
JOURNAL CLUB

The SuperDARN View of HAARP

by

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ABSTRACT

HAARP is a major arctic facility for upper atmospheric and solar-terrestrial research located on a DoD-owned site near Gakona, AK. Its principal research instrument is a high power, high-frequency phased array radio transmitter (or "ionospheric heater") used to stimulate plasma processes in the ionosphere. The Kodiak SuperDARN radar overlooks HAARP and is capable of providing diagnostics for many of these processes. In this talk I will discuss the Kodiak radar's "view" of HAARP, concentrating on recent observations made possible by the installation of a new digital receiver. In particular, these observations include a large number of unexplained spectral enhancements which we suggest are the signatures of heater-induced electrostatic waves generated in the heated volume and propagating perpendicular to the geomagnetic field. At this time, the HAARP/Kodiak pair of instruments is unique in its ability to diagnose such waves. This unique ability is significant since many heater-induced processes are thought to be driven by electrostatic waves (a list of these processes would include the generation of field-aligned irregularities, ground-based observations of so-called Stimulated Electromagnetic Emissions (SEEs), and the generation of artificial airglow).

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