



CGMS-39, NOAA-WP-16  
Prepared by NOAA  
Agenda Item: I/1  
Discussed in WG1

**Technical Input to the Space Frequency Coordination Group (SFCG) and International Telecommunication Union (ITU) Radiocommunication (ITU-R)**

NOAA-WP-16 presents a summary of radio frequency activities of the Space Frequency Coordination Group (SFCG, various ITU Radiocommunication groups and the WMO during 2010-2011 as well a summary of the frequency issues concerning metsats. This document is to provide information to CGMS Members regarding radio frequency management activities that could possibly affect radio frequencies used by metsats.

## **Technical Input to the Space Frequency Coordination Group (SFCG) and International Telecommunication Union (ITU) Radiocommunication (ITU-R)**

### **1. Introduction**

There are various international groups, some ad hoc in nature, which meet on a regular basis to discuss management of radio frequencies. Decisions reached by these groups can often affect the future access to the radio spectrum by meteorological satellites (metsats). NOAA is actively engaged in defending as well as promoting the use of the radio frequencies for metsats in order to meet the needs of our satellite missions. Such spectrum use includes not only communication links, both space-to-Earth and Earth-to-space, but also use for passive and active sensing needs.

### **2. Space Frequency Coordination Group (SFCG)**

The Space Frequency Coordination Group is an ad hoc group of space agencies. Each space agency could represent several nations such as the European Space Agency or partial interests of one nation such as NASA or NOAA. This group provides an opportunity for nations who are not part of the ITU to participate in the frequency coordination process. Also this group provides an opportunity for nations specifically interested in space science to coordinate positions on agenda items for the ITU administrative conferences.

The 31st annual meeting of the SFCG, SFCG-31, was held at the invitation of NASA in San Francisco (CA), USA, from 7 to 15 June 2011. Wayne Whyte (NASA) chaired the meeting, with the support of E. Marelli (ESA) as Executive Secretary.

The Chairman and the Executive Secretary welcomed the delegates, stressing that the large participation to this meeting is confirming the increasing role SFCG is playing in the frequency management "world".

Another welcome address was given by Dr. S. Pete Worden, Director of the NASA AMES Research Centre (ARC). Dr. Worden also gave a very interesting and captivating presentation of the activities at ARC.

The participants from NOAA were: James Mentzer, Carmelo Rivera, David Furlong, Beau Backus, Bill Daniels, and David Lubar.

The two working groups of most importance to MetSats are the "ITU Matters and preparation for WRC-12" and the "EES and Metsat". (Note: ITU = International Telecommunication Union, WRC = World Radiocommunication Conference, EES = Earth exploration satellite).

NOAA's input to SFCG-31 was an updated list of present and future radio frequency requirements of NOAA satellite networks.

SFCG-31 had three technical resolutions: Out-of-band (OOB) emissions measurement data for sensors in EESS (active), Compatibility studies for communications in the lunar region, and Filter characteristics of passive sensors.

SFCG-31 produced one recommendation of concern to NOAA addressing GOES-R.

Protection Criteria for GSO Space Research Satellites in the 7 GHz Band. Action Item 30/11 states that GOES-R has chosen to use the band 7190-7235 for the earth-to-space link. This band is normally used for Lagrange and lunar missions that require 2 kW power transmissions from 35m class antennas. GOES-R could potentially receive interference levels in excess of those allowed by Recommendation ITU-R SA.609, but its link budget seems to indicate that there are enough margins in the link to mitigate this interference. This input therefore studies the sharing conditions for GSO satellites. A new SFCG Recommendation is proposed in this document and the specific text is presented in an annex.

### **3. International Telecommunication Union – Radiocommunication (ITU-R) sector Working Parties 7B and 7C (WP7B, WP7C) and Study Group 7 (SG7)**

#### **Working Party 7B – Space Radio communication Applications**

Working Party 7B (Space radiocommunication applications) met from 5-11 October 2010 in Geneva. Three working groups met during this time. Output from each of the groups is summarized below.

