 (WRC-15)”² requested “CBS to pursue an intensive preparation for WRC-15, in coordination with other technical commissions, especially the Commission for Instruments and Methods for Observation, and in collaboration with other relevant international bodies, in particular, the Coordination Group for Meteorological Satellites and the Space Frequency Coordination Group”.

The detailed positions of WMO, as adopted by its SGRFC in January 2013 are included in the annex I of **WMO-WP-01**.

WGI noted the detailed positions of WMO regarding the relevant WRC-15 agenda items and confirmed that these positions are fully in line to the ones adopted by the different CGMS members in the different regional areas in which the preparatory activities of WRC-15 are taking place.

WGI was also reiterating the need of CGMS members to closely and regularly liaise with their national frequency management/regulation authorities on the importance of the frequency bands assigned/associated to MetSats and EESS and the need to protect/preserve them. These regular activities shall ensure that adequate awareness is raised, and maintained, with the national authorities that will convey the national positions to the WRC and reminded all CGMS members on the fact that none of the CGMS members is a member of ITU with voting rights (by definition of the membership in ITU which is done at national signatory level). WMO also wanted to emphasise the need to bring the same approach to regional fora (e.g. CEPT in Europe).

WGI further noted the resolution of WMO Executive Council asking the CBS to pursue an intensive preparation for WRC-15, in collaboration with other relevant international bodies, in particular, CGMS and the Space Frequency Coordination Group.

WMO-WP-23 presented a summary of the satellite module of the Observing Systems Capability Analysis and Review Tool (OSCAR), available to the public under www.wmo.int/oscar provides information on EO satellite frequencies.

Following WGI discussions at CGMS-40 and subsequent interactions with CGMS members, the presentation format of the frequency tables has been improved (with the possibility to show or hide the expert details for each satellite) and a significant amount of information has been added. Filtering tools allow selecting specific frequency ranges, time-spans or operators, and data can be exported for offline use.

To date, OSCAR contains frequency information for 74 individual satellites in the following 21 satellite programmes:

COMS	INSAT-3
Electro	JASON
EPS	JPSS
FY-2	Kalpana
FY-3	Meteor-3M
FY-4	Meteosat 1st Generation
GOES 2nd generation	Meteosat 2nd Generation
GOES 3rd generation	Meteosat 3rd Generation
Himawari 2nd generation (MTSAT)	NOAA 5th generation / POES
Himawari 3rd generation	Sentinel-3
Suomi-NPP	

WMO invited WGI to note the availability of satellite frequency information in OSCAR and the potential use of this tool to support frequency management and planning activities. WMO asked CGMS members to continue providing WMO with updates of their respective satellite frequencies to be recorded in OSCAR, using the CGMS-agreed format. (See: <http://www.wmo-sat.info/oscar/satellitefrequencies>).

WGI/3 Direct broadcast services

WGI/3.1 Direct read-out stations

NOAA-WP-09. presented possible recommendations seeking affordable receiving stations. It contains the provided recommendations and background information on previous activities involving the development on the affordable user terminals and their investigation of alternative method for disseminating satellite data. The most reliable and cost effective method for disseminating satellite data is via re-broadcast. This primary method of distributing satellite data allows environment users to obtain this critical information by means of a low cost receiving terminals. In addition, this data can be exploited to meet the specific mission requirements of an organisation or satisfy needs of the users.

Future environmental satellites will produce far more data than the current satellite series. The next generation geostationary and polar-orbiting environmental satellite constellations will employ new downlink frequency allocations, larger bandwidths, and faster data rates. Environmental data

users must employ new field terminal receivers unique to that particular broadcast service. The cost of these new terminals is relatively expensive, despite the fact that costs have decreased.

To ensure a broader use of the data, alternative methods and affordable user station should be made available. In comparison, the cost of the new terminals overshadows the price of an existing receive station. Several surveys have shown that the primary reason for *not* considering the new high rate data (HRD) stations is cost. If cost was not a factor, the new systems would be in prime demand.

The old (current) systems are not compatible with the new (future) terminals. A legacy of services for more than fifty (50) years will cease with the operation of the next generation of satellites. The cost of transition is extremely high. Affordable receiving stations as well as alternative dissemination systems will promote the full use of the next generation of satellite data.

NOAA invites CGMS and the WMO to consider ways to help make acquiring this data affordable to all.

NOAA-WP-13 presented NOAA Direct Broadcast Data Initiative to Meet NWP Latency Requirements. This WP was written as NOAA's answer to CGMS-40 action 40.18 (originally raised on WGII): CGMS Agencies to support fast delivery initiatives using direct broadcast with extensions wherever possible (e.g., IASI, METOP-B, NPP), including on future polar orbiting satellites.

The volume and coverage of polar-orbiting satellite data available to NCEP's operational data assimilation systems depends on both the number of occupied orbits (orbital configuration) and the data latency. Both factors are critical issues for determining the accuracy and timing of NCEP's numerical guidance. Numerical guidance is foundational to all NOAA's forecast and warning services and future Weather Ready Nation objectives.

