



HIGH FREQUENCY ACTIVE AURORAL RESEARCH PROGRAM

University of Alaska Fairbanks
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Date: December 21, 2022
To: Amateur Radio and Radio Astronomy Communities
From: HAARP Program Office
Subject: Notice of Transmission

The High-frequency Active Auroral Research Program (HAARP) will be conducting a research campaign on December 27, 2022, with transmissions between 1100-2300 UTC (0200-1400 AKST). Actual transmit times are highly variable based on real-time ionospheric conditions. All information is subject to change.

This campaign will be in support of a NASA Jet Propulsion Laboratory project, in collaboration with Caltech's Owens Valley Radio Observatory Long Wavelength Array (OVRO-LWA) and the University of New Mexico Long Wavelength Array (UNM-LWA), testing the potential use of HAARP/OVRO-LWA/UNM-LWA for interior sensing of near-Earth asteroids (NEAs). This experiment will reflect HAARP transmissions off of NEA [2010 XC15](#), and the echo will be received by OVRO-LWA and UNM-LWA. The target asteroid will be roughly two lunar distances away from Earth at the time of transmission.

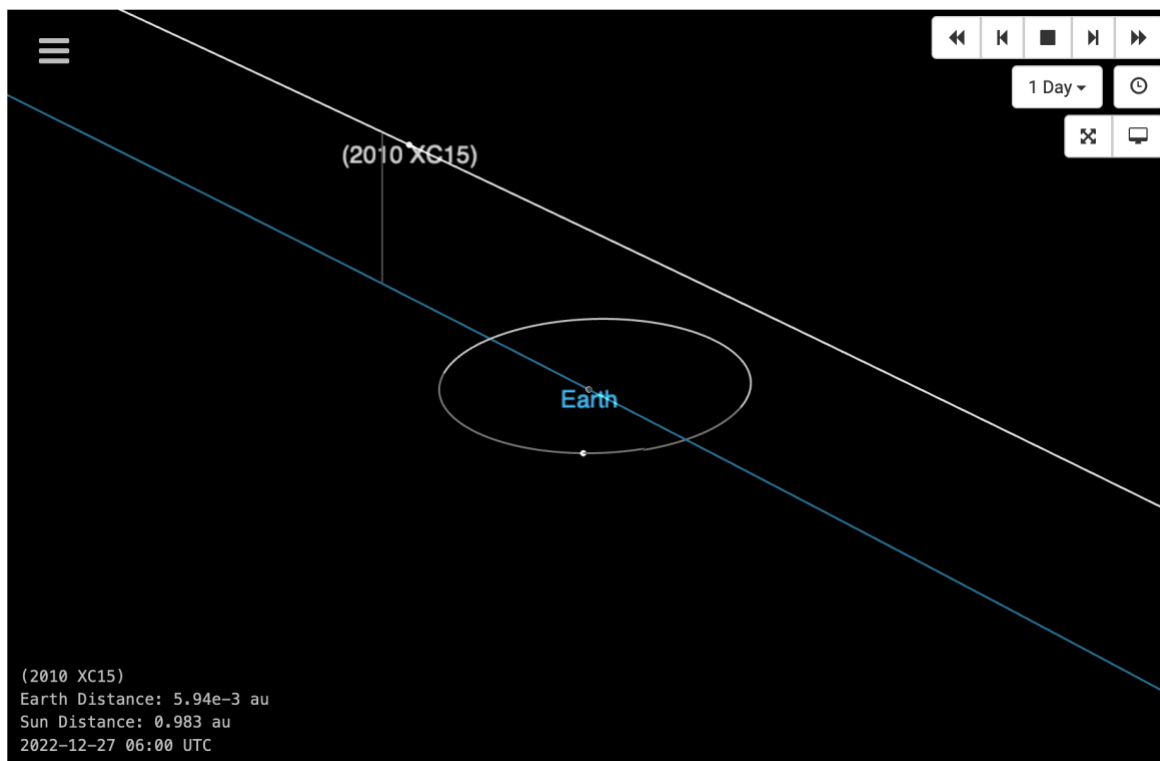
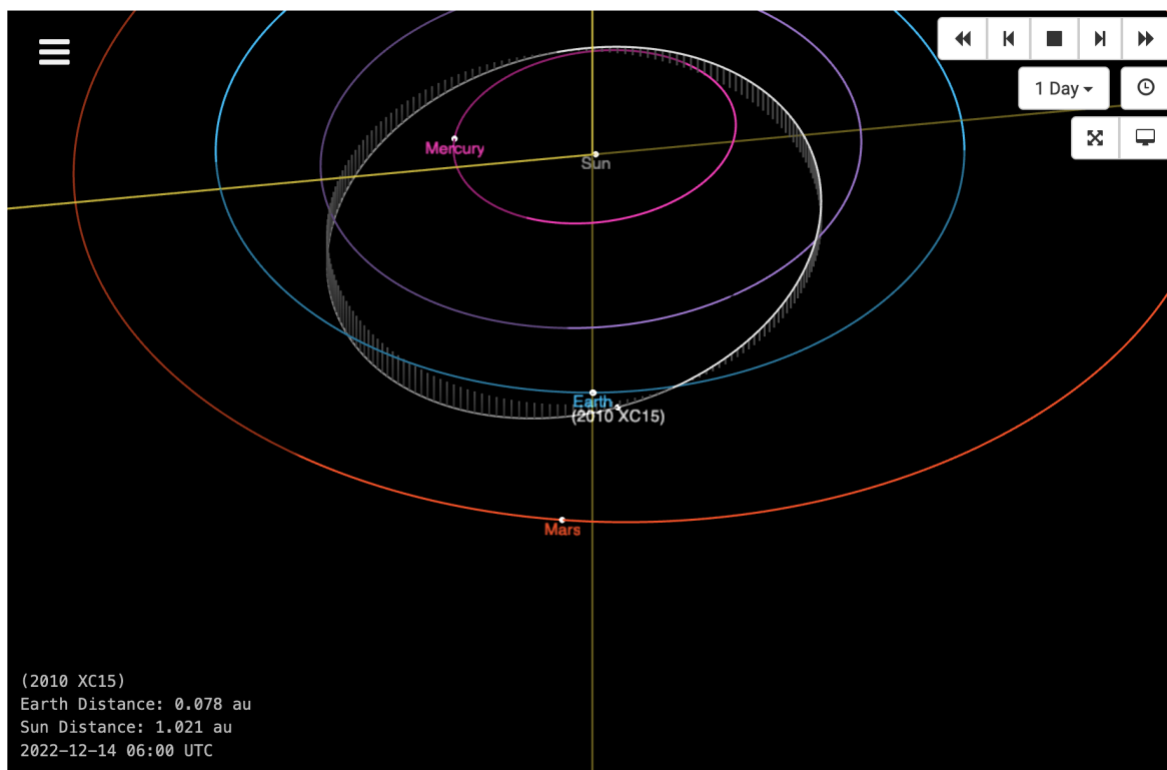
Characterizing the interior structure and composition of NEAs is critical for advancing our understanding of solar system evolution and aiding in planetary defense. Multiple lines of evidence indicate that many, if not most, NEA interiors are rubble piles, with a subset that are monolithic