##### Working group 1

###### Review of SA Series Recommendations

A total of 26 ITU-R SA Series Recommendations were considered under this item. The following summarizes the review:

###### Recommendations to be suppressed:

It was noted that SG 7 agreed to the suppression of Recs. ITU-R SA.1278 and ITU-R SA.1625. ITU-R will send a circular letter to administrations asking if they have objections to the proposed suppression.

It was agreed that Rec. ITU-R SA.1236 could be suppressed and WP 7B notified SG 7. SG 7 subsequently agreed to the suppression and will recommend its suppression to administrations.

###### Recommendations recently approved or updated that need no further action at this time:

All of the following Recommendations are either in the process of being approved or updated or have done so within the past year, so it was agreed that no action is needed now: Recs. ITU-R SA.1275-3, ITU-R SA.1276-3, ITU-R SA.[SRS 23 GHz CHAR], ITU-R SA.1862 and ITU-R SA.1863.

###### Recommendations that need to be updated:

The working group identified a number of Recommendations that need to be updated. The list of Recommendations identified along with the administration/member taking the lead on this process is as follows:

USA: Recs. ITU-R SA.364-5, ITU-R SA.509-2, ITU-R SA.510-2, ITU-R SA.1018, ITU-R SA.1019, ITU-R SA.1155 and ITU-R SA.1414. ESA: Recs. ITU-R SA.363-5 and ITU-R SA.1273

###### Recommendations that do not need to be updated:

The working group agreed that the following Recommendations do not

need to be updated at this time: Recs. ITU-R SA.609-2, ITU-R SA.1154, ITU-R SA.1274, ITU-R SA.1275-3, ITU-R SA.1276-3, ITU-R SA.1415, ITU-R SA.1626, ITU-R SA.1629 and ITU-R SA.1743.

#### Review of Questions Assigned to WG 7B-1

A total of 4 ITU-R SA Series Questions were considered under this item. The group agreed that all four questions should be extended to 2015, as more work is needed on each. These are: Q118-2/7, Q129-2/7, Q222-1/7 and Q247/7.

#### Working Group 2

##### WRC-12 Agenda item 1.12: Sharing in the 37-38 GHz band

There were no proposals submitted to this meeting to revise the preliminary draft new Report ITU-R SA. [SRS-AMS (37-38 GHz)] (Document 7B/239 Annex 9), which contains the results of sharing studies between the AMS and the SRS in the band 37-38 GHz. WP 7B agreed to submit this document to the second day of SG 7 meeting for approval. The draft new Report was subsequently adopted by SG 7 as Report ITU-R SA.2190 (see Document 7/123).

##### WRC-12 Agenda item 1.25: Possible additional allocations to the MSS in 4-16 GHz

The group considered a proposal (Document 7B/245) which analyze the applicability of Recommendations ITU-R P.452 "Prediction procedure for the evaluation of interference between stations on the surface of the Earth at frequencies above about 0.1 GHz", and ITU-R P.528 "Propagation curves for aeronautical mobile and Radionavigation services using the VHF, UHF, and SHF bands", in calculating the required separation distances between SRS earth stations and MSS aircraft earth stations (AES). It was concluded that it is more appropriate to use Recommendation ITU-R P.452 than Recommendation ITU-R P.528 for calculating the separation distances between MSS AES and SRS earth stations. Nevertheless, WP 7B agreed to send a liaison statement to WP 3M requesting confirmation on the applicability of Recommendation ITU-R P.452 in the resolution of WRC-12 Agenda item 1.25. A copy of this liaison statement was also sent to WP 4C.

##### Sharing in the band 37.5-38 GHz

The working document towards a preliminary draft new Report ITU-R SA.[SRS SHARING 37 GHz] on the sharing between FSS and SRS in the band 37.5-38 GHz was agreed by WP 7B to be attached as an annex to the Chairman's Report for further consideration at the next WP 7B meeting. WP 7B also agreed to a drafted liaison statement to WP 4A requesting comments and informing them that WP 7B plans to use these results to develop a sharing recommendation between FSS and SRS.

