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The Honorable Eddie Bernice Johnson
Chairwoman
Committee on Science, Space and Technology
United States House of Representatives
Washington, DC 20515

The Honorable Frank Lucas
Ranking Member
Committee on Science, Space and Technology
United States House of Representatives
Washington, DC 20515

Dear Chairwoman Johnson and Ranking Member Lucas,

Thank you for your ongoing leadership to preserve diverse spectrum resources to sustain and advance crucial environmental information and forecasting. We appreciate that you continue to focus on these important issues and we look forward to today's hearing titled, "Spectrum Needs for Observations in Earth and Space Sciences". We appreciate that you called on the GAO to investigate the actions of the FCC when they auctioned crucial spectrum adjacent to weather forecasts in 2019 and look forward to reviewing the GAO Report that will be released today. The co-signers of this letter, who are some of the leading Earth science and weather organizations in the U.S. and world, are grateful for your leadership in this area.

A nationwide survey indicated that weather forecasts generated $35 billion in economic benefits to U.S. households in 2016.[1] Since this only addresses households and weather, the value of this spectrum-reliant environmental information is likely far more vast. Another study indicated the economic sensitivity to weather variability in the U.S. was $485B in 2008 dollars.[2] The spectrum for these systems also support weather forecasts and warnings more broadly that contribute to a range of economic activity from local governments making evacuation decisions to grocery stores planning their supply schedules and routes.

Weather apps are some of the most used in the world, so we directly recognize the value of expanding 5G technologies across the U.S.[3] But we believe that such growth must be balanced to ensure other critical national assets such as environmental satellites and other weather and water technologies be safeguarded since their failure will cost the nation in both lives and local economies.

For spectrum sharing to work, greater investment in innovation is required across disciplines, including engineering and economics, to enable these technologies to safely coexist. Right now, spectrum sharing initiatives have not yet proven sufficient to avoid potential impacts on weather forecasting, which is highly time sensitive and cannot tolerate interference.[4] The wireless industry has not been open to

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[1] Lazo, J. K., Morss, R.E. and Demuth, J.L. (2009). 300 billion served: Sources, perceptions, uses, and values of weather forecasts. Bulletin of the American Meteorological Society 90(6), 785-798. *Updated for inflation by NOAA in 2016.*

[2] Laso. J.,K., Lawson, M., Larsen, P. H., Waldman, D. M., (2011), U. S. Economic Sensitivity to Weather Variability, . Bulletin of the American Meteorological Society 92(6), 709 – 720.

[3] Recognizing 5G is much more of an issue related to passive microwave observations near 24, 50 and 90 GHz, since L-band spectrum has not been internationally harmonized as an area for 5G deployment.

[4] This is particularly because terrestrial signals for wireless services are so much stronger than signals from environmental satellites. (March 2019 filing by meteorological experts in IB 16-185 on recommendations approved prior to WRC-19: https://ecfsapi.fcc.gov/file/103190617326602/Final%20-%20response%20to%20FCC%20CITEL%20WRC-19.pdf)

dialogue about possible technologies and techniques they could employ to address weather enterprise concerns, especially related to passive microwave observations for modeling.

The past few years have been challenging as the weather and water communities have worked to defend our spectrum assets that are crucial to the operation of critical environmental sensors and GPS dependent technologies operated by the private sector, academia and federal agencies like NOAA, NASA and the Department of Defense.

We welcome both of your leadership as Chairwoman and Ranking Member of the U.S. House Committee on Science, Space and Technology to advance environmental forecasting and hazard prediction, which can only happen if existing spectrum assets in key passive bands and in the L-Band are protected from interference. We are looking to you for continued support in the following areas:

- Protect information from passive microwave sensors that provide crucial operational inputs to weather models. The spectrum adjoining 24 GHz, 50 GHz and 90 GHz, provides important information ranging from hurricane forecasting to precipitation estimates that improves forecasts. These measurements are unique to these spectral areas and cannot be obtained elsewhere.
    - Prior to any further auctions, there must be further research and balanced dialogue to find reasonable solutions that value the full economic significance and impact of weather forecasting and water resources management.[5]
    - In addition, there is a need for funding and technology development to detect contamination in the passive bands and the full impact of growing terrestrial operations on these crucial microwave observations as a result of the FCC's spectrum allocation actions.
- Safeguard real-time environmental information for severe weather, aviation, wildfire prediction and marine transportation provided by NOAA's geostationary weather satellites (GOES) as well as the GPS and satellite communication assets relied upon by numerous industries to keep people safe and informed of hazards. It is critical for the FCC to reverse its April 2020 L-Band GPS and satellite communications decision and prevent any further consideration of Ligado's other proposal directly impacting GOES and its reliance on 1675-1680 MHz.

We appreciate your continued attention to this issue, and we hope the full Committee's focus on this issue will continue. We believe ongoing dialogue about the structure and relationship between FCC and NTIA is necessary to ensure that scientific voices are fully heard within spectrum allocation proceedings.

We look forward to working with both of you on these critical issues to keep weather forecasting moving forward.

Sincerely,

Lexi Shultz	Keith Seitter	Janice Bunting
VP, Science Policy & Govt Relations	Executive Director	Chief Executive Officer
American Geophysical Union	American Meteorological Society	National Weather Association

[5] In addition, while the 24 GHz band was controversially auctioned by the FCC in 2019, those proceedings need to be updated to reflect the more stringent rules set by the World Radiocommunications Conference-19 (WRC-19) in November 2019.