Data latency is critical for the use of satellite data in numerical weather prediction forecast models. The use of direct read-out over the Northern Hemisphere can improve latency of sounder data to less than 30 minutes, and as low as 15 minutes.

Direct read-out of both NPP and METOP sounder data can be implemented at a low cost since most of the stations are already available. Current North American stations are located at universities, and include Madison, Wisconsin, Fairbanks, Alaska, and Oahu, Hawaii. Additional stations are needed at Monterey/California, Miami/Florida, San Juan, Puerto Rico, Guam, and Suitland MD (or Wallops). When combined with existing stations in Japan, China, Russia, and Europe, most of the Northern Hemisphere can be covered with excellent latency.

The NOAA initiative for SNPP and Metop includes working with EUMETSAT to combine all stations to a network, which will provide data access to NCEP

and the European NWP community. Today, such a concept exists with current NOAA POES data and is called the EUMETSAT Advanced Retransmission Service (EARS). NOAA will also work with the WMO.

NOAA has approved the development of a network of direct broadcast stations which will include Suomi NPP, METOP, EOS (AIRS), and POES (AMSU), and potentially GCOM and the FY-3 satellite series. NOAA welcomes the participation of other CGMS agencies and would like to explore including for example FY-3 and Russian satellites and would encourage open access to level 0 and level 1 processing code to convert satellite data packets to calibrated sensor observations.

WMO thanked NOAA for the effort put in preparing the WP and the concepts and recommendations put forward. WMO confirm the support to the NOAA initiative for a RARS America and the intended “global” circulation of data (from regional RARS to other regions). It proposes NOAA to present a dedicated WP at the next Asia-Pacific Satellite User’s Conference in October 2013.

EUMETSAT-WP-17 PPT presented EUMETSAT current plans on the EUMETSAT Advanced Retransmission Service (EARS) Roadmap. The presentation covers

- the driving requirements for the EARS system (improving timeliness for LEO satellites data over European Region as part of the regional mission) in support of Numerical Weather Prediction (NWP) and Nowcasting (NWC);
- the timescale for the EARS services (since initial set up of the system);
- an overall EARS system overview and the principles and mechanism for data segmentation and selection (between several receiving stations);
- a summary of the current EARS supported services and the new regional SuomiNPP services the products provided in both Eumetcast and GTS and the associated timeliness to these products;
- preliminary information on the plans for a RARS-Africa and the objectives of this initiative;
- preliminary information for the EPS-SG Direct Read-out (at the beginning of Phase B) focusing on the relevant characteristics of the reception station (e.g. G/T) and the aim by EUMETSAT to align, as much as possible, to the relevant parameters and characteristics of the SuomiNPP and JPSS ones; and
- a summary of topics to be considered in the evolution of existing RARS and when planning for newer systems.

Most of the considerations provided by EUMETSAT in CGMS-41-**EUMETSAT-WP-17** are based on operational experience and derived lessons learned in the frame of implementing and operating the EARS system.

Following the presentation of the WPs, WGI discussed the proposals and concluded the following:

- It is necessary to separate the discussion topics between Direct Read-out terminals (for LEO systems) and direct broadcast and re-broadcast terminals (HRIT/LRIT like terminals for GEO systems). It is believed that the latter should be addressed specifically in WGIV with direct reference to GeonetCast related terminals. If considered necessary by WGIV, WGI can support telecommunication related discussions in WGIV regarding these systems and terminals.

For the specific case of Direct Read-out terminals, WGI is considered the adequate WG to address aspects related to affordable receiving systems (with participation of and support from WGIV as necessary).

- RARS-like systems and their evolution is an aspect to be considered in the discussions of WGI for aspects related to improvement of timeliness of LEO systems data (in support to NWP and NCW).
- WMO proposes that priority is given to sounding data (for NWP), while locally for now-casting (based on imager information) and where relevant with scatterometer (e.g. like EARS) but with due consideration of the need of tuning formats and products for adapting to available bandwidths for data circulation and repatriation/dissemination.
- WMO also expressed the importance of these RARS-related activities not only for Asia, Europe and North America but also for WMO Regions I, III, and V.
- Exchange of data (data transfers) between regions is also considered part of the RARS service implementation (timeliness requirements to be considered). Through the tour-de-table discussions it was recommended to build upon an expansion of the existing RARS infrastructure as much as possible.
- Roshydromet confirmed support to the concept of RARS in the different regions,
- KMA confirmed support to the concept of RARS in the different regions,
- ISRO and CMA/CNSA confirmed support to the concept of RARS in the different regions.
- CMA/CNSA also mentioned the need to consider not only operational systems but also pre-operational and R&D satellites. A specific point was

made on the need to consider L-Band and X-Band HRPT like solutions for the RARS systems.

- JMA also confirmed support to the concept of RARS in the different regions.
- In the round table discussions several concepts/ideas were put forward by the different participants in WGI like:
 - Homogeneity of products (specially L2 and formats);
 - The use of OSCAR to capture the necessary information;
 - The idea of specialising agencies by instruments.
- A Task Team was proposed to be organised (manned from the different WGI participating organisations) to work through the inter-sessional meetings to ensure progress before the next CGMS plenary session.
- WGI agreed on having dedicated bi-monthly inter-sessional e-meetings for the purpose of discussion and addressing topics in relation to LEO Direct Read-out terminals, RARS like systems and services and associated standards.