##### WRC-12 Agenda item 8.1.1 issue

Following a request from WP 1A to provide relevant WP 7B protection criteria so that these criteria can be sent to the International Special Committee on Radio Interference (CISPR) for inclusion in the TR CISPR 31 database, WP 7B approved a liaison statement containing a list of all Recommendations dealing with protection criteria.

## Review of questions by Group 2

Question ITU-R No.	Title	Category (current)	Last revision	WG 7B-2 Comments
129-2/7	Unwanted emissions radiated from and received by stations of the science services	S2	2010	- Keep it for another cycle - Possibility of revisions for future meetings
211/7	Frequency sharing between the space research service and other services in the 37-38 GHz and 40-40.5 GHz bands	S2	2010	- Keep it for another cycle - Work in progress: PDN Report - Extended to 2015
222-1/7	Radio links between Earth stations and lunar and planetary missions by means of lunar and planetary data relay satellites	S2	2010	- Keep it for another cycle - Extended to 2015
235-1/7	Technical and operational characteristics of applications of space science services operating above 275 GHz	S2	2006	- Two existing Recs.: SA.1742 and SA.1805 - Keep it for another meeting.
246/7	Future bandwidth requirements for the space research service (deep space)	S2	2010	- Keep it for another cycle. - Extended to 2015

## Review of Recommendations assigned to WG-2

Rec. ITU-R	Title	ITU-R Questions	Last Revision (M/Y or Year)	Status	WG 7B-2 comments
SA.509-2	Space research earth station and radio astronomy reference antenna radiation pattern for	127/7	02/98	Needs to be	New tools are now available to refine this Rec. Will review

	use in interference calculations, including coordination procedures				this Rec. at future meetings.
SA.1012	Preferred frequency bands for deep-space research in the 1-40 GHz range	133/7	03/94	Suppress due to DN Report SA.[SRS-DS FRQ] (Doc 7/91)	Suppress
SA.1013	Preferred frequency bands for deep-space research in the 40-120 GHz range	133/7	03/94	Suppress due to DN Report SA.[SRS-DS FRQ] (Doc 7/91)	Suppress
SA.1014- [2]	Telecommunication requirements for manned and unmanned deep-space research	N/A	03/06	Current	Currently under adoption in SG 7
SA.1015-1	Bandwidth requirements for deep-space research	209/7	06/07	Current	Current
SA.1016	Sharing considerations relating to deep-space research	210/7	03/94	Needs to be reviewed.	Will review the bands and numbers to see if current.
SA.1017	Preferred method for calculating link performance in the space research service	131/7	03/94	Suppress due to DN Report SA.[LINK PERF] (Doc 7/99)	Suppress
SA.1030	Telecommunication requirements of satellite systems for geodesy and geodynamics	143/7	03/94		Some administrations expressed interest in keeping this Rec. Candidate for revision
SA.1157-1	Protection criteria for deep-space research	N/A	03/06	Retain - called out in Recommendations of SA.1743	Current
SA.1344-1	Preferred frequency bands and bandwidths for the transmission of space VLBI data	203/7	2/09	Current	Current

SA.1345	Methods for predicting radiation patterns of large antennas used for space research and radio astronomy	127/7	1998 [2009]	Current	Current
SA.1396	Protection criteria for the space research service in the 37-38 and 40-40.5 GHz bands	211/7	04/99	Retain - called out in Recommendations of SA.1743 - Review further for possible modification	Number might not be realistic. Revision is needed. Possible contribution next mtg.
SA.1742	Technical and operational characteristics of interplanetary and deep-space systems operating in the space-to-Earth direction around 283 THz	235/6	05/03	Current	Current
SA.1805	Technical and operational characteristics of space-to-space telecommunication systems operating around 354 THz and 366 THz	235/7	06/07	Current	Current
SA.1811	Reference antenna patterns of large-aperture space research service earth stations to be used for compatibility analyses involving a large number of distributed interference entries in the bands 31.8-32.3 GHz and 37.0-38.0 GHz	N/A	06/07	Current	Current

## Working Group 3

## Characteristics, sharing and performance criteria of EESS and METSAT

The work towards revising and merging all ITU-R Recommendations dealing with METSAT and EESS systems has been initiated at the previous WP 7B meeting with, in particular, a proposal to replace the

current analysis by interference criteria and analysis in term of C/(N+I).

