



**WMO/ITU Seminar:
Use of Radio Spectrum for Meteorology:
Weather, Water and Climate Monitoring
and Prediction**

**7.2.1 WRC 2012 Issues and
WMO Positions**

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WRC 2012 Issues and WMO Positions

- **At WRC 2012, more than 30 Agenda Items will consider new or modified frequency allocations, for various uses, for future assignment on a global basis.**
- **8 of these are of direct interest/concern to meteorology:**
 - i.e. they concern frequency bands currently used, or planned to be used, for meteorological purposes.
- **4 more may impact on meteorology:**
 - i.e. although they do not directly concern frequency bands used for meteorology, they do concern frequency band usage that may impact on those bands used for meteorology.
- **It is of critical importance to global meteorology that member nations support the WMO positions on these items at WRC 2012, to the greatest possible extent.**

WRC 2012 Issues and WMO Positions

- **8 Agenda Items of Direct Interest to Meteorology:**
 - **Agenda Item 1.6:** Passive services between 275 and 3,000 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 1.22:** 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.

WRC 2012 Issues and WMO Positions

- **4 Agenda Items of Potential Interest to Meteorology:**
 - **Agenda Item 1.3:** Unmanned Aircraft Systems (UAS);
 - **Agenda item 1.5:** Electronic News Gathering (ENG);
 - **Agenda item 1.7:** Aeronautical mobile under Resolution 222 (Rev. WRC-2007);
 - **Agenda Item 8.2:** WRC-2015 Agenda.

WRC 2012 Agenda Items of Direct Interest

- **Agenda Item 1.6: Update passive services between 275 and 3,000 GHz**
 - **Review No. 5.565 of the Radio Regulations** (table of uses):
 - Update spectrum use by the passive services between 275 GHz and 3 000 GHz (Resolution **950 (Rev.WRC-07)**);
 - Consider possible procedures for free-space optical-links (Resolution **955 (WRC-07)**)
 - **WMO focus:**
 - Earth Exploration Satellite Service:
 - Sensors on planned satellites, such as MLS, MASTER, GEM, GOMAS, CLOUDS, ODIN, SOPRANO, SMILES
 - Important water vapour and oxygen spectral lines, cloud ice and cirrus measurements.
 - Aeronomy (ground-based passive sensors for various atmospheric chemistry/physics applications).
 - **WMO Position:**

WMO confirms the high interest and importance of such bands above 275 GHz for meteorology, climatology and environmental activities and supports such review and update of spectrum use by EESS or aeronomy to allow early assessment of meteorological next generation equipments.

WRC 2012 Agenda Items of Direct Interest

- **Agenda Item 1.8: Fixed service between 71 and 238 GHz**
 - **Consider progress of ITU studies under Resolutions 731 (WRC-2000) and 732 (WRC-2000):**
 - Concerns **technical and regulatory issues** relative to the **fixed service** between 71 and 238 GHz;
 - Includes **sharing** and adjacent **compatibility** with **passive services**.
 - **WMO Focus:**
 - Numerous important EESS (passive) frequency bands between 71 and 238 GHz, currently in use;
 - Includes 86-92 GHz, 100-102 GHz, 114.25-122.25 GHz, 148.5-151.5 GHz, 174.8-191.8 GHz, 226-231.5 GHz and 235-238 GHz;
 - Some covered by RR N°5.340, others not.
 - **WMO Position:**

WMO supports the protection of passive frequency bands in the 71-238 GHz range and strongly urges that any technical and regulatory conditions set up for the Fixed Service should be associated with appropriate in-band or adjacent-band conditions to ensure protection of the EESS (passive).

WRC 2012 Agenda Items of Direct Interest

- **Agenda Item 1.15: Oceanographic radars in the frequency range 3-50 MHz**
 - **Consider possible allocations in the range 3–50 MHz to the radiolocation service for oceanographic radar applications**
 - In accordance with Resolution 612 (WRC-07)
 - **WMO Focus:**
 - Numerous experimental or pre-operational HF oceanographic radars are operating in various countries (under RR N°. 4.4);
 - Current radars operate in narrow bands near 4.5, 9, 13, 16, 25 and 43 MHz. Lower frequencies for long range operation, higher for short range operation;
 - They provide valuable information on coastal sea surface conditions, which assists environmental, oceanographic, meteorological, climatological, maritime and disaster mitigation activities;
 - We now understand spectrum needs and the requirements for spectrum sharing with other services.
 - **WMO Position:**

WMO confirms the importance of oceanographic radars for meteorology, climatology and environmental activities and supports a relevant radiolocation service allocation within the 3-50 MHz band to enable the implementation and operation of such radars.