The following action was agreed as a result:

CGMS-41 actions - WGI							
Actionee	Action	#	Description	Deadline	Status	HLPP ref	
CGMS members	WGI/3.1	41.17	CGMS members to nominate representatives in the Task Team to work on RARS related aspects (before 1st IS meeting (WG-I.IS-2.1 mid October 2013)	31-Aug-13	OPEN	HLPP #2.10	

In terms of proposed considerations:

- Use of the same core software for the centralised global instrument data processing and the local processing of the regional data has proven to be successful and ensuring consistency of products (example: Suomi NPP).
 - This requires the core software to be portable;
 - Better if defined and considered from the early programme development phases;
 - Should consider modern computer architectures (multi-core computers, cloud computing, etc) in order to optimise timeliness of product generation;
 - Timeliness oriented, including the use of clearly defined product granules for faster processing, distribution and exchange between stations and regions;

- It seems natural that each organisation is responsible for developing/releasing and supporting product processing packages for the instruments on their satellites (need for a release and change mechanism agreed at CGMS?);
- To consider the “minimum requirements” for S/W release and its associated documentation (including test data);
- Helpdesk for issues on product processors (who, how);
- Open access to mission specific details including Space To Ground ICD, data formats and instrument characteristics; and
- Harmonisation of front-end characteristics (G/T, polarisation, limiting range of alternative for modulation, FEC, etc) to achieve economical and multi-mission capable reception systems.

WGI/3.2 Coordination and Global Standards

This specific agenda point was covered in agenda point 1 when reviewing the status of WGI related actions from previous CGMS meetings (in particular action 40.13. Round table for comments review to proposed update to CGMS Global Specification 04 (by end of Q1 2013 –same e-meeting as for action 40.12). WGI considers this action closed with the outcome of the inter-sessional meeting at end March 2013 (held together with WGIV). In this meeting, the participants confirmed support to the proposed modification to CGMS-04 (as proposed in CGMS-40 EUM-WP-08). The point has been again open for comments by the WGI participants during this specific agenda topic and reconfirmed unanimously in the agreement by WGI to the proposed update.

WGI will report this to the plenary in order to apply the necessary change control mechanism to the update of the corresponding CGMS global spec (04).

WGI/4 International data collection and distribution

EUMETSAT-WP-09 presents the status of the EUMETSAT 0° and IODC Data Collection Services. The status of the High Rate Data Collection Platforms and DCP data dissemination mechanisms are also detailed in the WP.

Regional DCS (0°)

Channel utilisation

There are 223 regional channels (at 1.5 kHz spacing) available on the Meteosat-10 satellite which supports the 0° Data Collection Service (DCS). Of these channels, 66 are used by 'older' DCPs, with 3 kHz spacing, (corresponding to 33,3 kHz channels), therefore 157 channels are available for 1.5 kHz DCPs. Of these channels, 42 have DCPs allocated. The upper part of the band has been set aside for HRDCP use.

There are 115 1.5 kHz Regional channels with no DCPs allocated. As older 3 kHz DCPs become obsolete, more channels will become available. The allocation is shown in Figure 1. This figure also shows the additional 11 Regional channels that were redistributed from the original 33 International Channels following the agreement at CGMS-36 i.e. I01-I11 were allocated to NOAA for regional use, I23-I33 allocated to EUMETSAT for regional use. I12-I22 remain as International channels.

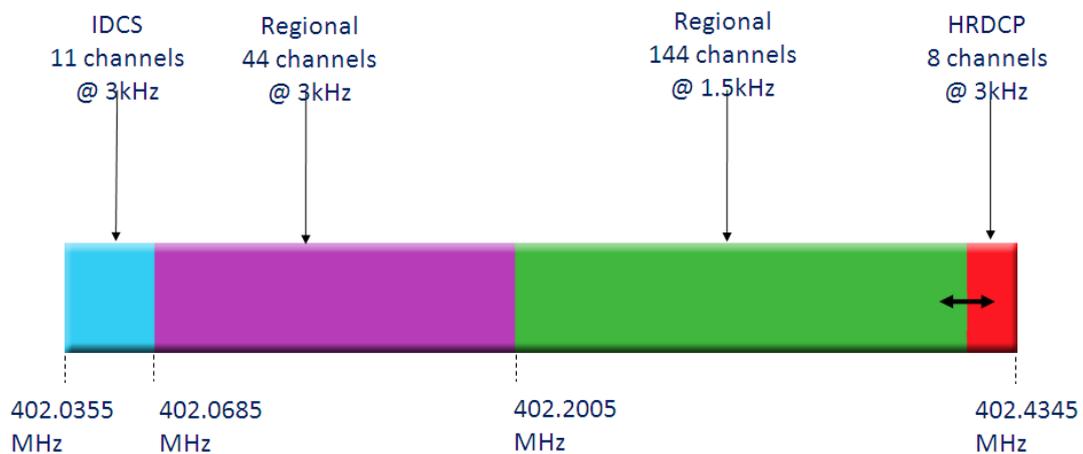


Figure 1 Allocation of International/Regional Channels of DCPs

DCPs Allocated /Active

There are 1087 DCPs allocated, of which 639 are actively transmitting. Several transmitters are seasonal in nature.