The two input documents were agreed to be attached to the Chairman's Report as "Working documents towards a draft new Recommendation". As a consequence, the future work in WP 7B related to this issue will consider the following documents:

- ITU-R SA.[EES/MET PERF] : "METSAT and EESS performance objectives in the presence of interference"
- ITU-R SA.[EES/MET SHAR] : "Sharing among systems using bands allocated to the Earth Exploration-satellite and Meteorological-satellite services"
- 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"

#### Review of questions

These two revised Questions were sent for adoption to SG 7 and subsequently adopted:

- Draft revised ITU-R Question 139-2/7: "Data transmission for Earth exploration-satellite systems"
- Draft revised ITU-R Question 141-3/7 : "Data transmission for meteorological satellite systems"

#### Review of Recommendations

WG 7B-3 reviewed the list of Recommendations related to EESS and METSAT data-links and proposed relevant action on the following Recommendations:

- Recommendation ITU-R SA.514-3 (last revision in 1997): To be further considered. The options will be to either extend the frequency range above 10 GHz or merge it with current working documents.
- Recommendation ITU-R SA.1024-1 (last revision in 1997): A revision will have to be considered.
- Recommendation ITU-R SA.1158-3 (last revision in 2008): A deletion may be considered since it refers to a regulatory situation prior WRC-03 but Annex 1 would need to be kept in a Report.
- Recommendation ITU-R SA.1258-1 (last revision in 1999): Still valid.
- Recommendation ITU-R SA.1277-1 (last revision in 1997): To be considered for revision in the light of RR provisions agreed at WRC-97. It could only focus on guidance for separation distances between EESS stations and stations of other services.

### **Working Party 7C – Remote Sensing Systems**

Working Party 7C "Remote sensing systems" met in Geneva from 5 to 8 October 2010.

Here's a summary of the output documents from this meeting:

Draft new ITU-R Recommendations (DNR)

Rec. ITU-R RS.[METAIDS\_METH] "Methodology for determining terrestrial and space-to-Earth sharing and coordination criteria for meteorological

aids in the 400.15-406 MHz and 1 668.4-1 700 MHz bands”  
(Source: Document 7C/TEMP/85).

Preliminary draft revised Recommendations (PDRR) PDRR’s were reviewed at this meeting. They will be further discussed at WP 7C meetings in September 2011:

PDR Rec. ITU-R RS.515-5 “Frequency bands and bandwidths used for satellite passive sensing below 275 GHz”

PDR Rec. ITU-R RS.1347-1 “Feasibility of sharing between Radionavigation-satellite service receivers and the Earth exploration-satellite (active) and space research (active) services in the 1 215-1 300 MHz band”

Preliminary draft new ITU-R Recommendations (PDNR)

One PDNR were created at this meeting. Actually it is the result of merging to existing recommendations: Recommendations ITU-R RS.1028-2 and ITU-R RS.1029-2. It will be further discussed at the next WP 7C meeting:

Preliminary draft new Recommendation ITU-R RS.[PERF\_INTERF] -

Performance and interference criteria for satellite passive remote sensing

Recommendations proposed for suppression

Recommendation ITU-R RS.1262 was proposed for suppression in conjunction with the adoption and approval of the draft new Recommendation ITU-R RS.[METAIDS\_METH].

Draft new Reports

One draft new Report was sent to SG 7 for adoption: DN Report ITU-R RS.[ABOVE 275] “Passive bands of interest to EESS from 275 to 3000 GHz”

## **Study Group 7 – Science Services**

As the overseeing body for its working parties, SG7 is responsible for reviewing the outputs of the working parties. If an output is approved by SG7, it is sent forward to the members of the ITU for adoption.

## **4. World Meteorological Organization (WMO) Commission for Basic Systems (CBS) Steering Group on Radio Frequency Coordination (SG-RFC)**

### **1 ORGANISATION OF THE SESSION**

The SG-RFC 2011 meeting was held 18-20 January 2011 in Geneva (Switzerland) at WMO Headquarters under the Chairmanship of Philippe Tristant (Meteo France) and with attendance. The Attendance from the United States included James Mentzer, and Robert Leck.

