‘Running the EISCAT Mainland System for Dummies’

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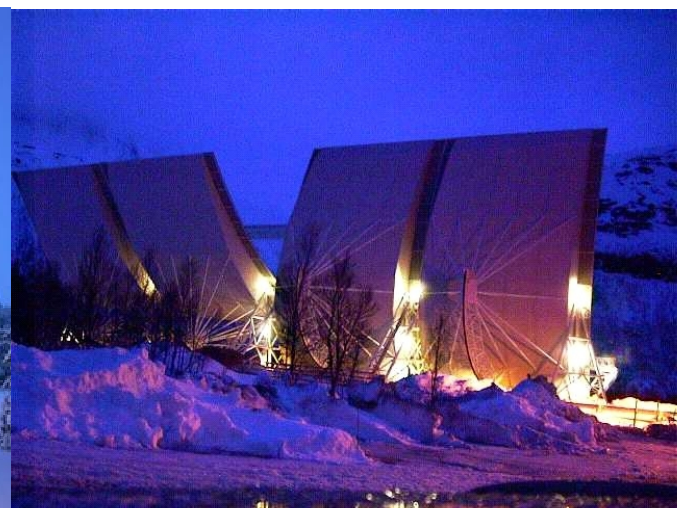
October 2007



This is a quick guide to familiarise yourself with the system. Please feel free to add / modify this document as you see fit. The system is also constantly changing so this document will only remain valid if you keep it up to date!!

Contents:

1. Introduction

(from http://www.oulu.fi/~spaceweb and http://www.eiscat.rl.ac.uk/get_started/incoherent_scatter.html)

The basic principles of incoherent scatter:

Ionospheric electrons start to oscillate due to the electric field of the radar transmitted wave

Oscillating electrons radiate electromagnetic wave

The frequency of the radiated wave changes according to the movement of each electron

Electrons are partly following the motion of the much heavier ions

Radar observes signal from many electrons simultaneously

Because of the electron movement, spectrum of the observed signal is broad and it has shape which depends, e.g., on the temperature.

The frequency spectrum of the received signal provides information about

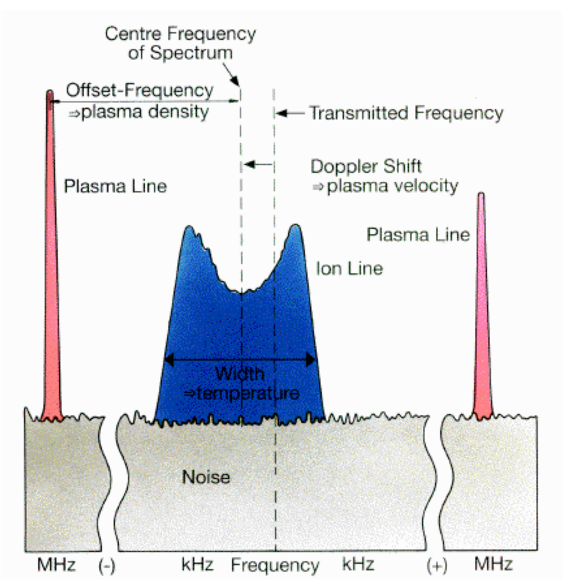
Electron concentration

Ion and electron temperatures

Ion mass

Plasma velocity

The typically double-peaked ion line spectrum of the incoherent scatter echo also contains information about the temperature of the electrons themselves. Besides the ion line, the incoherent scatter spectrum also contains other, normally weaker, components including two plasma lines representing scattering processes where the electrons act as if the ions were absent.



The total returned power depends on the number of electrons and gives an estimate of the ionospheric electron concentration, the width of the spectrum depends on the ratio of the ion temperature to the ion mass, and the overall shift of the spectrum corresponds to the bulk drift motion of the ions (the plasma velocity).

The shape of the ion line spectrum is a sensitive function of the ratio of the electron and ion temperatures. The offset frequencies of the upshifted and downshifted plasma lines are also determined by the electron concentration.