Geographical Distribution

DCPs transmitting via the 0° and IODC satellite are located in Europe, Africa and Asia. The following table and chart show the geographical distribution.

DCPs	Country	DCPs	Country	DCPs	Country	DCPs	Country
51	Algeria	1	Finland	3	Maldives	10	Tanzania
11	Angola	113	France	19	Mali	1	Thailand
2	Armenia	1	Gambia	1	Malta	2	Togo
3	Austria	44	Germany	3	Mauritania	4	Tunisia
1	Bangladesh	8	Ghana	4	Mauritius	1	Turkey
2	Belarus	1	Gibraltar	0	Morocco	48	UK
3	Benin	1	Greece	23	Mozambique	22	Ukraine
11	Botswana	11	Guinea	2	Myanmar	1	Union des Comores
1	Brazil	2	Guinea-Bissau	18	Namibia	61	USA
4	Bulgaria	19	Indonesia	23	Niger	2	Vietnam
6	Burkina Faso	2	Iran	16	Nigeria	1	Yemen
61	Cameroon	136	Iraq	10	Oman	15	Zambia
4	Cap Verde	9	Ireland	4	Pakistan	13	Zimbabwe
1	Central African Republic	96	Italy	3	Palestine		
3	Chad	3	Ivory Coast	3	Philippines		
2	Congo	0	Jordan	11	Republic of Moldova		
3	Croatia	4	Kenya	10	Republic of Seychelles		
1	Cyprus	6	Lesotho	12	Romania		
26	Democratic Republic of the Congo	11	Libya	11	Senegal		
2	Djibouti	0	FYR Macedonia	35	South Africa		
1	Egypt	2	Madagascar	7	Spain		
5	Falklands	8	Malawi	3	Sri Lanka		
		1	Malaysia	2	Swaziland		

Total = 1087 DCPs

Table 1 Geographical Distribution by Country

Note (1) Larger numbers of DCPs are highlighted with darker colours. (2) Red entries indicate countries where DCP operation has ceased, green entries where it has commenced.

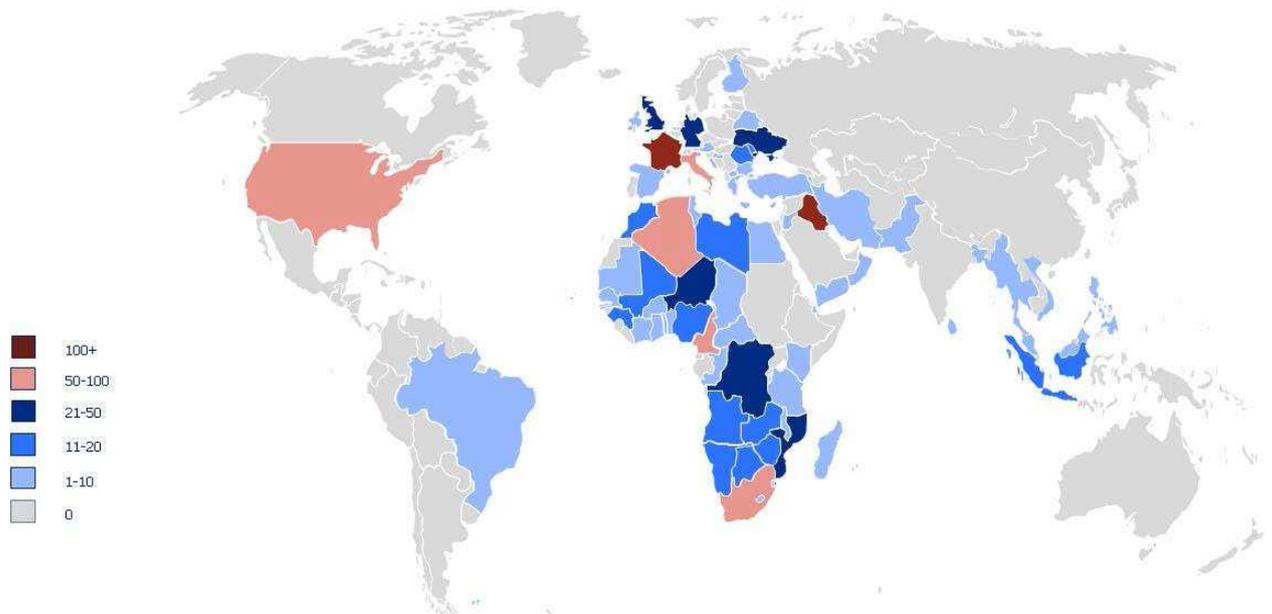


Figure 2 Geographical Distribution of DCPs

IODC (57°)

Meteosat-7 is used for the provision of the IODC service, including the DCS. The prime application is for the Indian Ocean Tsunami Warning Network (IOTWS). There are plans for DCP networks in Vietnam and other Asian countries, however further utilisation of Meteosat-7 is contingent on the use of HRDCPs due to the limited bandwidth available.

