

A blue-tinted photograph of a snowy mountain range. The foreground shows a smooth, snow-covered slope. In the background, several jagged mountain peaks are visible, some with patches of dark rock. The sky is a clear, pale blue.

# EISCAT Common Programmes

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# Designation

- Common Programmes

Scan positions deemed important by SAC to all  
1200 hours per year

- Special Programmes

Scan pattern designed by experimenter

- Unusual Programmes

# Past versus Present System

## **Pre 2000:**

CP1 - a specific pulse scheme that was run in the field-aligned position (1 lp, 1ac, 2pp)

CP2 – same pulse scheme as CP1, but different pointing directions

## **Post 2000:**

cp1 mode – field-aligned pointing direction

cp11 – pulse scheme (same as CP1 pre-2000 - CP1K)

# Experiment Names

**Pre 2000:**

CP1K

CP2E

SP-UK-HEAT

SP-UK-DUCT

**Post 2000:**

tau2pl\_cp1\_CP@uhf

cp11\_cp2\_UK@uhf

cp11\_cp1\_CP@uhf

tau0\_cp1\_SP@32m

Pulse  
scheme



Pointing  
mode

Owner

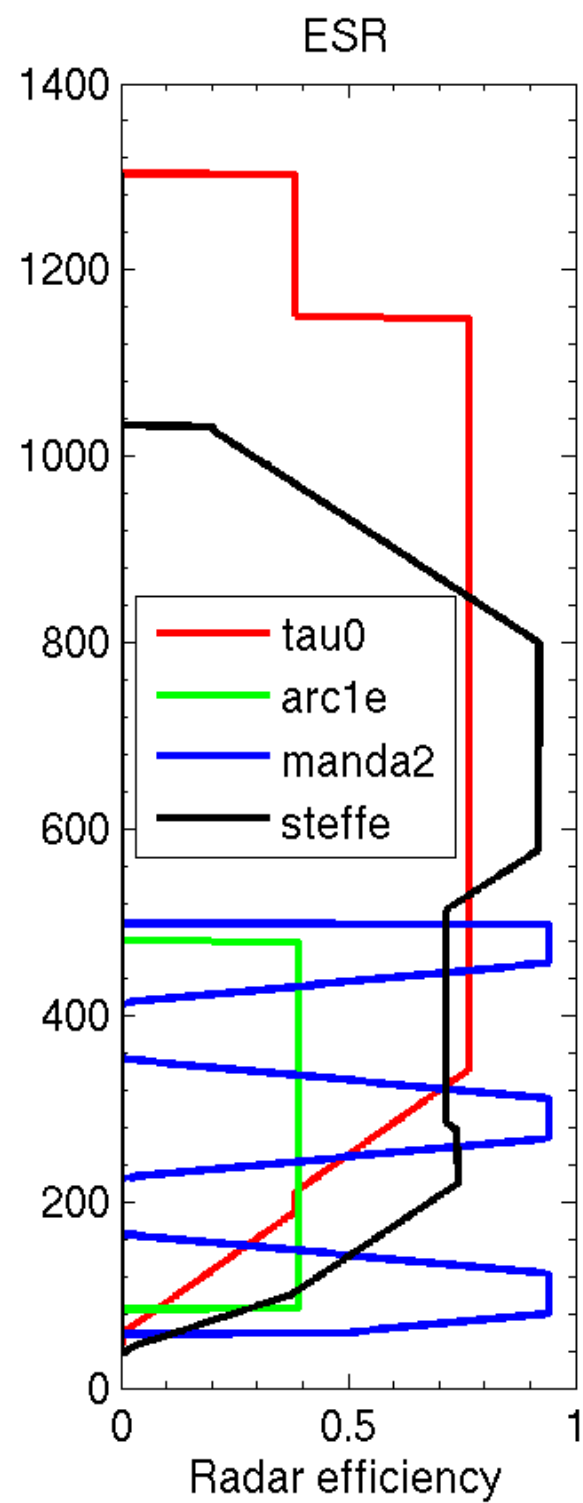
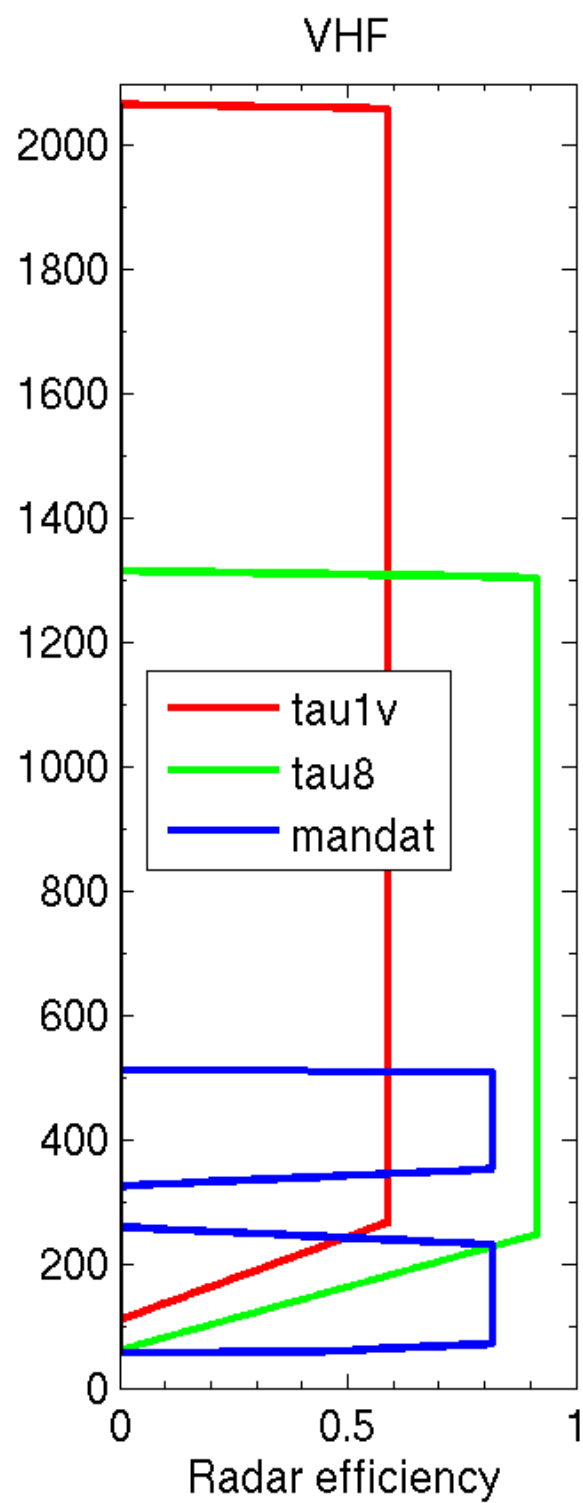
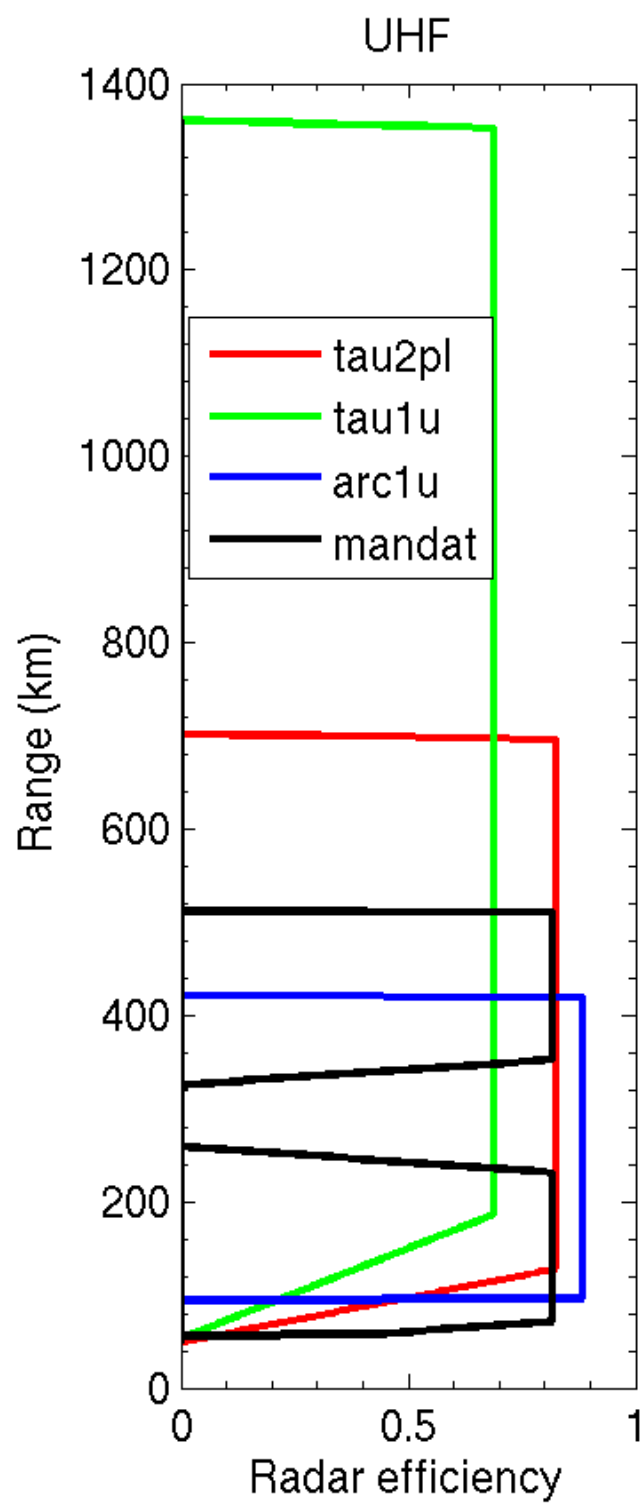
Radar