At altitudes below about 120 km, collisions between the ions and the molecules of the neutral atmosphere affect the incoherent scattering process and the result is a single peaked spectrum from which, for instance, the frequency of ion collisions with the molecules of the upper atmosphere can be deduced.

From these basic results, many further ionospheric and upper atmospheric parameters can be derived, though not all together nor in all altitude regimes. These include:

Ion composition

Electric field strength

Conductivity

Joule and particle heating rates

Neutral air temperature

composition and wind speed

Heat and plasma flux along the Earth's magnetic field

Supra-thermal electron spectra (from the plasma lines)

2. Quick Guide to Running an Experiment

To start:

1) Check that the dish is enabled and it's pointing in the right direction. (The engineers will ensure that the power is on to the transmitters and that the VHF is pointing in the correct direction if you are using it)
2) Start the experiment running with the **runexp** command
3) Enable the recording using the **enablerec** command
4) Start up **rtg** in the eros window
5) Start up the realtime analysis using **guisdap** in the ana vhf and ana uhf window

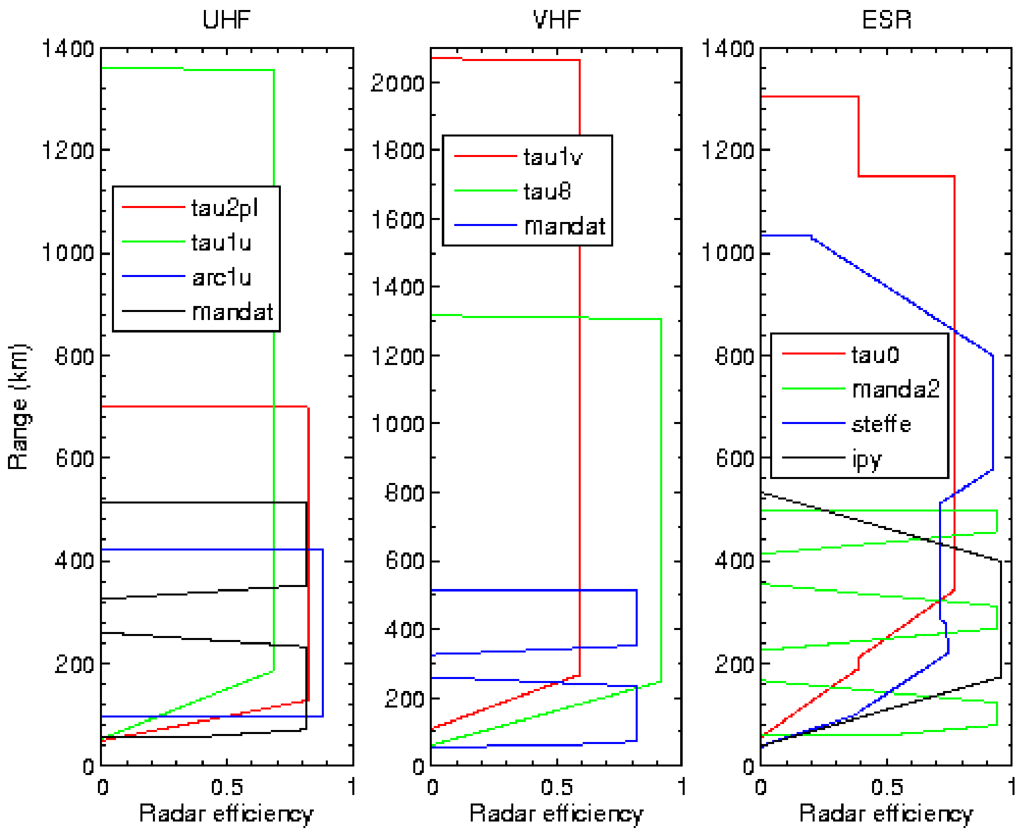
To finish:

1) Disable recording using the **disablerec** command
2) Stop the experiment using the **stopexp** command

https://e7.eiscat.se/groups/Documentation/UserGuides/eros4docs/ contains all the commands needed to run the experiments

3. The Different Experiments

There are different types of experiments which can be run depending on what altitude you wish to investigate. The plots below show which experiments are most effective at which altitudes for both the UHF and VHF mainland dishes at Tromsø and the UHF dishes at the ESR:



All the programs use alternating code.