Channel utilisation

Due to interference with the 0° service, only International channels have been allocated for IODC use. As noted above, I01-I11 were allocated to NOAA for regional use, I23-I33 allocated to EUMETSAT for regional use. I12-I22 remain as International channels.

Agreement has been made with NOAA, that the 11 former International channels, now allocated to NOAA, can be used for IODC DCS application on a noninterference basis.

DCPs allocated

There are 37 DCPs allocated, of which 35 are actively transmitting.

Outlook

International channel usage

Only 1 DCP is allocated as an International DCP, however this DCP only transmits via the 0° spacecraft. It does not transmit via the NOAA or JMA satellites. Indeed NOAA no longer support 100 bps DCPs. It can therefore be regarded as a Regional Meteosat DCP.

It is proposed to analyse whether the remaining 11 International channels could be reallocated to Regional use, taking into account the future EUMETSAT, NOAA and JMA satellite programmes and a possible re-convergence on the DCP platform specifications.

Currently the NOAA and EUMETSAT DCP specifications are not compatible. Meteosat-7 is planned to be de-commissioned in 2017. The use of an MSG satellite over the Indian Ocean Region will only be decided following the successful launch and commissioning of MSG-4 in 2015.

HRDCP Status

EUMETSAT has recently published an updated TD16 “Meteosat Data Collection and Distribution”, mainly covering the HRDCP specification and an updated Certification process.

Several Manufacturers are actively pursuing certification of HRDCP transmitters. In addition the European Space Agency (ESA) is preparing a design for European manufacturers to be able to build HRDCP transmitters.

Data is processed and distributed to the user via these mechanisms:

- EUMETCast: Comms Satellite Multicast, which covers Europe, Africa and South America;
- LRIT Direct Dissemination: Via the prime Meteosat Satellite (Meteosat-10 LRIT);
- Global Telecommunications System (GTS) of WMO, used to transmit environmental data to meteorological services throughout the world. EUMETSAT disseminate DCP bulletins the RTH in DWD Offenbach;
- Internet-manual download from the website via secure log in; and
- The first certified HRDCP is planned for the second half of 2013.

It is proposed to further analyse whether the remaining 11 International channels could be reallocated to Regional use, taking into account the future EUMETSAT, NOAA and JMA satellite programmes and a possible re-convergence on the DCP platform specifications. A joint report to be prepared and presented to the next CGMS plenary session.

WGI thanked EUMETSAT for the detailed report and the proposals made for evaluating future assignment of the identified 11 International channels, JMA confirmed support to this proposal (the IDCP ship stations allocated to these channels have not reported since 2007). NOAA is also supportive of the proposal regarding the 11 International channels.

It was agreed to have dedicated inter-sessional discussions to progress on the assessment of the potential transfer of these 11 international channels to the regional use. WGI agree in having dedicated bi-monthly inter-sessional e-meetings for the purpose of discussing this (and other WGI topics). The first e-meeting on this topic is planned for mid-November 2013.

JMA-WP-08 reports on the present status of JMA's Data Collection System (DCS) and related future plans, highlighting a recent increase in the number of Data Collection Platform (DCP) stations at which DCS regional channels are used for better tidal/tsunami monitoring.

JMA has been operating the Data Collection System (DCS) since its first Geostationary Meteorological Satellite (GMS) was launched in 1977. As follow-on satellites to the current MTSAT-1R and MTSAT-2 spacecraft, Himawari-8 and Himawari-9 are scheduled to enter operation in 2015 and 2017, respectively. These satellites will continue to provide services for the DCS, which plays important roles in collecting meteorological information as well as earthquake and tidal/tsunami data.

After the major 2004 tsunami in the Indian Ocean, JMA began the operation of additional MTSAT-DCS channels to allow the collection and distribution of tidal/tsunami data for the Indian Ocean and western Pacific areas, thereby helping to enhance tsunami monitoring in these regions.

The use of MTSAT-DCS has increased rapidly, and JMA has received more and more requests for new Data Collection Platform (DCP) stations to support disaster prevention in these regions. The current situation suggests that DCS channels may be exhausted in the future.

Messages transmitted from DCP stations to MTSAT are relayed to JMA's Command and Data Acquisition Station (CDAS) near Tokyo before being demodulated. After format conversion, the data are distributed globally via GTS. Along with these distribution efforts, JMA provides online access to the data and an email transmission service as backup with the aim of creating redundancy in data dissemination to users. These services will also be continued on Himawari-8 and -9. Himawari-8 and -9 will use the Ka-band (up to 18 GHz) as the downlink frequency for relaying DCP data as opposed to the L-band (up to 1.6 GHz) used on the current MTSAT-DCS. To cope with the effects of rain attenuation in the Ka-band, JMA will introduce site diversity with two receiving stations in different locations so that they are unlikely to be affected by heavy rain at the same time. This is expected to guarantee 99.99% uptime in radio communication.

