American Geophysical Union
2000 Florida Ave. NW #400
Washington, DC 20009
+1 202 462 6900

American Meteorological Society
45 Beacon St.
Boston, MA 02108
+1 617 227 2425

National Weather Association
3100 Monitor Ave. #123
Norman, OK 73072
+1 405 701 5167

20 June 2019

Federal Communications Commission
Ms. Marlene Dortch, Secretary
445 12th Street, S.W.
Washington, DC 20554

RE: WT Docket No. 19-116

Ms. Dortch:

The American Geophysical Union (AGU), American Meteorological Society (AMS), and the National Weather Association (NWA), have previously expressed concern with the proposal for sharing the 1675-1680 MHz band with terrestrial communications because of the likelihood of interference with the reception of weather satellite imagery and relayed environmental data to receive-only antennas that members of America's weather, water, and climate enterprise use.[1] We are reiterating that concern in this filing.

The prospect of rulemaking in this band without a fully informed record is deeply concerning because the non-federal weather services resulting from real-time data transmitted in and adjacent to the 1675-1680 MHz band are crucially important for public safety and scientific research. The proceeding RM-11681 is complete with responses from a substantial number of stakeholders across the weather, water, and climate enterprise and weather-sensitive industries that provide a compelling basis to not proceed with a sharing arrangement.

The federal government currently owns and operates two satellites in the Geostationary Operational Environmental Satellite R-Series (GOES-R), and will own and operate two more in the mission that will continue into the 2030s. These satellites have several space-to-earth transmissions in or adjacent to the 1675-1680 MHz band, most notably to this proceeding, the Data Collection Platform Relay (DCPR) and GOES-R Rebroadcast (GRB).

On Congressionally-authorized funds, the National Oceanic and Atmospheric Administration (NOAA) is currently conducting the Spectrum Pipeline Reallocation Engineering Study (SPRES) "to study the impacts from sharing, possible mitigations, alternatives and recommendations to facilitate spectrum

[1] *See* Letter from the American Meteorological Society, American Geophysical Union, and the University of Wisconsin-Madison, to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-16881 (April 10, 2017).

sharing in the band."[2] Given the relevance to the questions asked in the Notice of Proposed Rulemaking (NPRM), rulemaking in 1675-1680 MHz should not continue without the aforementioned finished NOAA study to inform the record and course of action.

In the interim, we recommend that the Commission establish a process for parties in the weather, water, and climate enterprise to freely and voluntarily register their receive-only antennas in 1675-1695 MHz. Furthermore, as part of the registration process, the Commission should voluntarily request information about a prospective filer's specific timeliness requirements for the weather data received from their antenna(s), whether alternative methods of accessing the same data are available at the filer's geographic location without substituting the consistency or reliability of the feed, and whether the filer communicates or transmits time-sensitive environmental information of any form, such as weather imagery or warnings, to federal, state, or local government entities or other public safety organizations.

If the Commission elects to continue to rulemaking in the 1675-1680 MHz band, which we do not support given the ongoing concerns, voluntarily registered users should be deserving of interference protections on par with incumbent federal users. This should not materially impact the value or shared use of the 1675-1680 MHz band for terrestrial communications because respondents to this docket in favor of sharing stipulate the number of such users to be "100 or fewer".[3]

Some users may benefit from their geographic proximity to proposed federal protection zones. Because NOAA provides contracts and grants to academic and industry partners for the purpose of conducting research into atmospheric phenomena that requires the timeliest and most reliable collection of data, failure to properly protect incoming data could jeopardize subsequent funding opportunities for organizations that do not reside within protection zones. America's weather enterprise is founded on fair and open access to government-provisioned weather data regardless of geographic location and academic, industry, or government affiliation.

In addition to the satellite broadcast (GRB), NOAA currently serves weather satellite data via a commercial cloud service and terrestrial delivery to users without the means or need for a routine, reliable satellite-transmitted feed. This is an important and useful repository for many users.

However, routine monitoring[4] of the data on the Amazon Web Services (AWS) cloud based on the NOAA Product Distribution and Access (PDA) service reveals substandard latency and poor data quality for real-time decision-making on severe weather or similar applications. For example, full disk imagery is routinely delayed by approximately one to two minutes, with the most substantial impacts during the day. Earlier in June 2019, the latency of full disk and other images were regularly as high as three to seven minutes, far too significant for timely weather bulletins. The latency and quality are in stark contrast to the superior GRB service.

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[2] *See* "Spectrum Pipeline Request 1675 - 1680 MHz Engineering Study (SPRES) Program", presentation to the National Academies of Sciences, Engineering, and Medicine Committee on Radio Frequencies from Al Wissman, NOAA, https://www8.nationalacademies.org/pa/projectview.aspx?key=48813, slide 3 (May 16-17, 2019).

[3] *See* Letter from Gerard J. Waldron, counsel, Ligado Networks, to Marlene H. Dortch, Secretary, Federal Communications Commission, WT Docket No. 19-116 (June 5, 2019).

[4] The University of Wisconsin-Madison Space Science and Engineering Center (SSEC) operates a data center that makes routine monitoring of multiple sources possible.

Absent an amelioration of risk and a suitable replacement for the GOES-R satellite transmission of weather data for all purposes and users, AGU, AMS, and NWA request that the Commission delay further action on rulemaking until the NOAA study is complete. We additionally request that all current users of receive-only antennas who voluntarily register under such a Commission initiative qualify for the equivalent federal site protections because NOAA's cloud service for non-federal users of weather satellite imagery is insufficient to meet the timeliness requirements of the enterprise fairly and reliably.

We encourage the Commission to extend the filing window for reply comments by at least 30 days to allow full consideration of comments from members of the weather enterprise that are usually unengaged with Commission proceedings and related requests for comments. This is particularly important because the enterprise is presently consumed with matters related to the ongoing tornado and hurricane seasons.

The undersigned invite the opportunity to address any questions.

Respectfully submitted,

American Geophysical Union[5]

American Meteorological Society[6]

National Weather Association[7]

[5] To address the American Geophysical Union (AGU) on this matter, contact Lexi Shultz, Vice President of Public Affairs. To learn more about the AGU, visit *www.agu.org*.
[6] To address the American Meteorological Society (AMS) on this matter, contact Keith Seitter, Executive Director, or Paul Higgins, Director of the AMS Policy Program. To learn more about the AMS, visit *www.ametsoc.org*.
[7] To address the National Weather Association (NWA) on this matter, contact Janice Bunting, Executive Director. To learn more about the NWA, visit *www.nwas.org*.