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Lightning Megaflash Sets New Global Record Over Central U.S

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A record-breaking lightning flash stretching 515 miles across parts of the United States has been officially confirmed by the World Meteorological Organization (WMO), setting a new global benchmark for the longest single lightning event ever recorded.

The extraordinary “megaflash” occurred on October 22, 2017, originating in eastern Texas and reaching as far as near Kansas City, Missouri. The total distance measured at 829

kilometers (approximately 515 miles) is roughly equivalent to the journey from Paris to Venice. According to the WMO, this event took place in one of the most active regions for large storm systems, commonly known as Mesoscale Convective System (MCS) thunderstorms, which often occur over the Great Plains of North America.

This lightning record surpasses the previous mark of 768 kilometers (477 miles), set in 2020. The newly recognized flash was identified during a detailed reanalysis of the 2017 storm using data from the National Oceanic and Atmospheric Administration's (NOAA) Geostationary Operational Environmental Satellite (GOES-16). This satellite played a pivotal role in detecting such massive discharges, known as "megaflashes," which are characterized by their unusually long travel distance and duration.

Celeste Saulo, Secretary-General of the WMO, emphasized the significance of this discovery, stating, "Lightning is a source of wonder but also a major hazard that claims many lives around the world every year." She highlighted that findings like these are vital for public safety, particularly with air travel and wildfire prevention, as electrified clouds capable of producing these flashes can stretch vast distances undetected by conventional methods.

The WMO's Weather and Climate Extremes Committee, which verifies and maintains global records of meteorological extremes, noted a margin of error of approximately 5 miles (8 kilometers) in the measurement. Despite the small margin, the record remains significant, both scientifically and in terms of practical implications.

Professor Randall Cerveny, rapporteur for the WMO, remarked that this megaflash demonstrates the sheer power of nature and reflects advancements in meteorological science. "It is likely that even greater extremes still exist," Cerveny said, "and that we will be able to observe them as additional high-quality lightning measurements accumulate over time."

Lightning expert and WMO committee member Walt Lyons added that the study of megaflashes offers fresh insights into how electric charges behave in MCS thunderstorms. He also referenced the emerging term "bolt from the gray," a phenomenon similar to the more familiar "bolt from the blue" describing lightning that travels hundreds of kilometers from its origin point.

This event not only sets a new world record but also underscores the importance of continued investment in advanced weather observation technology, particularly in a time

when understanding extreme weather phenomena remains a global safety priority.