For a full explanation of the most common experiments that can be run at the ESR and the mainland sites see:

http://www.eiscat.se:8080/usersguide/experiment.html

3.1 Experiments

Below is a list of the experiments that can be undertaken on each radar with the corresponding code filename. For example, in the online schedule (http://www.eiscat.se:8080/raw/schedule/schedule.cgi) if you see a CP1 experiment scheduled on the Tromso UHF then the dish will be pointing field aligned and using the tau2pl code. The standard (CP1 – CP6) scan patterns for all the dishes are shown in section 5.2 of this document.

Default radar pointing direction	Experiment type	Tromsø UHF code	Tromsø VHF code	Plasma Line data taken?
Field aligned	CP1	tau2pl	-	Yes
Beam swinging 4 positions	CP2	tau2pl	-	Yes
Meridional scan	CP3	tau1		No
2 position scan	CP4	tau1	tau8	No
D-layer	CP6		manda	No
Topside	CP7		tau8 (tau7 with two klystrons working)	Yes

CP – common program – anyone has access to the data
SP – special program – data is owned by 1 or more associates who collaborated on that experiment for one year ie. HEAT, day_arcs. In the schedule these will have country names listed next to them.
UP – unusual program (can be run for special events without having to go through the normal channels..ie. a large solar flare event, the end of the world etc…)

Additional Experiments

Name	Dish	Height resolution	Comments
arc1	UHF	E/F region experiment	Very high temporal resolution experiment
arc1_dlayer	UHF / VHF	D region experiment	Very high temporal resolution experiment
Beata	UHF	(D) E /F region	

Below is a table containing further information about each experiment type:

Dsp exp	Radar	Pulses (μs)	Sampling (μs)	Resolution (km)	Ranges (km)	Plasma line
tau2pl	UHF	AC	12	1.8 – 5.4	50-702	kHz
tau1	UHF	AC	12	1.8 – 9	54-1361	
	VHF	AC	24	4 – 11	61-2014	
tau8	VHF	AC	14	2 – 12.5	61-1317	1x1x1.7MHz
manda	UHF/VHF	64x3 AC	3	0.45	513	
arc1	UHF	64x6 AC	6	0.9	96-422	
arc_dlayer	UHF/VHF	64x2 AC	2	0.3	60-140	
beata	UHF	32x20 AC	10	1.5 – 3	49-694	1x1x2.5MHz

If in doubt consult the online schedule:

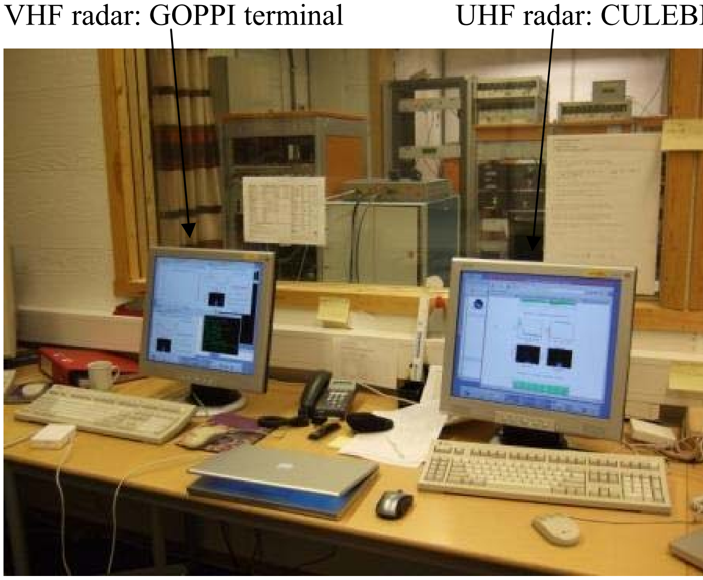
http://www.eiscat.se:8080/raw/schedule/schedule.cgi