The meeting was opened by Wenjian Zhang, WMO Director of Observations.

Even though the agenda of the meeting and input documents covered all general issues, the main focus of this SG-RFC 2011 meeting was to revise the WMO preliminary position on WRC-12 agenda in view of the forthcoming ITU-R CPM meeting.

## 2 WMO POSITIONS ON WRC-12 AGENDA

### Review of WMO positions on WRC-12 agenda

As the main focus of this meeting, SG-RFC reviewed the WMO positions on WRC-12 agenda in view of presenting these updated positions to the forthcoming ITU-R CPM meeting (Conference Preparatory Meeting) held 14-25 February 2011.

SG-RFC considered and reviewed information presented by SG-RFC Chairman as a possible update of the 2009 position document. Unlike this 2009 document that was splitting the items into two separated lists, it was agreed that this 2011 position document would consider a single list of 13 items concerning frequency bands or issues of prime interest/concern for Meteorology, as follows:

- **agenda item 1.2** : Enhancing the international regulatory framework
- **agenda item 1.5** : Electronic News Gathering (ENG)
- **agenda item 1.6 (Res. 950)** : Passive service between 275 and 3000 GHz
- **agenda item 1.8** : Fixed service between 71 and 238 GHz
- **agenda item 1.15** : Oceanographic radars in the frequency range 3-50 MHz
- **agenda item 1.16** : Lightning detection below 20 kHz
- **agenda item 1.19** : Software Defined Radio (SDR) and Cognitive Radio Systems (CRS)
- **agenda item 1.20** : High Altitude Platform Stations (HAPS) in the range 5 850-7 075 MHz
- **agenda item 1.22** : Effect of emissions from short-range devices (SRD)
- **agenda item 1.24** : Extension of the 7 750-7 850 MHz Metsat band to the band 7 850-7 900 MHz
- **agenda item 1.25** : Mobile Satellite Service
- **agenda item 8.1.1** : (issue C) Resolution 673 (WRC-07) on Radiocommunications use for Earth observation applications
- **agenda item 8.2** : WRC-2015 Agenda

Updated positions were agreed for each of these agenda items, including consideration of the current CPM Text Methods supported or opposed by WMO.

This revised WMO position document was submitted to CPM and, in addition, circulated by WMO to all members with relevant stress on the need to advocate these positions to their National Regulatory Authorities.

### Specific inputs to CPM

SG-RFC also agreed on 3 specific inputs to CPM dealing with the following agenda items, proposing some revisions to the CPM Text:

- **agenda item 1.8** : this input proposes revisions to the CPM text, building

upon outcomes and discussions held during last ITU-R WP5C and considers providing a better balance between Method A (no change) and Method B (limits on FS).

- **Agenda item 1.16:** it was agreed that WMO co-signs with some European countries, EUMETSAT and CRAF (Committee on Radio Astronomy Frequencies) a contribution proposing to add a new Method B to propose a METAIDS allocation between 8.3 and 11.3 kHz to support lightning detection applications.
- **Agenda item 8.1.1c:** this input proposes revisions to the CPM Text to include a specific proposal to satisfy the agenda item, namely, a new provision in Article 4 and a proposed revision of Resolution 673.

These documents were submitted to CPM.

#### Additional work in ITU-R

SG-RFC also considered agenda items 1.5, 1.8 and 1.20 (in WP5C) as well as 1.22 (in WP1B) in the light of the current technical studies performed in the ITU-R and agreed that to support WMO positions, relevant participation to the above mentioned ITU-R Working Parties (WPs) will have to be ensured and supported by WMO in order to be confident that the remaining studies will be completed and approved by the ITU-R before WRC-12.

