

# World Radiocommunication Conference 2019 and 2023 issues



**WMO OMM**

World Meteorological Organization  
Organisation météorologique mondiale

Eric ALLAIX  
METEO-FRANCE  
WMO SG-RFC CHAIRMAN

# WRC -19

**Among the 27 agenda items:**

- \* 12 are related to issues of prime interest or concern for WMO**
- \* 7 may potentially have an impact on WMO interests**



WMO OMM

# AI 1.1 : Amateur service in the 50-54 MHz band (Resolution 658 (WRC-15))

- **Studies required**
  - Sharing between Amateur service and radiolocation limited to Wind Profilers in the 50-54 MHz band
- **Difficulties foreseen**
  - Primary status for amateur service against secondary status for radiolocation
  - Potential willingness to also include amateur-satellite service
- **ITU-R responsible group**
  - WP 5A
- **Preliminary WMO position**
  - No opposition to an allocation to amateur service in the 50-54 MHz provided that:
    - appropriate protection of radiolocation service allocated by RR No 5.162A is ensured and
    - the status of the new allocation to amateur service provides the radiolocation service equality or precedence relative to the amateur service.
  - Opposition to any new allocation to amateur-satellite service in this frequency band



WMO OMM

## AI 1.2 : Satellite hard limits at 400 MHz (Resolution 765 (WRC-15))

- **Studies required**
  - Sharing between telecommand links using these allocations and the current systems operating in this band for data collection within the METSAT (DCS) and the EESS (ARGOS) to ensure the proper continuation of their operations
- **Difficulties foreseen**
  - Cross-linkage with AI 1.7 on SOS allocation for small satellites for the band 401-403 MHz.
- **ITU-R responsible group**
  - WP 7B
- **Preliminary WMO position**
  - WMO supports the establishment of an appropriate set of in band power/e.i.r.p. limits to ensure the protection of existing and future use of meteorological operations (e.g. METSAT and EESS (Earth-to-space)) in the 401-403 MHz frequency band for both non-GSO and GSO Data Collection Station systems.



WMO OMM

# AI 1.3 : METSAT and EESS at 460-470 MHz (Resolution 766 (WRC-15))

- **Studies required**
  - Sharing of EESS (s-E) and METSAT (s-E) with FS and MS
  - Sharing between EESS (s-E) and METSAT (s-E)
- **Difficulties foreseen**
  - Band identified for IMT
- **ITU-R responsible group**
  - WP 7B
- **Preliminary WMO position**
  - WMO supports the upgrade of the METSAT (space-to-Earth) allocation to primary in the frequency band 460-470 MHz with the use of an appropriate PFD limit to protect incumbent services.
  - WMO also supports creation of a primary allocation to the EESS (space-to-Earth) in the frequency band 460-470 MHz with the use of an appropriate PFD limit to protect incumbent services, while retaining the priority of MetSat over EESS as currently expressed in footnote RR No. 5.289.



WMO OMM

# AI 1.6 : Non GSO FSS at 37.5-51.4 GHz (Resolution 159 (WRC-15))

- **Studies required**
  - Compatibility between non GSO FSS (s-E) in the band 37.5-42.5 GHz and EESS (passive) in the band 36-37 GHz.
  - Compatibility between non GSO FSS (E-s) in the bands 47.2-50.2 GHz and 50.4-51.4 GHz and EESS (passive) in the band 50.2-50.4 GHz.
  - Sharing between non GSO FSS (s-E) and EESS (E-s) in the band 40-40.5 GHz.
- **Difficulties foreseen**
  - There is no guard band available around the passive band 50.2-50.4 GHz.
  - Problem of compatibility with ground-based radiometers in 50.4-51.4 GHz band in relation with the low status of radiometers
- **ITU-R responsible group**
  - WP 4A
- **Preliminary WMO position**
  - WMO supports the development of a regulatory framework (including revisions to Resolution 750 (Rev.WRC-15) for non-GSO FSS satellite systems in the 37.5-51.4 GHz range provided that protection of EESS (Earth-to-space) in the band 40-40.5 GHz and EESS (passive) in the bands 36-37 GHz and 50.2-50.4 GHz is ensured by including appropriate unwanted emission limits in Resolution 750 (Rev. WRC-15).
  - WMO would appreciate the development of a solution to ensure the effective operation of the ground-based radiometers in the 50.4-51.4 GHz frequency band.