The conditions and required/recommended specifications for the use of MTSAT-DCS along with the relevant request form are available at <http://www.jma.go.jp/jma/jma-eng/satellite/nmhs/dcp.html>

Statistics on the distribution of tidal/tsunami DCP data via GTS are shown in Figure 3 of the WP, which indicates a significant increase in numbers over the last few months. In addition to this increase, more frequent collection (from every 15 minutes to every 6 minutes) is being implemented for some tidal/tsunami DCP stations in consultation with the Intergovernmental Coordination Group for the Pacific Tsunami Warning and Mitigation System (ICG/PTWS) for enhanced monitoring.

Among the MTSAT-DCS international channels, four are currently allocated for ship stations but have not been used since March 2007.

JMA is receiving more and more requests for the use of MTSAT-DCS. Based on the importance of disaster reduction/mitigation activities in the relevant regions and the significant role of DCS in such work, JMA has positively responded to requests for the use of MTSAT-DCS toward these ends.

Recent cases have included:

- Vietnam's plan to install more than 100 hydrometeorological DCP stations for disaster prevention along the Mekong River;
- Fiji's request for a new tidal DCP station;

- A request from France's Service Hydrographique et Océanographique de la Marine (SHOM) for new tidal DCP stations in the Indian Ocean and the western Pacific; and
- Requests from The University of Hawaii Sea Level Center (UHSLC) for developments including transition of the use of DCS from Metsat-7 to MTSAT and improvement of data collection periodicity.

MTSAT-DCS is expected to be adopted by users other than those mentioned above. However, in consideration of the need to secure backup channels in case of interference, the number of regional channels left on MTSAT-DCS is limited, even though the additional 11 channels were redistributed from the original International Channels for EUMETSAT/JMA regional use, following the agreement at CGMS-36. In light of the importance of DCS, it is desirable to find a solution to the shortage of satellite channels before they actually run out.

WGI expressed its appreciation for the dedicated report provided by JMA and the agreement and support for evaluating the future assignment of the identified 11 International channels.

ROSHYDROMET-WP-03 addresses the current status and technical specifications of Russian DCS (Electro-L №1). During Electro-L №1 exploitation DCS proved to be fully functional.

The main purpose of Russian data collection system (DCS) is to provide satellite channels for meteorological data transmission from data collection platforms (DCP). DCP signals are transmitted via Electro-L №1 dedicated channels. Main technical specifications of DCS are as follows:

- Total of 300 channels, with 33 international channels, channel spacing – 3 KHz;
- Data rate – 100 or 1200 bit/s;
- Frequency range – 401.5-402.5 MHz (Earth-space) and 1696.5-1697.5 MHz (space-Earth);
- Frequency range for international channels – 402.0-402.1 MHz (Earth-space) and 1697.0–1697.1 MHz (space-Earth);
- Message size – 5192 bit (100 bit/s channel) and 15000 bit (1200 bit/s channel); and
- Data format for 100 bit/s channel is in agreement with the European standard.

Messages received from DCPs on-board Electro-L №1 are retransmitted to the Earth at 1696.5-1697.5 MHz. Those signals are acquired in SRC Planeta, in the European (Moscow region) and Siberian (Novosibirsk) parts of Russia, via 9 meter antenna system. The deployment of the receiving system in the Russian Far East (Khabarovsk) is underway.

Now there are about 115 DCP in Roshydromet transmitting messages via Electro-L №1 channels every 3 hours (standard synoptic hours). Also it is possible to send storm warnings at any time. Russian DCS has a reliability of 99.6 % based on the number of messages successfully received.

According to the deployment plans, there should be about 800 DCP installed to the end of 2014.

Roshydromet is ready to provide WMO members with the international channels for data transmission from DCPs via Electro-L №1.

WGI thanked Roshydromet for the detailed report and the proposals made for evaluating future assignment of the identified 11 International channels

NOAA-WP-08 provides a status report on the performance of the International Data Collection System (IDCS) and NOAA's domestic DCS. NOAA's DCS Administration and Data Distribution System (DADDS, serving GOES DCS users) has almost 1000 individual users, with more than 600 organisations using the system. NOAA has continued with populating user and platform tables, registering and training users, and has now added the task of upgrading browsers, operating systems, and data base management systems. In the 4 years since the system has been in operation those features have become outdated and difficult to support. NOAA has modified the GOES DCS ground system to work with new transmitters (Version 2), which allows the use of smaller channels, has certified multiple manufacturers to this standard and has configured NOAA's receiving systems to allow those transmitters to operate. NOAA recently performed the task of updating the ground system to utilise a new filter to increase performance and now has a system that is fully capable of utilising Version 2 systems, while continuing to allow Version 1 systems to operate. The transition to high data rate (HDR) is almost complete, with approximately 400 of the 24,200 platforms that are active reporting at 100 bits/sec. NOAA plans to continue to investigate the use of two way communications to better command and control platforms but has continued to focus on higher priority items. NOAA is proceeding slowly with this project, since most resources are being committed to DADDS and to the Version 2 HDR transmitter implementation. Use of the international channels is minimal. NOAA is using the channels assigned to us for our domestic use by CGMS, and has already made assignments on all of them.