# The Common Programmes

- " **CP1**     Field-aligned, UHF, remotes fixed
- " **CP2**     UHF, 4-position, remotes as CP1
- " **CP3**     UHF meridional scan
- " **CP4**     Low elevation VHF
- " **CP6**     Low altitude D-region, UHF/VHF
- " **CP7**     Topside VHF

# Pulse Schemes and Common Programmes

<b>CP</b>	<b>Mainland</b>	<b>ESR</b>
CP1	tau2_pl	steffe
CP2	tau2_pl	steffe
CP3	tau1u	tau0
CP4	tau1u, tau8	tau0
CP6	manda	manda
CP7	tau8	tau7(tau0)





# CP1

Tromsø field-aligned at 292.9 km  
(az=184.0, el=77.1)

Remote sites usually in F-region  
(292.9 km)

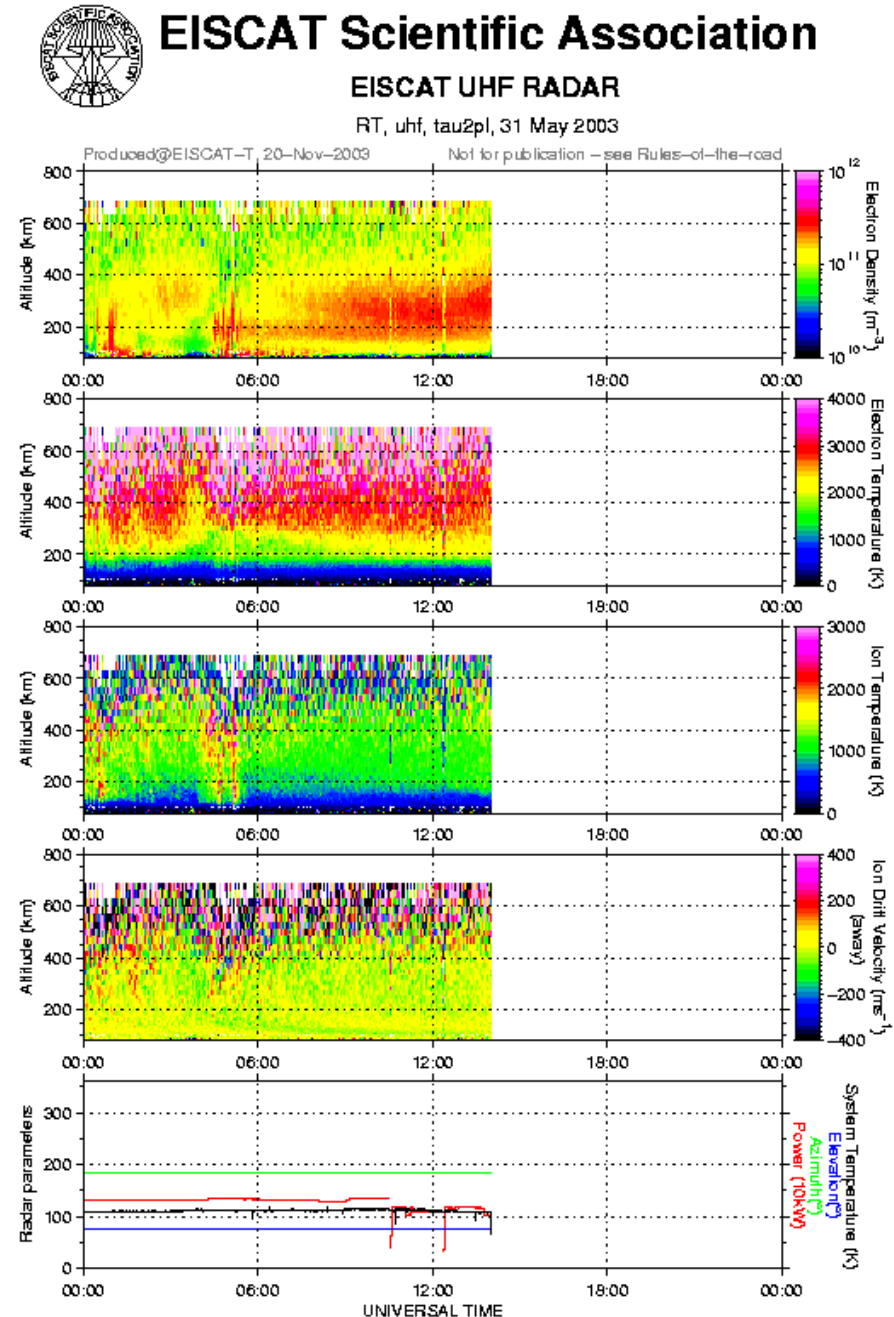
Longyearbyen field-aligned (az=184.0,  
el=82.1)