WMO OMM

# AI 1.7 : Small satellites (Resolution 238 (WRC-15))

- **Studies required**
  - Suitability of existing SOS allocation below 1 GHz
  - If no SOS existing allocation below 1 GHz is suitable, sharing of SOS with METAIDS, METSAT (E-s) and EESS (E-s) in the 400.15-406 MHz band
- **Difficulties foreseen**
  - Cross-linkage with AI 1.7 on SOS allocation for small satellites for the band 401-403 MHz.
  - Risk of focus on the 400 MHz band
- **ITU-R responsible group**
  - WP 7B
- **Preliminary WMO position**
  - WMO emphasises that the frequency band 400.15-406 MHz is the key band for radiosondes and DCS worldwide operations and is concerned about its consideration under this agenda item.

# AI 1.13 : IMT 5G (Resolution 238 (WRC-15)) - 1

- **Studies required**

- Sharing with ISS and EESS (s-E) in the band 25.25 – 27.5 GHz
- Sharing with EESS (E-s) in the band 40-40.5 GHz
- Compatibility between IMT and EESS (passive) in the bands 23,6-24 GHz, 31.5-31.8 GHz, 36-37 GHz, 50.2-50.4 GHz, 52.6 - 54.25 GHz and 86-92 GHz

- **Difficulties foreseen**

- Footnotes in the band 25.5-27 GHz mentioning that EESS earth stations shall not claim protection from MS, and de facto, from IMT.
- Nothing guarantees that the Administrations will still accept to give licensees in the future to deploy new, or even continue to operate current transmitting or receiving earth stations.
- No guard band available around the passive band 50.2-50.4 GHz.
- Problem of compatibility with ground-based radiometers in relation with the low status of radiometers

- **ITU-R responsible group**

- TG 5/1



## AI 1.13 : IMT 5G (Resolution 238 (WRC-15)) - 2

- **Preliminary WMO position**

- WMO supports the need to conduct studies under agenda item 1.13. WMO does not oppose new IMT 5G identification/allocations provided that protection of ISS, EESS (Earth-to-space and space-to-Earth) and EESS (passive) is ensured and that guarantees are given on the long-term usage and future deployment of receiving EESS earth stations (in particular in the 25.5-27 GHz band).
- The protection of EESS (passive) would require appropriate unwanted emission limits in Resolution 750 (Rev. WRC-15).
- Furthermore, WMO would appreciate the development of a solution to ensure the effective operation of the ground-based radiometers in the 22-28 GHz and 50.4-51.4 GHz frequency bands.



WMO OMM

# AI 1.14 : HAPS (Resolution 160 (WRC-15))

- **Studies required**
  - Compatibility between HAPS in the band 21.4-22 GHz and EESS (passive) in the band 21.2-21.4 GHz
  - Sharing with ISS, EESS (s-E) in the band 25.25 – 27.5 GHz
- **Difficulties foreseen**
  - The frequency band 24.25-27.5 GHz is also considered for IMT. It is therefore likely that either one or the other will enter into the band 25.25-27.5 GHz used by scientific services.
  - HAPS downlinks will have a more severe impact in EESS receiving earth stations than HAPS uplinks or IMT.
  - Problem of compatibility with ground-based radiometers in relation with the low status of radiometers
- **ITU-R responsible group**
  - WP 5C
- **Preliminary WMO position**
  - WMO does not oppose new HAPS band identifications provided that studies show a need for identification of additional spectrum for HAPS and that protection of ISS, EESS (space-to-Earth), and EESS (passive) is ensured and that guarantees are given on the long-term usage and future deployment of receiving EESS earth stations (in particular in the 25.5-27 GHz band).
  - The protection of EESS (passive) would require appropriate unwanted emission limits in Resolution 750 (Rev. WRC-15).
  - Furthermore, WMO would appreciate the development of a solution to ensure the effective operation of the ground-based radiometers in the 22-28 GHz frequency band.



