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| A close up of a sign  Description automatically generated | **World Radiocommunication Conference (WRC-23) Dubai, 20 November - 15 December 2023** | |  |
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| PLENARY MEETING | | **Document 68-E** | |
|  | | **4 October 2023** | |
|  | | **Original: English** | |
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| Note by the Secretary-General | | | |
| WORLD METEOROLOGICAL ORGANIZATION | | | |
| SPACE WEATHER ISSUE | | | |
| Agenda item 10 | | | |

I have the honour to bring to the attention of the Conference, at the request of the World Meteorological Organization (WMO), the annexed information paper.

Doreen Bogdan-Martin  
 Secretary-General

World Meteorological Organization (WMO)

SPACE WEATHER ISSUE

WRC-23 agenda item 9.1 Topic A aims to provide space weather with recognition at an international regulatory level by defining space weather in the context of the Radio Regulations (i.e. space weather definition and the appropriate “radiocommunication service” under which space weather systems may operate, namely MetAids (*space weather*)).

Space weather refers to the physical and phenomenological state of the natural space environment and processes occurring in the space electromagnetic environment that ultimately affect human activities on Earth and in space. These disturbances can result in a hazardous radiation environment for satellites and humans at high altitudes, ionospheric disturbances, geomagnetic field variations, and the aurora. These effects can in turn impact a number of services and infrastructure located on the Earth’s surface, airborne, or in Earth orbit. Disturbances in the ionosphere and atmosphere have important impacts on radio communication, satellite navigation systems and heat the atmosphere which increases the atmospheric drag experienced by low-Earth orbit satellites, including the International Space Station. Radionavigation-satellite service (RNSS) signals, which are used for a growing number of precision positioning, navigation, and timing applications, as well as for sounding the atmosphere using radio-occultation, are affected by space weather as they propagate through the ionosphere. Strong spatial irregularities in the ionosphere (ionospheric scintillations) can cause loss of lock between a RNSS receiver and the satellite signals and can result in a total disruption of service. Variability in the total electron content between the receiver and the satellite degrades RNSS positioning accuracy. More detailed information is available in the draft revision of the Report ITU-R RS.2456-0 on “Space weather sensor systems using radio spectrum”.

Based on this ITU-R Report and regardless of the WRC-23 decision on the agenda item referred above, WMO studied the different space weather sensors that are either in operation or about to be put into operation in order to elaborate the associated list of frequency ranges used.

In the framework of a potential new WRC-27 agenda item, WMO would appreciate the inclusion of the frequency bands listed hereafter in the potential future WRC-27 agenda item on space weather, in line with the approved preliminary WRC-27 agenda item 2.6, in order to elaborate an appropriate provision in the Radio Regulations to ensure the protection of space weather sensor systems currently operational or planned to be operational in the near future:

– 27.5-32.6 MHz;

– 37.5-38.5 MHz;

– 51.275-51.525 MHz;

– 240-250 MHz;

– 608-614 MHz.

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