

2023 UAS Flights over the Blackwell-Tonkawa Area

This spring and summer, a series of uncrewed aerial system (UAS) flights will be made from the Blackwell-Tonkawa Municipal Airport to the Southern Great Plains (SGP) atmospheric observatory. The SGP is operated by the U.S. Department of Energy's Atmospheric Radiation Measurement (ARM) user facility. Operational periods in 2023 are:

- March 6 to 25
- June 6 to 25
- August 10 to 31

Flights for Atmospheric Science

The flights take meteorological samples and record cloud and atmospheric processes for the research community. These data, in turn, help scientists improve the accuracy of weather and climate models.

Led by the ARM Aerial Facility (AAF), the flights are at low altitudes and low speeds between the airport and SGP at 500 to 5,500 feet above ground level and a cruise speed of about 70 miles per hour. As a result, the UAS can be heard and observed by the public.

The flight path from the airport to the SGP is approximately 13 miles (see flight path map on the next page), so ARM officials have worked with landowners to make them aware of the flights and secured permission to position staggered visual observers on the ground who will track the UAS flights.

What the UAS Flights Are

- Flights will collect atmospheric data, including meteorological measurements (such as humidity, temperature, cloud composition, trace gases, and tiny particles of dust) and properties of the land surface relevant to climate. Scientists will use these data to better understand weather and atmospheric processes.



Throughout 2023, ARM's ArcticShark uncrewed aerial system will collect meteorological data during a series of flights above ARM's Southern Great Plains atmospheric observatory. Photo is by Jason Tomlinson, Pacific Northwest National Laboratory.

- Flights will test UAS instrumentation that collect meteorological samples.
- UAS flights and instrument development can lead to improved meteorological forecasts and better modeling of long-term weather patterns.

Background Links

- ARM Aerial Facility
<https://arm.gov/capabilities/observatories/aaf>
- Article: UAS Success in Skies Above Oklahoma:
<https://arm.gov/news/facility/post/74603>

Flight Path Map



Flight path from Blackwell-Tonkawa Municipal Airport (BKN) to the ARM Southern Great Plains (SGP) atmospheric observatory.

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