WMO OMM

# AI 1.15 : FS/MS above 275 GHz (Resolution 767 (WRC-15))

- **Studies required**
  - Sharing and compatibility studies between the land-mobile, fixed and passive services operating in the frequency range 275-450 GHz depending on the exact bands targeted.
- **Difficulties foreseen**
  - Radio-astronomy has identified in 5.565 bands which are not identical to EESS (passive) ones, leaving no empty band in this frequency range for FS or MS, and therefore requiring sharing.
- **ITU-R responsible group**
  - WP 1A
- **Preliminary WMO position**
  - WMO does not oppose the identification of land-mobile and fixed services in the 275-450 GHz band provided that protection of EESS (passive) is ensured and the identification is consistent with footnote RR No. 5.565.
  - If allocations for active service are envisaged, the same approach would have to be applied to passive service.



WMO OMM

# AI 1.16 : RLAN 5 GHz (Resolution 239 (WRC-15)) -1

- **Studies required**

- Participate in the RLAN requirements studies in order to verify the consistency of spectrum requirements with real needs as well as deployment scenarios.
- Studies to counter the rationales provided by the RLAN industry with regard to the applicability, efficiency and enforcement possibility of the proposed mitigation techniques.
- Additional studies on the compatibility between RLANs and altimeters/scatterometers (including revisiting studies performed prior WRC-03).
- Compatibility with meteorological radars in the 5350-5470 MHz, including assessment of DFS requirements

- **Difficulties foreseen**

- Same as for WRC-15 (high pressure from RLAN industry, ...).
- Ambiguity for altimeters also covering the band 5470-5570 MHz

- **ITU-R responsible group**

- WP 5A



WMO OMM

# AI 1.16 : RLAN 5 GHz (Resolution 239 (WRC-15)) -2

- **Preliminary WMO position**

- Due to potential for increasing interference to the EESS (active), WMO opposes relaxed restrictions that would allow the outdoor use of RLAN devices in the 5250-5350 MHz frequency band.
- WMO is highly concerned and opposed to an allocation/identification for RLAN in the frequency band 5 350-5 470 MHz, since it will in particular endanger the operation of current and planned EESS (active) systems.
- Furthermore WMO is concerned that the current situation in the band 5600-5650 MHz, regarding intentional illegal use and non-compliant RLAN systems by-passing the regulated mitigation technique and leading to interference to meteorological radars, will be repeated in the
- 5350-5470 MHz band and additionally affect EESS (active) and meteorological radars.



WMO OMM

## AI 9.1.5 : RLAN 5 GHz and reference to radar ITU-R recommendations (Resolution 764 (WRC-15))

- **Studies required**
  - To show that reference to Recommendation ITU-R M.1849-1 will have no impact on the conditions of use of the 5600-5650 MHz band for RLAN and meteorological radars
- **Difficulties foreseen**
  - May have an impact on the decisions related to agenda item 1.16.
- **ITU-R responsible group**
  - WP 5A
- **Preliminary WMO position**
  - WMO supports referencing Recommendation ITU-R M.1849-1 in No 5.450A of the Radio Regulations in order to ensure the continued protection of meteorological radars from WAS/RLAN systems operating under the mobile service allocation in the 5470-5725 MHz frequency band.



WMO OMM

# AI 9.1.6 : Wireless Power Transmission (Res. 958 (WRC-15))

- **Studies required**
  - To better understand the WPT principles and related propagation conditions
  - To confirm the frequency range under considerations for WPT (i.e. 20 to 6800 kHz range)
  - To assess the potential impact of WPT on lightning detection networks
- **Difficulties foreseen**
  - WPT characteristics are currently not known
- **ITU-R responsible group**
  - WP 1B
- **Preliminary WMO position**
  - WMO does not oppose to study the suitable harmonized frequency ranges for WPT provided that it does not impact operation of lightning detection networks operating in the 20-350 kHz range and oceanographic radars operating in the 5250-5275 kHz frequency band.