Field-aligned position calculated from  
IGRF model

Height range: 86-600 km

Time resolution usually about 5 seconds

Used to study changes in auroral  
phenomena, diurnal, semi-diurnal,  
seasonal and solar-cycle variations,  
electron heating



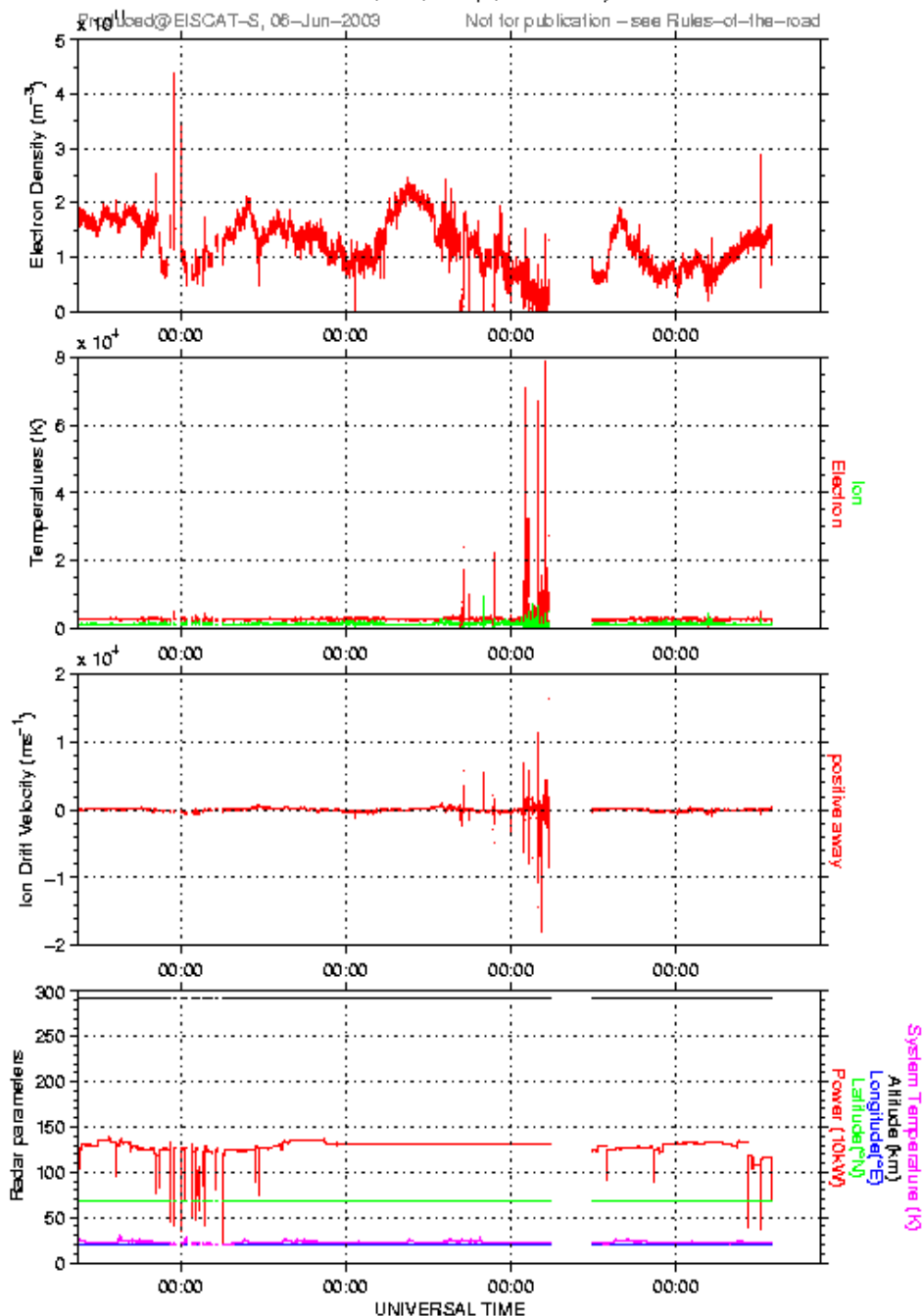




# EISCAT Scientific Association

## EISCAT UHF RADAR

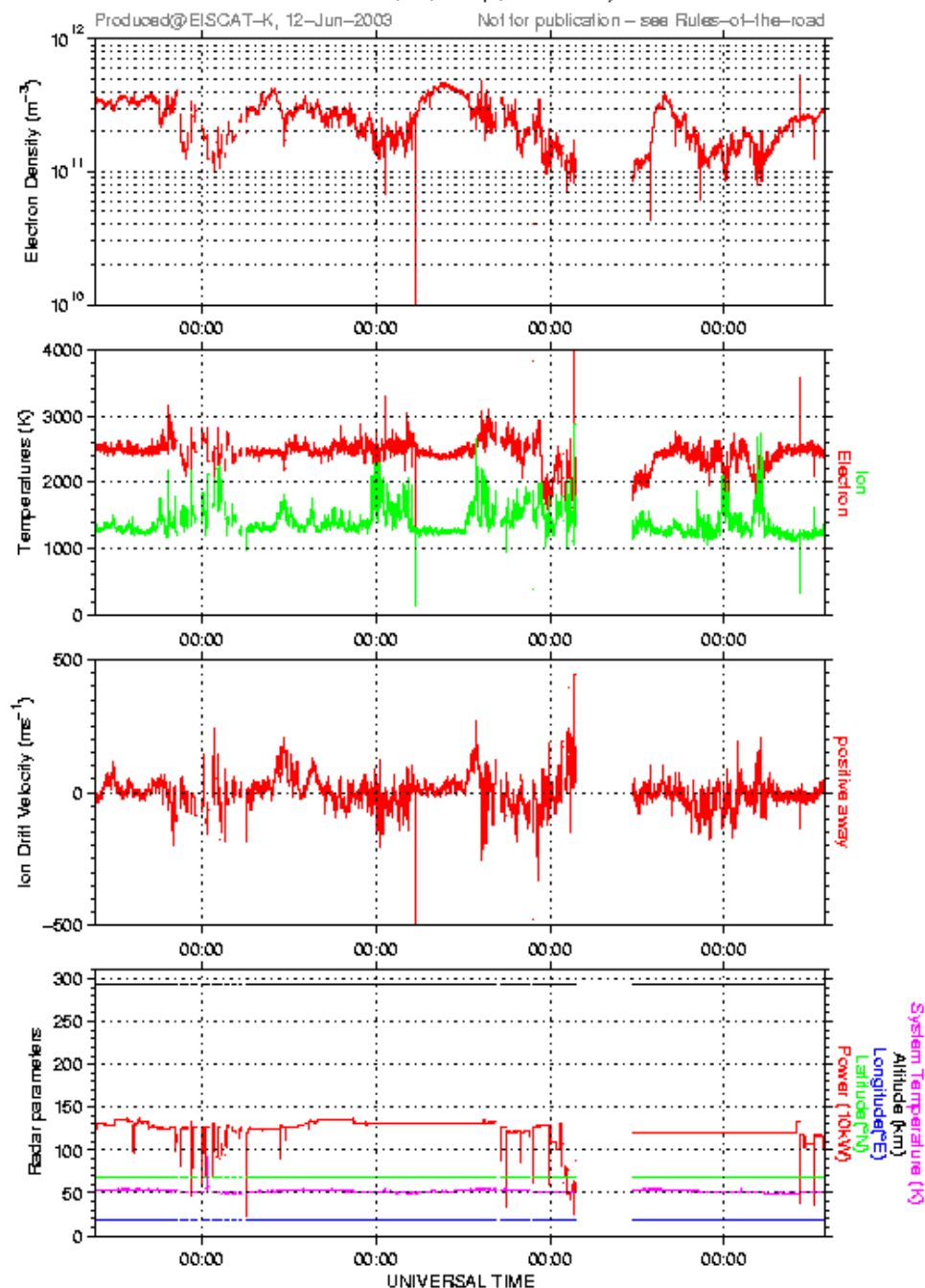
RT, sod, tau2pl, 27–31 May 2003



# EISCAT Scientific Association

## EISCAT UHF RADAR

CP, kir, tau2pl, 27–31 May 2003



# CP2

4-position scanning experiment:

Lat 69.58 Long 19.23 (Tromsø vertical)

Lat 68.40 Long 20.00 (Southmost)

Lat 68.64 Long 21.92 (Eastmost)

Lat 69.06 Long 19.16 (Field-aligned)

Dwell period of 90s  $\implies$  Cycle time of 6 mins

Remotes at 292.9 km

Used for calculation of E-region velocities (monostatic method) studying neutral winds, tides, waves and travelling disturbances