4. Starting and Running an Experiment

All experiments are run from a designated terminal in the control room at each site:

Tromsø:

VHF radar: GOPPI terminal UHF radar: CULEBRA terminal



Kiruna:

EISDEV terminal

Sodankyla:

There is no actual name for the terminal at Sodnakyla but it is the terminal located facing towards the hardware as shown below:

YOU WILL PROBABLY BE RUNNING THIS FROM THE TROMSO SITE SO THE FOLLOWING REFERS TO THAT SYSTEM.

Both the GOPPI and CULEBRA terminals have similar desktop views. There are several desktops to choose from using the tabs at the bottom of the screen

EROSU or **EROSV** – This is where the control widget called EROS which controls the experiment is run from and the raw data spectra are viewed. The U and the V are for the UHF or VHF system.

ana UHF / ana VHF – where the analysed data can be run and viewed in real time.

Log – allows the online log to be updated. This automatically keeps track of what experiments are being run.

rtg – you can opt to move the rtg windows to here if you think the eros screen is getting too crowded.

Monitor – a spare desktop to monitor other things if needed

4.1 Starting EROS

In the unlikely event that EROS is not running then do the following:

1. Chose the EROS screen and log on to the machine as the correct user by typing:
(right click → tools → terminal)

Tromsø: **ssh t45001** (full address: t45001.eiscat.uit.no) (for both the UHF and VHF)
username: **eiscat**

Kiruna: **ssh k2501** (full address: k2501.eiscat.irf.se)
username: **eiscat**

Sodanklya **ssh s2501** (full address: s2501.eiscat.sgo.fi)
username: **eiscat**

2. To start EROS, type:

EROS U

for the UHF radar

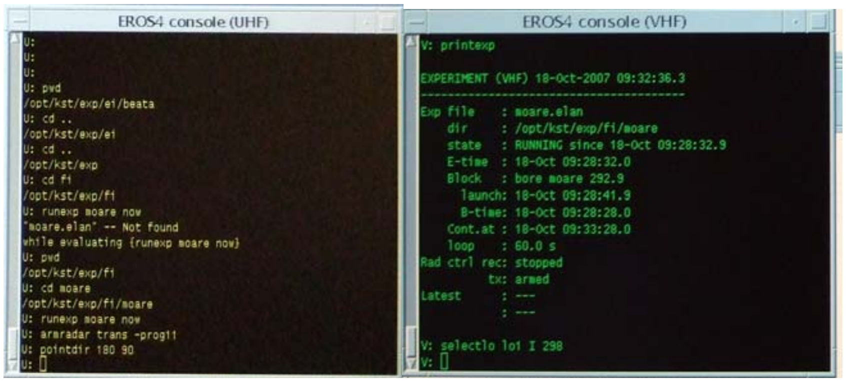
EROS V

for the VHF radar

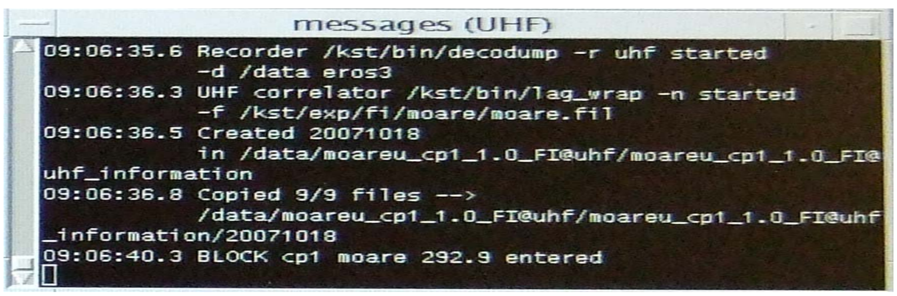
The EROS system should then start up in a gratuitously arty fashion and there should be 6 boxes (3 are minimised).

