March 3, 2006

KST UHF operation memorandum for the March 3, 2006 experiment

(Using Netscape might be in trouble on this page.)

Experiment name: sp_ni_mi: arc1 (CP1, but scanning 7 positions)

pointrheight 184.5 63.6 282.97 SYNC 1200

pointrheight 184.5 52.57 282.97 SYNC 1200

pointrheight 139.42 69.483 282.97 SYNC 1200

pointrheight 123.61 58.66 282.97 SYNC 1200

pointrheight 162.858 65.815 282.97 SYNC 1200

pointrheight 155.566 55.330 282.97 SYNC 1200

This SP (mi using arc1) is made to investigate the 3-D current system using artificial ionosphere heating in the E-region. PI is Prof R Fujii (STEL).

elan files:puny :/kst/exp/ni/arc1/arc1.elan

puny:/kst/exp/ni/arc1/scans/mi_pattern.elan

Pulse scheme: arc1

Start time: 15:00 UT on March 3, 2006

End time: 19:00 UT on March 3, 2006

Participants: Satonori Nozawa, Kazuhiro Adachi, and Takuo Tsuda

Before our experiment: Nothing (but, test run)

After our experiment: Nothing

Together with Heating experiment.

(1) 4 MHz

(2) X-mode

(3)10 min ON and 10 min OFF

(4) Field-aligned.

Concerning (3), start the operation one minute past the starting time (i.e., 15:01 UT).

Note: (time in UT)

March 3

Partly Clear Sky. Temperature is -10 deg.

14:55 **runexp** /kst/exp/ni/arc1/arc1 **15:00 mi NI**

14:56 sod runexp /kst/exp/ni/arc1/arc1 15:00 mi NI

kir runexp /kst/exp/ni/arc1/arc1 15:00 mi NI

15:00 START

at EROS4 console (UHF)

15:00 enablerec

sod enablerec

kir enablerec

kir was stopped by the staff at kiruna, since it was not ready.

15:12 at matilda

guisdap –a

15:09 1.2 MW

15:42 kir **runexp** /kst/exp/ni/arc1/arc1 **15:00 mi NI**

kir enablerec

16:42 The ionosphere is very very quiet.

17:04 The engineers checked the “crow-bar”.

17:07 recovered. 1.3 MW

17:07 kir disablerec

17:28 kir enablerec

17:41 kir disablerec

18:26 Slightly, the E-region got active

18:40 Again quiet.

The experiment ends with position 5.

19:00 stopexp (all sites)

sp_ni_mi

Development of polarization electric field due to artificial, sudden changes of ionospheric parameters by the EISCAT Heating facility

Here we propose an EISCAT heating experiment along with KST UHF observations for understanding the nature of the magnetosphere-ionosphere (M-I) coupling, in particular, of the electric field in the polar ionosphere.

EISCAT heater:

-The carrier frequency is set close to the plasma frequency around 110 km high.
The sequence of the on-off of the heater is 10 min on and 10 min off. (the traveling time of the Alfven wave between M and I is a few minutes, so within 10 min saturation to reach an equilibrium state can be expected)

EISCAT UHF radar:

Multi-points Arc mode. The remote antennae point the common volume around 280 km. The EISCAT UHF radar can measure only one line of sight at one time and cannot provide any information in other regions. It is therefore very important to check if the spatial and temporal development of the enhanced region by the heater and those of physical parameters have quantitative reappearance.