A fully redundant backup system has been located in Suitland, Maryland since 2010, and is being fully utilised by users and by developers who continue to roll out enhancements to DADDS by testing them at the Suitland site first. Use of the GOES DCS continues to flourish in the USA. The POES DCS (aka

Argos) has 21,000 active platforms, supporting 1,900 users in 115 countries. In the last year the Argos programme has supported a SARAL (Satellite with Argos and ALtika) launch by ISRO into an early morning orbit, a Metop-B launch by Eumetsat into a morning orbit, with a transition to dual-Metop operations, and preparations for a NOAA Free-Flyer into an afternoon orbit by NOAA in the 2016-2017 time frame.

Interference from “Ionospheric Scintillation” from Solar Activity

Near the end of 2011 NOAA began noticing interference to transmissions from a small number of platforms, primarily those near the North and South Poles (Canada and South America.) The data losses were not widespread, but instead seemed to be constrained to small areas, narrow time frames and specific platforms. After much investigation we concluded that the interference was coinciding with increased solar activity. This pattern seemed to be traced to a phenomenon called “Ionospheric Scintillation”, an ionisation of a specific layer of the ionosphere that causes refraction and diffraction of radio waves. The pattern has also been tied to GPS interference.

Solar activity has continued to increase. While NOAA has continued to monitor this activity, and to understand it a little more, NOAA has made little progress in finding ways to mitigate it. The solar activity is expected to peak in 2013, so there is not enough time to have an impact on this cycle. NOAA will continue to study this event, with the hope that we can be prepared to respond to the next cycle, expected in about 9 years.

STATUS OF IDCS

No new assignments have been made in the last year. Current allocations include:

New International Channels	224	226	228	230	232	234	236	238	240	242	244
Channel #	01	02	03	04	05	06	07	08	09	10	11
# of PLT(s)	0	0	0	1	1	0	0	0	4	0	0

A query of the DADDS message table showed no transmissions from any of these platforms.

INTERFERENCE TO THE IDCS

Due to the current limited use of the IDCS no monitoring is performed. If the usage expands NOAA’s DADDS provides tools to make it easier to monitor interference.

CONSOLIDATED LIST OF IDCS ALLOCATIONS

There have been no new allocations of IDCPs within the past year.

WGI thanked NOAA for the detailed report, including the details provided regarding interference from Ionospheric Scintillation from Solar activity and the support for evaluating future assignment of the identified 11 International channels.

WGI/4.1 Future Distribution

No papers were presented in this session.

WGI/4.2 Coordination

No papers were presented in this session.

WGI/5 Contributions to the HLPP

WGI reviewed the current version of the HLPP (v1 dated 9 November 2012).

Section 1.2, Coordination/Optimisation of data collection systems. It is considered of full relevance and applicability to WGI:

- Coordinated participation in the activities of the International Forum of Users of Satellite Data Telecommunication Systems, to prepare the future use of the International Data Collection System (IDCS):

Considered well covered by the activities of the International Forum of Users of Satellite Telecommunication Systems and the participation of identified members of CGMS (e.g. WMO and EUMETSAT).

It is proposed that WMO regularly reports to WGI on the progress made by this International Forum in the areas of relevance to CGMS (WGI).

- Assess Data Collection Platform (DCP) and Argos Data Collection System (A-DCS) status and evolutions including International channels, taking into account requirements of Tsunami alert systems and ocean observations (e.g. buoys):

Considered well covered by the different WPs provided by the different WGI members (see specific and dedicated report by NOAA in NOAA-WP-08 on Argos and NOAA-WP-08, ROSHYDROMET-WP-03, JMA-WP-08 and EUMETSAT-WP-09 for the regional DCS systems and the related

IDCS activities and proposal for future adaptations). Dedicated inter-sessional meetings are identified by WGI to progress on these topics.

- Share lessons learnt and share experiences on certification of DCS platforms (especially High Rate DCPs):

No specific WPs provided. Discussions by WGI on the identified gap confirmed the need to maintain this topic in the HLPP and the intention to address it by dedicated inter-sessional meetings to progress on these topics.

- Share information on the development of their High Rate DCPs and share lessons learned on mitigating interference between DCPs:

Dedicated sections in specific WPs (i.e. NOAA-WP-08 on solar activities related “interferences”). Discussions by WGI on this topic confirmed its relevance and the need to maintain it in the HLPP and the intention to address it by dedicated inter-sessional meetings to progress on these topics.

- To confirm user requirements for sharing data/information delivered using DCS (outside the regional area). Data mechanisms to share DCP data.

No specific WPs provided. Discussions by WGI on the identified gap confirmed the need to maintain this topic in the HLPP and the intention to address it by dedicated inter-sessional meetings to progress on these topics.

Section 1.3 Radio Frequency (RF) Protection. It is considered of full relevance and applicability to WGI:

- Establish a coordinated position on the future of L-band services;

Coordination in the positions is being achieved by the progress being made in the definition of the future systems (current systems are already designed and in most cases built and therefore no modifications can be expected).