The 3 most important windows have the headings:

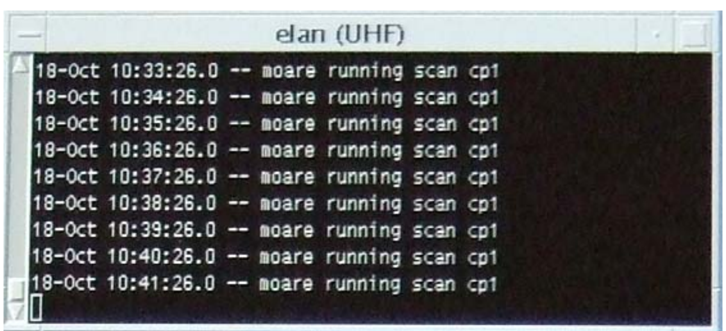
EROS4 Console (system) – This is where you type all the commands to start the experiments, start recording the data and to control the radar (ie. pointing direction etc.)



messages (site) – Prints messages from EROS (ie. tells you where the data is being written to and if it is successfully being written there. It is also where any error messages will be put)



elan (site) – Prints messages from the elan file (ie. what data is being recorded and from which dish)



If EROS is already running:

You can run your experiment and start recording the data etc in the EROS4 console window.

All the experiment directories are in:

/kst/exp/

For special programs there are country directories eg. /kst/exp/UK

4.2 Starting the Experiment

1. In EROS type:

<dish/site> runexp <expname> <start time> <scan> <owner>

For example:

runexp /kst/exp/steffe/steffe 12:00 lowelnorth1 UK

The <dish/site> flag is not needed if you are running the UHF from the CULEBRA terminal and the VHF from the GOPPI terminal (as is standard); ie. If you are sat at the VHF EROS control panel on GOPPI then you don't need to type:

VHF /kst/exp/tau0/510/tau0 08:00 SP

Just

/kst/exp/tau0/510/tau0 08:00 SP

However if you are running things from a remote site then you will need to specify which dish you are using at Tromso using the <dish/site> flag.

If you are running the tri-static system then you have to start the radars at each of the sites (KIR and SOD) also. You can do this by using the <site> flag

For example:

KIR runexp /kst/exp/steffe/steffe 12:00 lowelnorth1 UK

SOD runexp /kst/exp/steffe/steffe 12:00 lowelnorth1 UK

* THIS ALSO APPLIES TO ALL COMMANDS YOU TYPE SUCH AS STARTEXP, ENABLEREC AND PRINTEXP

You could also put the command rem kst in front of all commands for the <dish/site> flag. This will apply that command to all the sites (TRO, KIR and SOD)

rem kst runexp /kst/exp/steffe/steffe 12:00 lowelnorth1 UK

The <scan> and <owner> should be specified as the data will end up being labelled CP by default.

The <scan> parameter tells the dish where to point and also if the radar will be scanning through a set of positions. The files are all located in /kst/exp/scans/kst/.

If you want the dish to point in a particular fixed direction for the whole of the experiment which isn't the direction that is used in the default scan routine, run the experiment specifying **fixed** as the <scan> parameter and then move the dish manually to that position using the **pointdir** command. (There is information on the pointdir command in section 5.1)

To run tau0 at a pointing direction of

Eg. **runexp /kst/exp/tau0/510/tau0 08:00 fixed FI**

pointdir 90 60

Time is always in UT. There is a clock sat above the electronic racks straight in front of you when sat at the CULEBRA or GOPPI terminals which shows the time in UT. There are several options for <start time> parameters:

