

# HAARP artificial airglow may be widely visible in Alaska

November 3 2023, by Rod Boyce

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HAARP's Ionospheric Research Instrument is a phased array of 180 high-frequency antennas spread across 33 acres. Credit: UAF/GI photo by JR Ancheta.

Alaskans and visitors may be able to see an artificial airglow in the sky created by the High-frequency Active Auroral Research Program during a four-day research campaign that starts Saturday.

Scientists from the University of Alaska Fairbanks, Cornell University, University of Colorado Denver, University of Florida and Georgia Institute of Technology will conduct a variety of experiments at the UAF-operated research site.

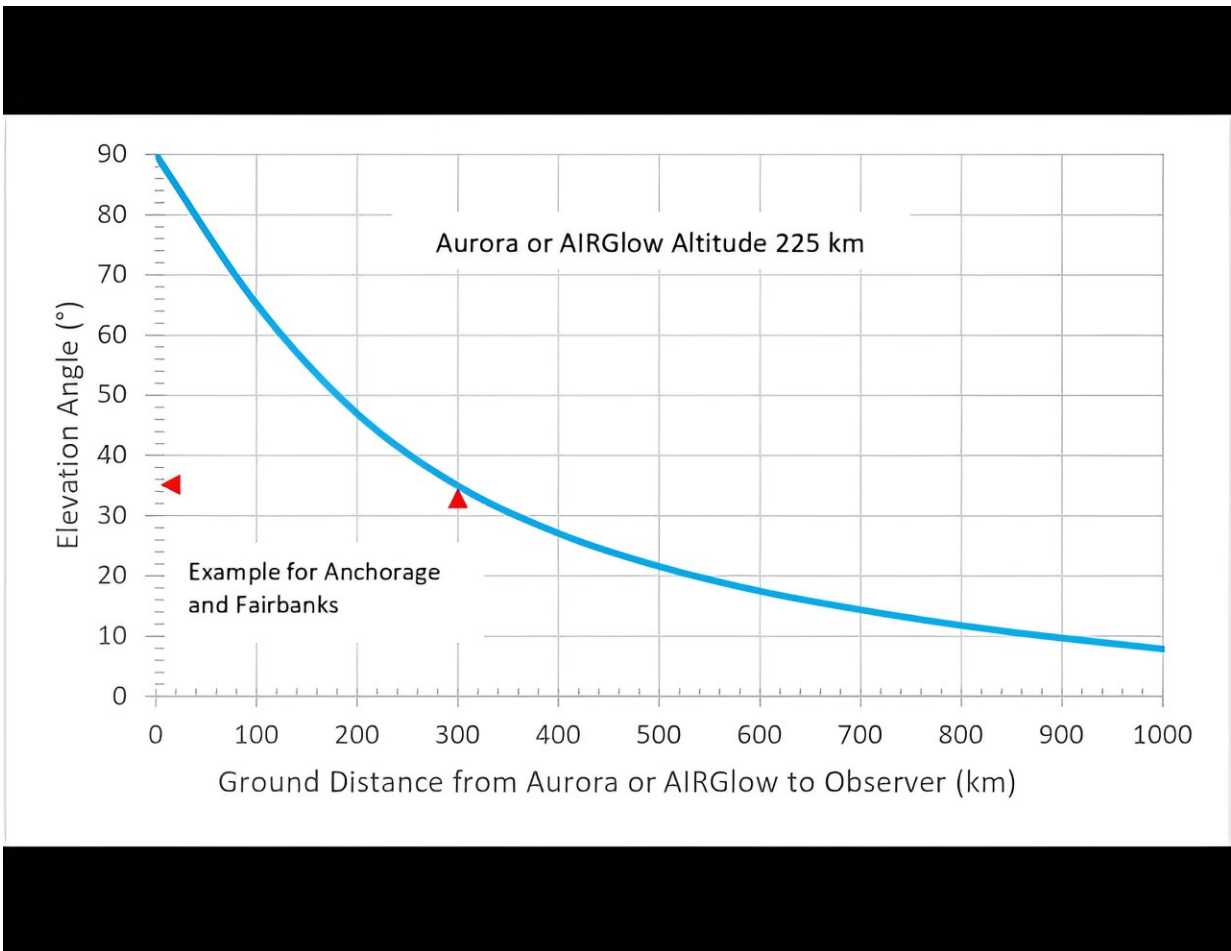
The experiments will focus on the ionosphere, the region of the atmosphere between about 30 and 350 miles above the Earth's surface.

Scientists will investigate ionosphere mechanisms that cause optical emissions. They'll also try to understand whether certain plasma waves—gas so hot that electrons get knocked off atoms—amplify other very low frequency waves. And they'll investigate how satellites can use [plasma waves](#) in the ionosphere for collision detection and avoidance.

Each day, the airglow could be visible up to 300 hundred miles from the HAARP facility in Gakona. The site lies about 200 miles northeast of Anchorage and 230 miles southeast of Fairbanks, or about 300 to 350 kilometers.

HAARP creates airglow by exciting electrons in Earth's ionosphere, similar to how [solar energy](#) creates natural aurora, with on and off pulses of [high-frequency](#) radio transmissions. HAARP's Ionospheric Research Instrument, a phased array of 180 high-frequency antennas spread across 33 acres, can radiate 3.6 megawatts into the upper atmosphere and ionosphere.

The airglow, if visible, will appear as a faint red or possibly green patch. Because of the way the human eye operates, the airglow might be easier to see when looking just to the side.



This chart shows the approximate elevation angle per distance from HAARP a person will need to be at to observe the airglow. Credit: HAARP.

HAARP will create an airglow at a specific point in the sky. The angle of visibility for anyone wanting to look for it will depend on a person's distance from HAARP.

HAARP transmission frequencies will vary but will occur between 2.8 and 10 megahertz. Actual transmit days and times are highly variable based on [real-time](#) ionospheric and/or geomagnetic conditions.

Additional information about the research campaign will be available on [the HAARP website](#).

The National Science Foundation in 2021 awarded the UAF Geophysical Institute a five-year, \$9.3 million grant to establish the Subauroral Geophysical Observatory at HAARP. The observatory explores Earth's [upper atmosphere](#) and geospace environment.

The grant has supported several HAARP research campaigns, including this one. It also helped fund the return to HAARP of the Polar Aeronomy and Radio Science Summer School, which hosted more than 50 researchers in August.

The Air Force originally developed and owned HAARP but transferred the research instruments to UAF in August 2015. UAF operates the site under an agreement with the Air Force.

Pilots flying in the Gulkana area are asked to check with the Federal Aviation Administration for temporary flight restriction details.

Provided by University of Alaska Fairbanks

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