WRC 2012 Agenda Items of Direct Interest

▪ Agenda Item 1.16: Lightning detection below 20 kHz

- Consider the needs of, and possible frequency allocation for, passive lightning detection systems operating below 20 kHz:

- In accordance with Resolution 671 (WRC-07)

▪ WMO Focus:

- Systems currently in operation around the world:

- e.g. UKMO network over Europe/Africa/Atlantic, and other networks;
 - Provides valuable lightning location information cheaply;
 - Significant potential benefit, particularly for developing nations;
 - Interference issues being experienced: spectrum allocation desired for future protection of service.

▪ WMO Position:

WMO supports an allocation to the meteorological aids service (passive) below 20 kHz that is the only solution to ensure long-term availability of long range and global lightning detection applications of importance for a number of meteorological services and the whole meteorological community.

WRC 2012 Agenda Items of Direct Interest

- **Agenda Item 1.22: Effect of emissions from short-range devices (SRD)**
 - **Examine the effect of emissions from short-range devices on radiocommunication services:**
 - In accordance with Resolution **953 (WRC-07)**
 - **WMO focus:**
 - Need to ensure that the incumbent radiocommunication services are adequately protected from emissions of SRDs;
 - Although the particular focus of this Agenda Item is on Radio Frequency Identifications (RFIDs), it may include all types of SRDs, for example Ultra Wide Band (UWB) applications;
 - Hence it is of potential concern for the future utility of all frequency bands of interest for meteorology.
 - **WMO Position:**

Should any provision relating to SRDs be included in the Radio Regulations, WMO urges that compatibility with and protection of meteorological applications and services be ensured.

WRC 2012 Agenda Items of Direct Interest

- **Agenda Item 1.24: Extension of the 7,750-7,850 MHz Metsat band to the band 7,850-7,900 MHz**
 - **Consider extension of the existing allocation to the meteorological-satellite service in the band 7,750–7,850 MHz to the band 7,850 – 7,900 MHz:**
 - Limited to **non-geostationary meteorological satellites** in the **space-to-Earth direction**;
 - In accordance with Resolution **672 (WRC-07)**
 - **WMO Focus:**
 - Next generation non-GSO meteorological satellites **need to transmit higher data rates**, hence the **need for a wider band** than they have at present;
 - Compatibility between MetSat and FS/MS already demonstrated for current band;
 - Hence proposed extension of the band should also be compatible with these services.
 - **WMO Position:**

WMO would like to stress that similar services are allocated in the 7750-7850 MHz and 7850-7900 MHz bands hence justifying similar sharing conditions with METSAT service. WMO supports the METSAT allocation extension in the 7850-7900 MHz under similar conditions than in the current 7750-7850 MHz band.

WRC 2012 Agenda Items of Direct Interest

▪ Agenda item 1.25: Mobile Satellite Service

▪ **Studies of possible bands for new allocations to the mobile-satellite service in the Earth-to-space and space-to-Earth directions, with particular focus on the range 4 GHz to 16 GHz:**

- Must take into account sharing and compatibility, without placing undue constraints on existing services;
- In accordance with Resolution **231 (WRC-07)**

▪ **WMO Focus:**

- Particular focus on the bands between 4 and 16 GHz;
- Meteorological allocations in bands under consideration;
 - (MetSat, weather radars, EESS);
- Important to ensure ongoing protection of these existing services.

▪ **WMO Position:**

Should identification or allocations for mobile satellite service be considered in meteorological bands, WMO urges that compatibility with related applications be assessed and adequate protection be ensured.

WRC 2012 Agenda Items of Direct Interest

- **Agenda Item 8.1.1: (Issue C) Resolution 673 (WRC-07) on Radiocommunications use for Earth observation applications**
 - **Resolution 673 (WRC-07) invites studies on possible means to improve**
 - **Recognition** of the essential role and global importance of **Earth observation radiocommunications applications**, and;
 - **Knowledge and understanding of administrations** regarding the utilization and benefits of these applications.
 - **WMO Focus:**
 - Resolution **673 (WRC-07)** was welcomed by the Earth Observation Summit Ministerial declaration (Cape Town, Nov 07) and is critical to the success of GEOSS and its broad range of societal benefits.
 - **WMO Position:**

WMO stresses the recognised importance of Resolution 673 (WRC-07) in relation to Earth observation activities and the need to secure it as a long-term ITU Resolution. WMO supports on-going ITU-R studies toward an ITU-R Report on “*The essential role and global importance of radio spectrum use for Earth observations and for related applications*“. Also, WMO encourages the use of such study results to identify frequency bands for use in Earth observation activities, which could require consideration at future WRCs.