## AI 9.1.9 : FSS at 51.4-52.4 GHz (Resolution 162 (WRC-15))

- **Studies required**
  - Compatibility between GSO FSS (E-s) in the band 51.4-52.4 GHz and EESS (passive) and ground based radiometers in the bands 50.2-50.4 GHz and 52.6-54.25 GHz .
- **Difficulties foreseen**
  - WPT characteristics are currently not known
- **ITU-R responsible group**
  - WP 4A
- **Preliminary WMO position**
  - WMO does not oppose to the possible allocation of the frequency band 51.4-52.4 GHz to the FSS (E-s) provided that protection of EESS (passive) in the bands 50.2-50.4 GHz and 52.6-54.25 GHz is ensured.
  - The protection of EESS (passive) would require appropriate unwanted emission limits in Resolution 750 (rev. WRC-15).
  - Furthermore, WMO would appreciate the development of a solution to ensure the effective operation of the ground-based radiometers in the 50.4-51.4 GHz frequency band.



WMO OMM



# WRC-19 agenda items that may have an impact on WMO interests (1)

- **Agenda item 1.11 : railway radiocommunication systems (Resolution 236 (WRC 15))**
- **Agenda item 1.12 : Intelligent Transport Systems (ITS) (Resolution 237 (WRC 15))**

- **Preliminary WMO position**

For these both AIs, since no specific frequency bands have currently been proposed for study, WMO does not have a specific concern on this agenda item. Consideration of frequency bands used for meteorological operations would increase WMO concerns.

- **Agenda item 2 : ITU R Recommendations incorporated by reference in the Radio Regulations (Resolution 28 (Rev.WRC 15) and Resolution 27 (Rev.WRC 12))**
- **Agenda item 4 : “in accordance with Resolution 95 (Rev.WRC 07), to review the resolutions and recommendations of previous conferences with a view to their possible revision, replacement or abrogation.”**

- **Preliminary WMO position**

For these both AIs, WMO will monitor this AI to ensure that any possible change to the RR will not adversely impact any service used for meteorological needs.



WMO OMM

# WRC-19 agenda items that may have an impact on WMO interests (2)

- **Agenda item 7 : Response to Resolution 86 (Rev. Marrakesh, 2002) of the Plenipotentiary Conference, an advance publication, coordination, notification and recording procedures for frequency assignments pertaining to satellite networks, in accordance with Resolution 86 (Rev.WRC 07).**

## **Preliminary WMO position**

WMO will support changes to the Radio Regulations that would improve the advance publication, coordination, notification and recording procedures for satellite networks.

- **Agenda item 9.1.4 : Stations on board sub-orbital vehicles (Resolution 763 (WRC-15)).**

## **Preliminary WMO position**

WMO will monitor this AI to ensure that these measures will not adversely impact any service used for meteorological operations.

- **Agenda item 9.1.7 : Unauthorized terminals (see Resolution 958 (WRC-15)).**

## **Preliminary WMO position**

WMO will monitor this AI to ensure that any possible change will not adversely impact any service used for meteorological operations.

- **Agenda item 9.1. 8 : M2M (see Resolution 958 (WRC-15)).**

## **Preliminary WMO position**

WMO will monitor this AI to ensure that the results of these studies will not adversely impact any service used for meteorological operations.



**WMO OMM**

# Agenda for next WRCs (Res. 808 (WRC-12)) WRC-23

There are currently two items on the WRC-23 Preliminary Agenda supported by WMO:

- WRC-23 Preliminary agenda item 2.2- “to conduct, and complete in time for WRC 23, studies for a possible new allocation to the Earth exploration-satellite (active) service for spaceborne radar sounders within the range of frequencies around 45 MHz taking into account the protection of incumbent services, in accordance with Resolution 656 (WRC 15);
- WRC-23 Preliminary agenda item 2.3- “in accordance with Resolution 657 (WRC 15), to review the results of studies relating to the technical and operational characteristics, spectrum requirements and appropriate radio service designations for space weather sensors, with a view to providing appropriate recognition and protection in the Radio Regulations without placing additional constraints on incumbent services;”



WMO OMM

# Thank you Merci



**WMO OMM**

World Meteorological Organization  
Organisation météorologique mondiale