solids, but definitive answers will influence the response to potentially hazardous objects. Approximately 80 known NEAs passed within one lunar distance in 2019. This will increase as new search observatories come online (e.g., the Large Synoptic Survey Telescope and NASA's NEO Surveillance Mission). In particular, the asteroid Apophis will pass Earth at 34,000 km (~5 Earth radii) in 2029 and presents one of the best opportunities for direct observations of an NEA. The proximity and frequency of NEA flybys creates opportunities to repeatedly probe and study the interiors of NEAs using ground-based radar systems and to fill a strategic knowledge gap in our understanding of these objects.

Amateur radio and radio astronomy enthusiasts are invited to listen to the transmissions/echoes and submit reception reports to the HAARP facility at uaf-gi-haarp@alaska.edu, or by mailing a report to the address at the end of this document.

Experiment	Dates/Times (UTC)	Frequency (MHz)	Notes
Asteroid Bounce (2010 XC15)	Dec. 27, 1100-2300	9.6 LFM, 0.5 Hz WRF, 30 kHz bandwidth	Reports recording echo encouraged; demodulated recordings in .wav or .mp3 recommended

For real-time ionospheric conditions in Gakona, please consult ionograms from the HAARP Diagnostic Suite: <https://haarp.gi.alaska.edu/diagnostic-suite>

Naturally Inspiring.



https://ssd.jpl.nasa.gov/tools/sbdb_lookup.html#/?sstr=2010%20XC15&view=VOP

To request a HAARP QSL card, send reception reports to:

HAARP

P.O. Box 271

Gakona, Alaska 99586

USA