#### Current status of regional preparation

SG-RFC considered the information in documents that was related to the current status of regional preparations for WRC-12 from APT, CEPT, African group and RCC. (Missing information from CITELE)

Although the current positions on each agenda item are either not finalised or in some cases not drawn, it appears that the current situation is quite favourable to WMO positions. One can, however, stress that the position regarding agenda item 1.8 is, for the moment, not so positive. As a result, interventions and further consultations by members with their NRA and Regional preparations meetings are required in order to assure a more favourable outcome. This point was specifically addressed in the WMO letter to members circulating WRC-12 WMO positions

#### Meteorological community representatives at ITU-R CPM Meeting

The following SG-RFC members attended the CPM meeting: B. Leck, J. Mentzer, D. Franc and C. Rivera (NOAA), M. Dreis (EUMETSAT), A. Price and R. Carter (UK Metoffice), P. Tristant (Meteo France) and D. Thomas (WMO).

### **3 ISSUES RELATED TO METAIDS**

#### ITU-R Activities

B. Leck reported to the meeting the recent ITU-R activities in the field of MetAids, mainly radiosondes (Lightning detection issues were covered under WRC-12 issues) and in particular

on the recent adoption of ITU-R Report RS.2187 on “*Determining radiosonde maximum interference levels from link analysis and flight studies*”.

Together with ITU-R Recommendations RS.1165-2 on “*Technical characteristics and performance criteria for systems in the meteorological aids service in the 403 MHz and 1 680 MHz bands*” and RS.1263-1 on “*Interference criteria for meteorological aids operated in the 400.15-406 MHz and 1 668.4-1 700 MHz bands*”, this new ITU-R Report provides an overall up-to-date package of reference documents related to MetAids (radiosondes)

#### *Future of 400 MHz METAIDS band*

SG-RFC 2009 reaffirmed the necessity for the meteorological community to prepare itself to respond to possible future pressures on limiting the 400 MHz METAIDS band.

It agreed that the meteorological community should not be pro-active to propose a bandwidth decrease in the 400 MHz but also agreed that, to be well prepared in case such request arises from any radio administration, there was a need to study the issue on possible bandwidth reduction among meteorological services taking into account constraints, current trends, relation with DCP use in the 401-403 MHz, ...).

A specific Document will be prepared taking into consideration following elements:

- need for different frequencies for all stations
- need for different frequencies at each station to ensure re-launching
- accounting for frequency shift, even though this shift is likely to be minimised by using digital sondes
- need for international coordination to avoid interference from sondes launched by neighbouring countries
- Other radiosondes users that have to be accounted (military, scientists,)
- need for Analog sondes in a large number of countries
- intensive launches of radiosondes during specific research campaigns
- METSAT operations in the lower part of the band (401-403 MHz)
- In some countries, some different parts of the 400.15-406 MHz band are already not usable by radiosondes, which hence make impossible to find a global harmonised solution.

No action was carried over since 2009 SG-RFC meeting but SG-RFC 2011 reiterated the importance of such an analysis and document.

It was agreed that such work should be coordinated with CIMO and SG-RFC decided that, at first, a short explanatory document providing rationale, context and goals of such analysis should be prepared and liaise to CIMO. This work should be completed before next CIMO management meeting (April 2011) and will be handled by A. Price (UK Met Office) and P. Hettrick (BOM).

## **4 ISSUES RELATED TO METSAT**

### *ITU-R and SFCG Activities*

Markus Dreis reported to the meeting on various ITU-R activities related to METSAT since last SG-RFC meeting and in particular the final adoption of ITU-R Report SA.2164 on

“*Compatibility between the meteorological satellite and the fixed service in the band 7 850-7 900 MHz*” in support to WRC-12 agenda item 1.24.

He also mentioned the initialisation in ITU-R WP 7B of a more general work aiming at revising and merging all ITU-R Recommendations dealing with METSAT and EESS systems and, in particular, reviewing the basis for interference criteria and analysis (probably in terms of C/(N+I) in replacement of current I/N analysis). This work will require contributions from METSAT operators to provide systems characteristics.

He also informed the meeting about the finalisation in SFCG of the frequency plan for the use of the 401-403 MHz band by Data Collection Platform (DCP). This plan was subsequently released to CGMS that endorsed this plan and encouraged its members to comply with it.

### CGMS Activities

Jerome Lafeuille (WMO space program) presented a summary of discussions in last CGMS meeting (Nov 2010 in India) related to radio-frequencies.

