

## Technical Page

Proposal Type: Regular  
 General Category: Terrestrial Aeronomy  
 Observation Category: HF Heating experiment  
 Total Time Requested: 40 Hours  
 Minimum Useful Time: two

**Proposal Title:** Creating Space Plasma from the Ground

*ABSTRACT:*

It was predicted (Carlson, 1993) that once high power HF transmitters achieved the Giga-Watt ERP level, they would from the ground produce plasma densities competitive with that produced by the sun, thereby breaking through a new threshold of progress for space science research. Only now has technology allowed testing that prediction, with two publications confirming it (Blagoveshchenskaya et al, 2009; Pedersen et al, 2009). The initial prediction was based on Arecibo HF heating experiment data (Carlson et al, 1982). The confirmations however involve processes expected to be important only at high latitudes (Gurevich, Carlson and Zybin, 2001). The purpose of this proposal is to learn how well the initial prediction scales to higher power densities, plus in light of current theory, test important dependencies on further geophysical processes now anticipated to be important. We know some ionization must be produced, we don't know what processes determine significant production.

Name	Institution	E-mail	Phone	Student
Herbert C Carlson	Utah State University, CASS	herbert.c.carlson@gmail.com	435-797-2962	

### Remote Observing Request

- Observer will travel to AO
- Remote Observing
- In Absentia (instructions to operator)

**Instrument Setup**

430 G                      430 CH receiver

**Atmospheric Observation Instruments:**

Tilt-Photometer    Fabry-Perot    Ionosonde

**Special Equipment or setup:**    none

**RFI Considerations**

## Frequency Ranges Planned