



IUCAF Activities 2017-2020, WRC-19 Outcomes and Prospects for WRC-23

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I. Extended Abstract

IUCAFⁱ is an international scientific committee drawing members and financial support from the International Astronomical Union (IAU), URSI, and COSPAR. IUCAF operates under the auspices of the International Science Council and publishes its Annual Report in the URSI Radio Science Bulletin. IUCAF is celebrating the 60th anniversary of its founding in 2020 and will hold its 5th International Spectrum Management School for Radio Astronomy in Stellenbosch, South Africa in March 2020.

This talk will summarize IUCAF's activities over the triennium since URSI GASS 2017 in Montreal with an emphasis on actions and outcomes at the ITU-R, especially the results of the recently-concluded World Radiocommunication Conference WRC-19. The implications for radio astronomy and appropriate responses by radio astronomy will be discussed. A roadmap for IUCAF activities during the coming years will be presented in the form of a discussion of the WRC-23 agenda.

Scientific access to spectrum is eroding. One aspect of this erosion is increasing intrusion from insufficiently constrained unwanted emissions of transmitters in adjacent and nearby frequency bands, as recently occurred at WRC-19 when overly-permissive limits were allowed for 5G equipment operating at 24.25 – 27.5 GHz, potentially spilling over harmfully into the radio astronomy and passive remote sensing band at 23.6 – 24 GHz. Another aspect of intrusive so-called terrestrial operations is increasing allowance for airborne use of frequencies that formerly were employed only for fixed microwave data links on the ground, and were relatively easily coordinated with radio astronomy and avoided using geographic coordination and radio quiet zones.

Another aspect of this erosion is the ongoing launch of kilo-satellite non-GSO constellations for wireless global broadband at X, K, V and, eventually, W-band frequencies. While these constellations may protect narrow allocated radio astronomy bands at levels set by ITU-R protocol, they will oblige radio astronomy to hunt for broader swaths of usable spectrum between immensely strong, rapidly varying, in-band satellite transmissions. A perverse unintended consequence of these constellations is the disruption of the appearance of the dark night sky caused by their reflection of sunlight, and it is ironic that the only agencies permitting and regulating these constellations are concerned solely with the radiofrequency spectrum.

ⁱIUCAF (<http://www.iucaf.org>), originally The Inter-Union Committee on Allocation of Frequencies, is now known as The Scientific Committee on Frequency Allocations for Radio Astronomy and Space Science