In particular, he informed the group on the agreement in CGMS to send a letter to the US authorities expressing high concerns regarding the potential use of the METSAT L-Band for 4G Mobile communications applications.

### Status of L-Band issue in the US

This issue is part of a general plan in the US to find up to 500 MHz band for 4G broadband mobile applications, for which, the US authorities have been targeting, amongst others, the 1675-1710 MHz METSAT band.

This issue was raised at last WMO Executive council and triggered a letter from WMO Secretary General to the US FCC, raising high concerns from the meteorological community and the risk of seeing such National decision generalised on a worldwide basis

Since then, the issue has been further studied in the US with high implication from NOAA and current conclusion have been to limit the possible allocation to 4G applications in the 1695-1710 MHz, recognising that the current use in the US of the 1675-1695 MHz band, for GEO satellites, would not allow to allocate this sub-band to mobile applications while ensuring protection of existing METSAT Earth Stations.

It was also noted that the possible release of the 1695-1710 MHz band would be associated with the specification of exclusion zones around 9 main NOAA receiving stations. The radius of such protection area is still to be confirmed but distances of about 120 to 150 kms are under discussions. NOAA will update SG-RFC on the future status of this issue.

NOAA representatives mentioned that such conclusions would be satisfactory to their interests in the US, although this would probably lead to a review of their JPSS program.

Recognising the positive outcome of seeing the 1675-1695 MHz excluded, SG-RFC members reiterated their concerns for the possible allocation of 1695-1710 MHz band since such decision seems to disregard the fact that number of other METSAT operators are currently or plan to use this band for their polar orbiting satellites (METOP, FY3, ...). Indeed, SG-RFC reminded the fact that Direct Broadcast represents an important characteristic of METSAT operations and is the only solution to release data in “real-time”.

SG-RFC considered whether additional actions through the US authorities were required,

in addition to the WMO and CGMS letters. The conclusion was that no new action was necessary.

On a more general basis, SG-RFC recognised that this issue will definitely come into discussion at the ITU-R level, since it is now obvious that WRC-15 agenda will include an Agenda Items that will seek new frequency bands for 4G mobile applications.

To this respect, SG-RFC agreed that strong WMO representation and lobbying will be necessary during the whole WRC-15 preparation process to avoid any negative conclusions for meteorological interests, in particular for this METSAT L-Band.

## 5 ISSUES RELATED TO SPACEBORNE REMOTE SENSING

### ITU-R Activities

SG-RFC chairman informed the meeting about various ITU-R activities related to satellite remote sensing and in particular:

- The adoption of the ITU-R Handbook on “*Earth Exploration Satellite Service*”
- The adoption of ITU-R Recommendation RS.1859 on “*Use of remote sensing systems for data collection to be used in the event of natural disasters and similar emergencies*”
- The adoption of ITU-R Recommendation RS.1883 on “*Use of remote sensing systems in the study of climate change and the effects thereof*”
- The adoption of ITU-R Recommendation RS.1861 on “*Typical technical and operational characteristics of Earth exploration-satellite service (passive) systems using allocations between 1.4 and 275 GHz*”
- The revision of ITU-R Recommendation RS.1813 on “*Reference antenna pattern for passive sensors operating in the Earth exploration-satellite service (passive) to be used in compatibility analyses in the frequency range 1.4-100 GHz*”
- The adoption of ITU-R Report RS.2165 on “*Identification of degradation due to interference and characterization of possible interference mitigation techniques for passive sensors operating in the Earth exploration satellite service (passive)*”

He also informed the meeting that, following concerns raised by WMO, EUMETSAT and ESA in ITU-R WP5C about Report F.2107, a revision of this Report is now on-going to clarify the situation of Fixed Service applications around 120 GHz that are, in the current version of the Report, depicted as using the band 114.25-116 GHz covered by RR N°5.340. This revision will have to be monitored.

Finally, SG-RFC recognised that ITU-R activities on remote sensing as well as on METSAT are assumed to be known by satellite operators (in CGMS) but agreed that it could be wise to regularly keep them informed and point them to the relevant ITU-R WebPages. WMO space program representative could ensure such information.