WRC 2012 Agenda Items of Potential Interest

■ Agenda Item 1.3: Unmanned Aircraft Systems (UAS)

- Consider spectrum requirements and possible regulatory actions, including allocations, in order to support the safe operation of unmanned aircraft systems (UAS):

- In accordance with Resolution 421 (WRC-07).

- **WMO Focus:**

- No specific frequency bands are identified under this Agenda Item;
 - It is likely that the main focus will be on existing bands used for aeronautical safety;
 - It is possible, however, that bands, such as between 2 and 10 GHz, will be considered;
 - Since there are numerous spectrum allocations for meteorological applications in various bands, it will be important to ensure ongoing protection of these existing services;
 - UAS have been and will continue to be used for meteorological observations.

- **WMO Position:**

WMO supports this agenda item. However, should identification or allocations for Unmanned Aircraft Systems (UAS) be considered in bands allocated for meteorological purposes, WMO urges that compatibility with related applications be assessed and adequate protection be ensured.

WRC 2012 Agenda Items of Potential Interest

▪ Agenda Item 1.5: Electronic News Gathering (ENG)

▪ Consider worldwide/regional harmonization of spectrum for electronic news gathering (ENG):

- In accordance with Resolution 954 (WRC-07).

▪ WMO Focus:

- Some bands currently used for ENG, or under consideration, are also allocated for meteorological applications;
- Examples of these are 2700 – 2900 MHz (weather radars) and 10.6 – 10.68 GHz (passive remote sensing of the atmosphere from space);
- Concentrated usage of powerful ENG applications in these bands could potentially interfere with incumbent meteorological applications.

▪ WMO Position:

Should identification or allocations for Electronic News Gathering (ENG) be considered in meteorological bands, WMO urges that compatibility with related applications be assessed and adequate protection be ensured.

WRC 2012 Agenda Items of Potential Interest

▪ Agenda Item 1.7: Aeronautical mobile satellite service

▪ Ensure long-term spectrum availability and access to spectrum for the aeronautical mobile-satellite (R) service:

- While retaining unchanged the allocation to the mobile-satellite service in the bands 1,525 - 1,559 MHz and 1,626.5 - 1,660.5 MHz;
- In accordance with Resolution **222 (Rev. WRC-07)**.

▪ WMO Focus:

- No specific frequency bands for aeronautical mobile-satellite (R) service are mentioned under this Agenda Item;
- Bands above 1.6 GHz are likely to be considered;
- Since there are numerous existing allocations for meteorological applications above 1.6 GHz (e.g. MetSat, weather radars, EESS), it will be important to ensure ongoing protection of these existing services.

▪ WMO Position:

Should identification or allocations for Aeronautical mobile service be considered in meteorological bands, WMO urges that compatibility with related applications be assessed and adequate protection be ensured.

WRC 2012 Agenda Items of Potential Interest

▪ Agenda Item 8.2: WRC-2015 Agenda

- This Agenda Item deals with proposals for Agenda Items for WRC-2015.

▪ WMO Focus:

- Since no agenda items have yet been proposed for WRC-2015, WMO has no position on this Agenda Item at this stage;
- When and as new Agenda Items for WRC-2015 are proposed, WMO will adopt its position on each based on the relevance of the proposed item to the use of spectrum for meteorological purposes, and will advise the global meteorological community accordingly.

▪ WMO Position:

Yet to be developed.

Conclusion

The ongoing availability of radiofrequency spectrum for meteorological and other environment-related applications is of critical importance to all on Earth.

Without it, we cannot continue to measure, collect and disseminate data and information for the protection of the environment and human welfare.

The global meteorological system is an integral system: we cannot protect some parts of it but not others, without putting the effectiveness of the entire system at risk.

Accordingly, WMO requests all nations to support its efforts in the ongoing protection of all spectrum for meteorology.



Thankyou!