- Investigate how to mitigate Earth Exploration Satellite Service (EESS) X-band congestion and coordinate interference assessments on a regular basis and as necessary, establish coordination mechanisms for sharing and using this band (both GEO and LEO systems and inter-agencies):

No specific WPs provided, the inter-sessional meetings organised after CGMS-40 did not materialise as the necessary inputs were not ready at agency level for feeding the inter-sessional meeting and supporting the related discussions. It is considered a recurrent point to be maintained in the HLPP (or on the agenda of WGI) but CGMS members need to ensure the availability of interference studies to support discussions. It is planned to continue addressing it by dedicated inter-sessional meetings to progress on these topics. In parallel, EUMETSAT and CGMS have confirmed interference assessments results and minimum of interference at high latitude sites via SFCG dedicated reports on the topic (discussed at SFCG meeting in June 2013).

- Facilitate an effective preparation of national positions for the World Radiocommunication Conference (WRC) favourable for the CGMS-related issues:

Considered well covered by the different WPs provided by the different WGI members. This topic needs to be kept in the HLPP for securing adequate information flow inside CGMS on national and regional level preparatory activities (as well as the dedicated report from SFCG activities provided by CGMS liaison [M. Dreis, EUMETSAT] representative in SFCG).

Section 1.3 Radio Frequency (RF) Protection. It is considered of full relevance and applicability to WGI:

Relevant bullets from Section 2 of the HLPP for WGI: DATA DISSEMINATION, DIRECT READ OUT SERVICES AND CONTRIBUTION TO THE WIS

- Maintain the CGMS Direct Broadcast Global Specifications, optimise and harmonise the approach to direct read-out dissemination, whilst investigating possible alternatives:

Considered well covered by the different WPs provided by the different WGI members (see specific and dedicated presentations by NOAA in NOAA-WP-13 and EUMETSAT in EUM-WP-17(PPT) regarding RARS). Dedicated inter-sessional meetings are identified by WGI to progress on these topics.

- Facilitate the transition to new direct read-out systems (GOES-R, JPSS, FY-3):

Considered of full relevance to WGI. Dedicated inter-sessional meetings are identified by WGI to progress on these topics.

- Work together to define a set of recommendations seeking affordable future receiving stations or alternatives to direct read-out solutions:

Considered well covered by the different WPs provided by the different WGI members (see specific and dedicated presentations by NOAA in NOAA-WP-09 regarding affordable receiving stations). Dedicated inter-sessional meetings are identified by WGI to progress on these topics.

- Further enhance the Regional ATOVS Retransmission Services (RARS) initiatives through their extension to advanced sounders for at least half of the globe:

Considered of full relevance to WGI. Dedicated inter-sessional meetings are identified by WGI to progress on these topics.

WGI/6 Any other business

Nothing to report.

WGI/7 Planning of inter-sessional activities/meetings

Two groups of Inter-sessional meetings are agreed by WGI:

- WGI.IS-1.x: First group of Inter-sessional meetings will be dedicated to Section 1.2 and 1.3 of the HLPP and it is agreed to have also a bi-monthly frequency, starting mid-November 2013.
- WGI.IS-2.x. Second group of Inter-sessional meetings will be dedicated to Section 2 of the HLPP of relevance to WGI (i.e. RARS related activities) and it is agreed to have a bi-monthly frequency, starting mid-October 2013.

WGI/8 Review of actions, conclusions, preparation of WG report for the plenary

The following actions from previous CGMS meetings were given a new deadline for further discussions:

CGMS-39/-40 actions open at CGMS-41 – WGI						
Actionee	Action	#	Description	Deadline	Status	HLPP ref
CGMS members	WGI	39.21	Action 39.21: Based on the inputs of action CGMS-39 39.20 (CGMS members to report on their plans for the utilisation of the band 7750-7850/7900 MHz for their existing and future LEO systems [including the detailed list of frequencies used in the band, associated bandwidth and signal characteristics - together with the orbital parameters]), CGMS members to analyse potential interference issues, reporting results of analysis back to CGMS WGI by next CGMS meeting.	(CGMS-40) New deadline 15 Oct 2013	OPEN	HLPP#1.3.2
CGMS members	WGI	40.12	CGMS members to complete and review interference assessment (in response to action 39.21)	31/03/2013 New deadline 15 Oct 2013	OPEN	-

Feedback related to Action 39.21:

CGMS-40: Remains open - new deadline proposed end Q1 2013 for specific follow up e-meeting of WG-I activities. Linked to HLPP: EESS X-Band congestion and interference assessments.

CGMS-41: CGMS members to analyse potential interference issues reporting results of analysis back to CGMS WGI by the next inter-sessional WGI meeting autumn 2013.

Feedback related to Action 40.12:

CGMS-40: New deadline proposed end Q1 2013 (during CGMS-40) for specific follow up Inter-Sessional e-meeting had to be postponed to a new inter-sessional (IS-1) meeting of WG-I in May 2013 as key inputs were missing on some of the WG-I participants. Second IS meeting in May 2013 had to be cancelled as inputs were still pending.

CGMS-41: CGMS members to complete and review interference assessment (in response to action 39.21) by mid November 2013 in time for the inter-sessional meeting.

The agreed list of WGI actions resulting from CGMS-41 is available [here](#).