### Status of 1.4 GHz, 10.6 GHz and 31 GHz bands in Europe

SG-RFC chairman presented the following documents: ECC Decision at 10.6 GHz, ECC Decision at 31 GHz and draft ECC Decision at 1.4 GHz, aiming at transforming into mandatory limits in Europe the “recommended levels” agreed at WRC-07 to ensure protection of EESS (passive) sensors in those bands.

SG-RFC welcomed such positive initiative and encouraged all countries to follow similar

path. To this respect, it was agreed that such situation should be advertised to all members.

#### *Status of the SRR (Short-Range Radars) 24 GHz issue in Europe*

SG-RFC chairman presented documentation on a call to stakeholders towards a draft revision of the European Commission (EC) Decision **2005/050/EC** on Automotive Short-Range Radars at 24 GHz.

This revision aims at proposing, after 1st July 2013, a shift of SRR 24 GHz operating frequency into the 24.25-26.65 GHz band, hence avoiding in the future the use of the 23.6-24 GHz passive band.

If such revision was adopted, it would represent a huge success for the Earth Exploration community, ending about 10 years of strong discussions and lobbying to safeguard this 23.6-24 GHz essential passive band.

The proposed revision is however not complete since it currently forgets about proposing relevant unwanted emissions levels in the passive band, although such levels were proposed during the technical studies in Europe.

EUMETNET, EUMETSAT and ESA will provide a response to this EC call to stakeholders (deadline 15 February) and it was proposed to WMO to join such a response. This was agreed by SG-RFC and SG-RFC chairman was tasked to coordinate such response.

## **6 RADIO FREQUENCY ISSUES COMMON TO VARIOUS BANDS**

### *UWB (Ultra-Wide Band) and SRD (Short Range Devices) issues*

Consistent with discussions and the WMO position on WRC-12 agenda item 1.22, SG-RFC reiterated the potential of threat represented by UWB and SRD applications.

More specifically, SG-RFC chairman stressed a preliminary draft ITU-R Recommendation on “*Frequency bands regionally or globally identified for short-range devices (SRDs)*” aiming at listing some bands harmonised for such SRD applications. This document was presented for adoption at last WP1B (June 2010) but was fortunately blocked, thanks to intervention from WMO and supports from several administrations.

Indeed, it proposes as harmonised SRD band, among others, the 5 GHz RLAN band as well as the radiosonde 400 MHz band, which could represent a risk for the future. Indeed, it is more than likely that SRD manufacturers would consider in priority the frequency bands included in this Recommendation when developing their future equipments with a huge risk of proliferation and a likely misapplication of radar protection mechanisms (for the 5 GHz band).

It was agreed that WMO should stress this issue at next WP1B (May 2011), presenting a contribution to request deletion of these 400 MHz and 5 GHz bands from this Recommendation. A contribution will be prepared in advance and circulated among SG-RFC members, to seek support from their NRA on this WMO position.

### *Essential role of spectrum use for Earth Observations*

SG-RFC chairman stressed the adoption of ITU-R Report RS.2178 on “*The essential role and global importance of radio spectrum use for Earth observations and for related applications*”.

This Report was produced under WRC-12 agenda item 8.1.1c and already represents, in particular its Part A, a major step in the improved recognition of radio-frequency applications that are essential to Meteorological activities. It will become an important reference document in future frequency management discussions either at international level or at national levels.

It will also be the main reference to the forthcoming discussions on WRC-12 agenda item 8.1.1c for which is expected a revision of resolution 673 (WRC-07) to improve the visibility and recognition of Earth Observations radio applications in the Radio Regulations.

On the same topic, SG-RFC also presented documentation that is the text of a statement made by ITU-R at the UNFCCC conference in Cancun and that can be summarised as : “*No spectrum, no global observations!*”.

This information, together with joint WMO-ITU Handbook as well as numerous other reference ITU-R documents should be considered by WMO and members to highlight and stress, if necessary, the essential nature of radio-frequency for meteorology and the importance to maintain or increase meteorological community activity and representation in frequency management process at national, regional and international levels.