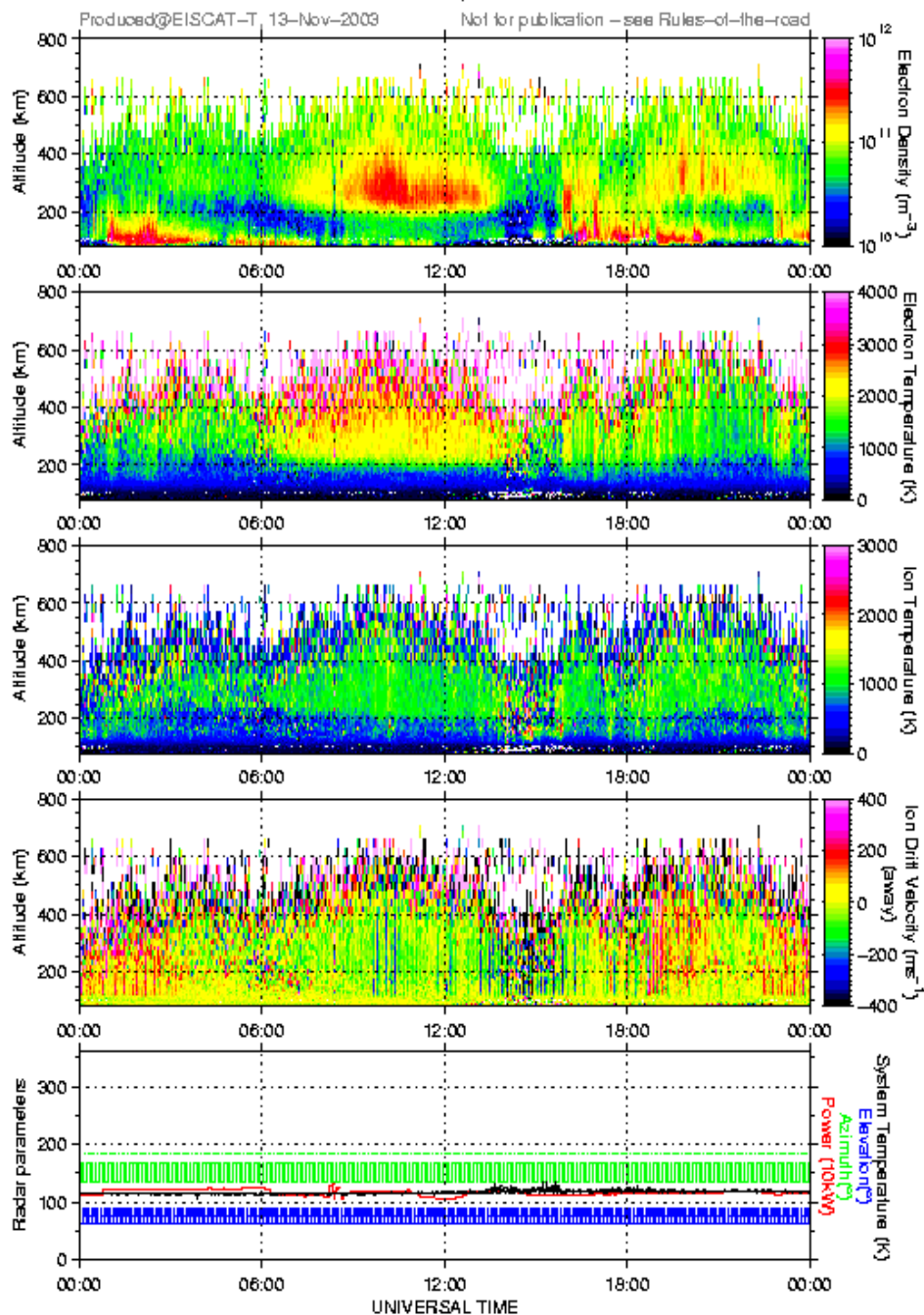
Problems: Temporal ambiguities



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## EISCAT UHF RADAR

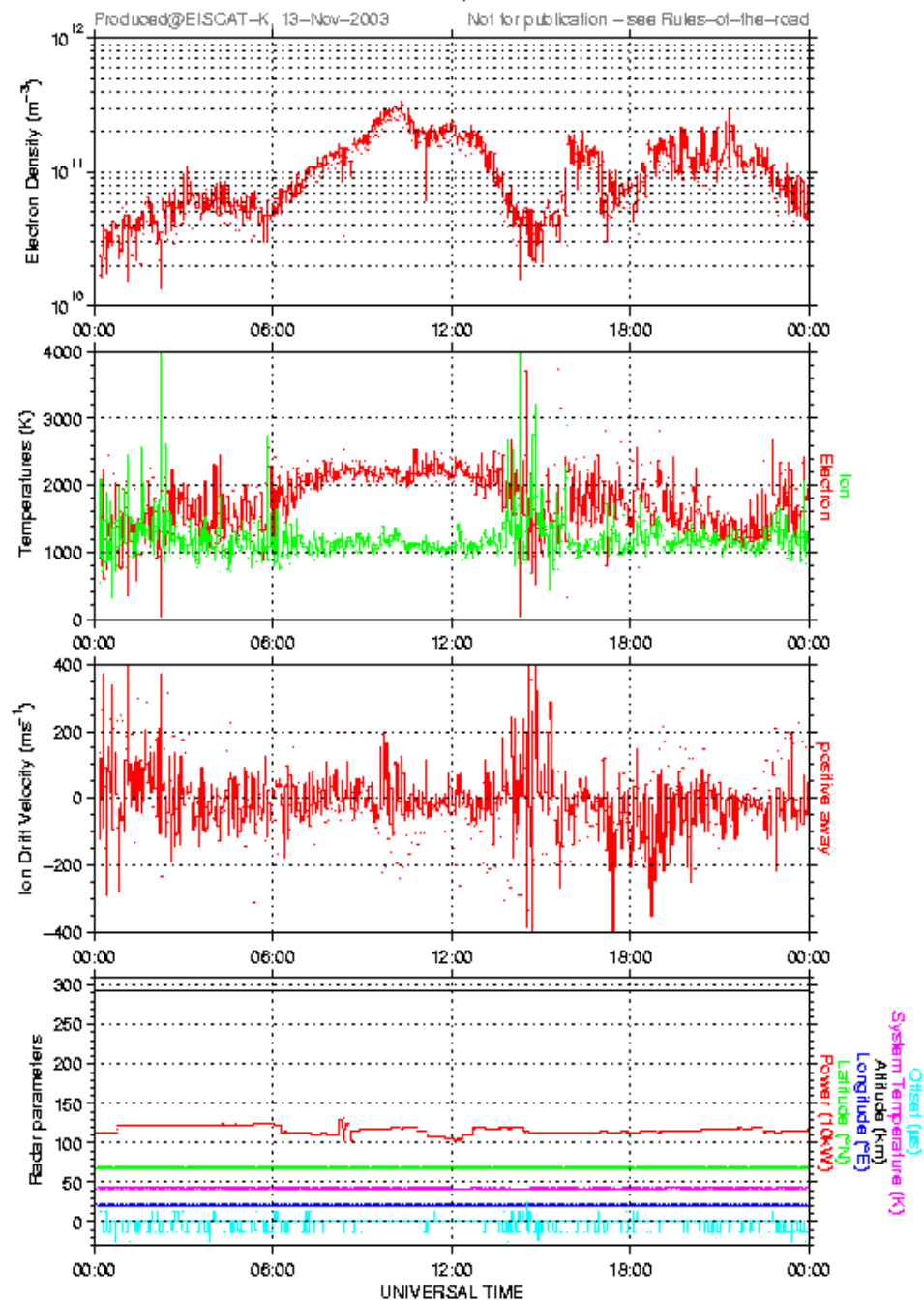
CP, uhf, tau2pl, 12 November 2003



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## EISCAT UHF RADAR

RT, kir, tau2pl, 12 November 2003



# CP3

17 position latitudinal scan

Long cycle time (30 mins)

Spins at vertical for antenna to go down "other" side

Used for:

- convection mapping,

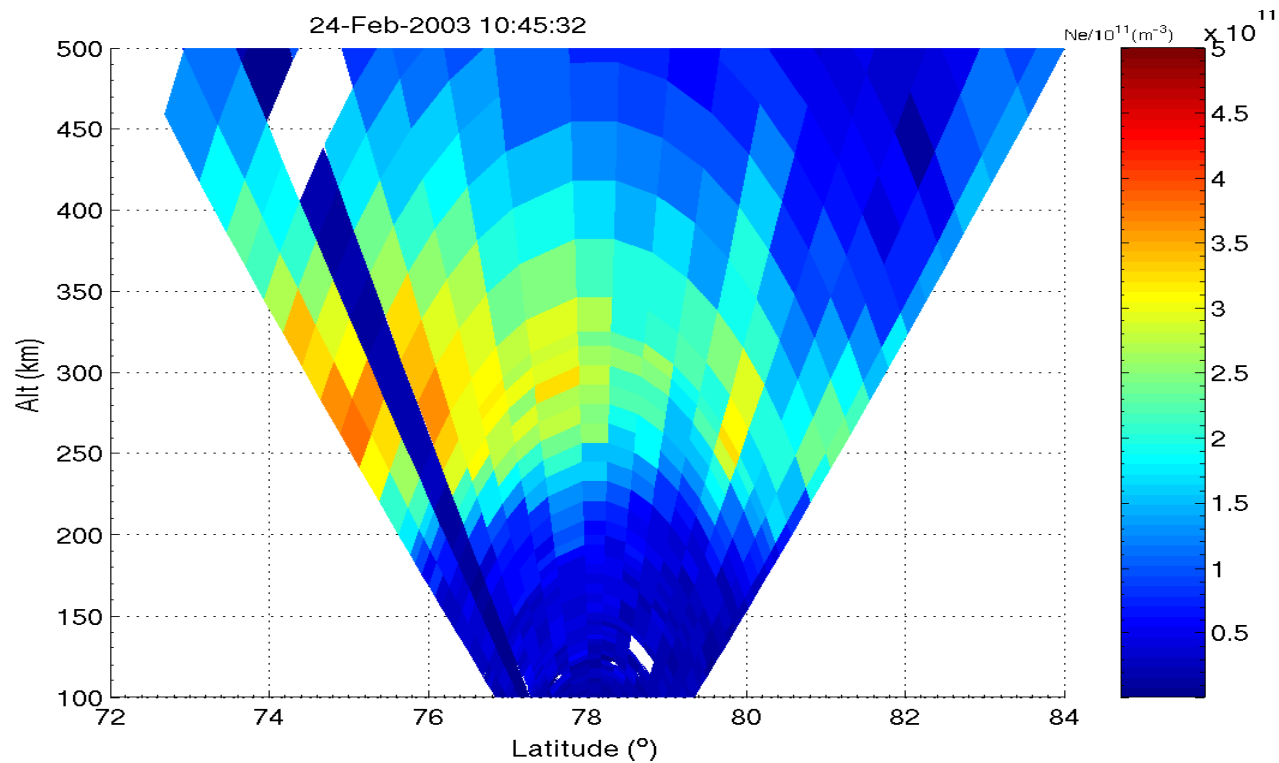
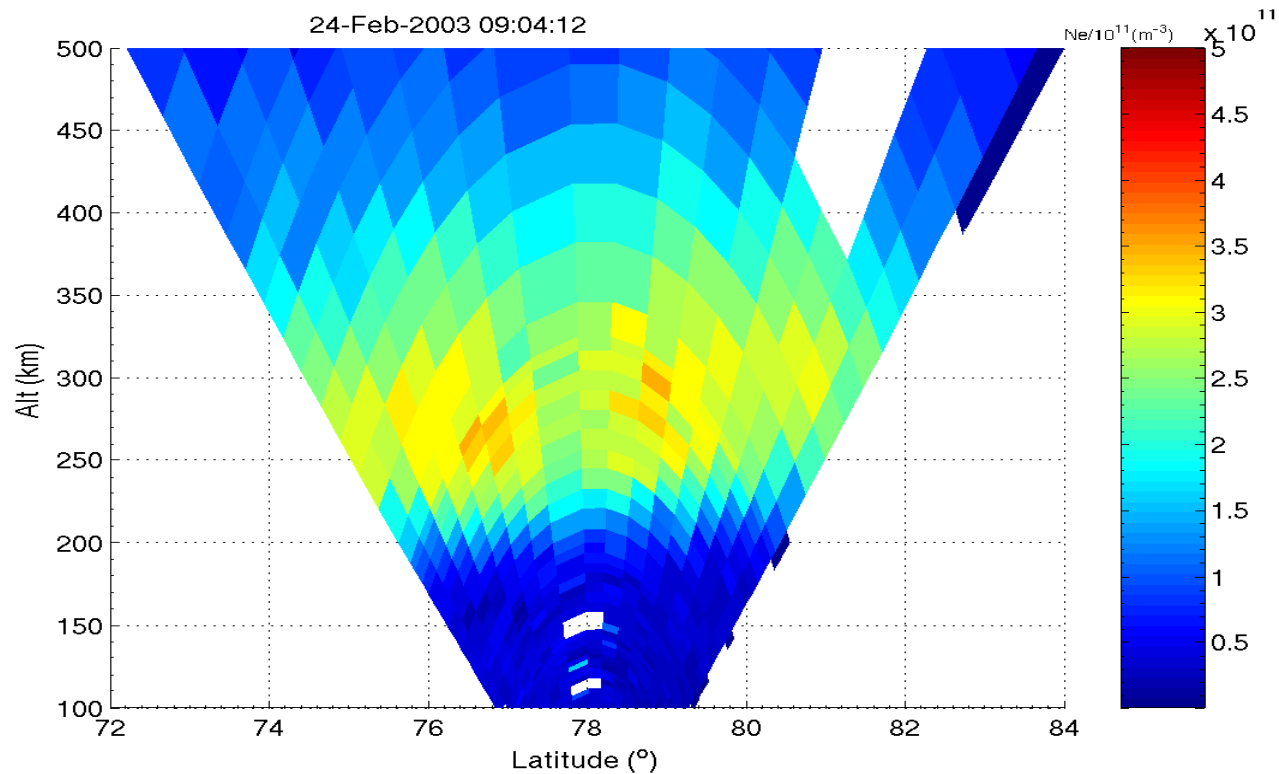
- spatial occurrences of plasma phenomena,

- field-aligned currents,

- studies of spatially and temporally extended features (troughs, patches and tongues),

- spatial studies of aurora,

- joint observations with satellites



**CP3**

Electron  
Densities  
displayed as fan  
plots rather than  
alt-time  
summary plots

# CP4

- Two beam-swinging position, low elevation to North
  - 24 degree separation with UHF?
  - 15 degree when VHF phased
- For velcom,  $V_{para}$  assumed 0
- Used to map convection in polar cap, collaborate with optical experiments on Svalbard

# CP6

- " D-layer experiment.
- " Narrow single-humped spectra
- " Height range 60-130 km
- " Range resolution is 600 m
- " Used for PMSE work.



# CP7

- High altitude VHF programme, typically 250km through to 1700km
- Vertical, would be field-aligned but VHF can't point south.
- Used for "two-temperature plasmas", plasma outflows.

# CLUSTER Modes AA

Usually:

ESR: Northward looking low-elevation ( $30^\circ$ )

- Dumps 1-1 on 32m-42m dishes (6.4s dumps)

VHF: Northward looking  $30^\circ$  elevation

Sometimes:

ESR: Northward-looking beam-swing

UHF: cp1-type mode when CLUSTER footprint is close to mainland radar