For time in UT type 08:00

runexp /kst/exp/tau0/510/tau0 08:00 CP

To start immediately type now

i.e. **runexp /kst/exp/tau0/510/tau0 now CP**

To start on the next full minute type fullminute or fm (in shorthand)

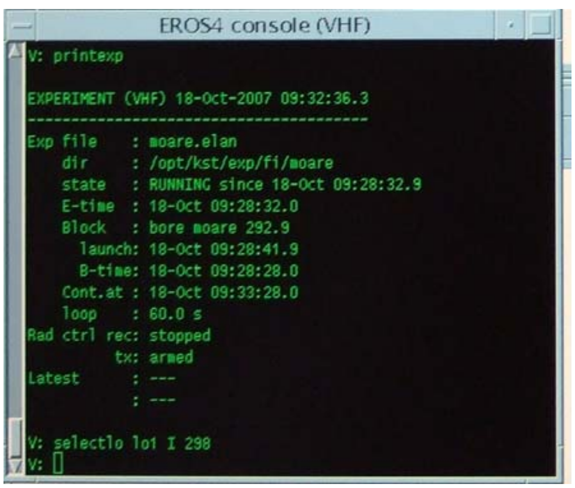
i.e **runexp /kst/exp/tau0/510/tau0 fullminute CP**

If you are a bit late in starting the experiment just put in the original start time (even though it has passed and the radar will catch up automatically).

If you are running the tri-static system then stick to using the start time in the runexp commands as opposed to ‘fm’ as this will keep everything nice and synchronized.

To look at the experiment parameters (i.e. if the program is running correctly etc.) in the EROS4 console widow type:

printexp



This will give you a summary for what experiment is running and what data you are recording

<u>4.2.1. Additional Things to be Aware of if You are Stopping and Restarting an Experiment From a Remote Site</u>

If you have to stop the experiment before schedule from a remote site, you must tell the staff at the Transmitter site (Tromso) so they can power down the transmitter and the radar controller there. Otherwise there is an unnecessary load put on the Klystrons which reduces their lifespan.

4.3 Recording the Data

1. Start recording the data by typing in the EROS4 console (ESR) window:

    enablerec

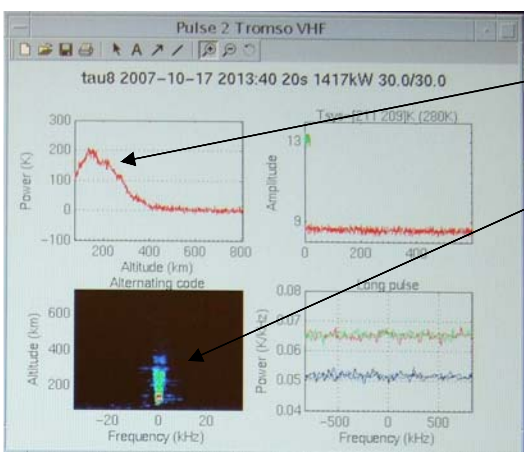
You must start recording the data at all sites if you are running the tri-static system:

enablerec
KIR enablerec
SOD enablerec

4.4 Starting the Transmitters

This should already have been taken care of by the engineer at the sites.
You can monitor the radar power by using rtg (see section on rtg in this document).
You can also monitor the amount of power at the remote sites in the same way.

To check that you are transmitting look at the rtg displays (the next section shows you how to start them up), where you should now see:



Hopefully some of the transmited power will be returned from the ionosphere.

A nice spectrum from the ionosphere.

In the recorder window in the EROS screen the raw data names should change from the buffer file names after the enablerec command is given (eg. RTO@32m.mat) to full filenames (eg. /data2/steffel_lowelnorth1_1.40_CP@42m/20030316_12/06265329.mat)

For examples of realtime rtg displays from the radars please see:
http://www.eiscat.se:8080/raw/rtg/rtg.cgi

<u>4.5 RTG - Looking at the Raw Data on EROS</u>

1. To look at the raw data– in the EROS4 console (dish) window type:

rtg

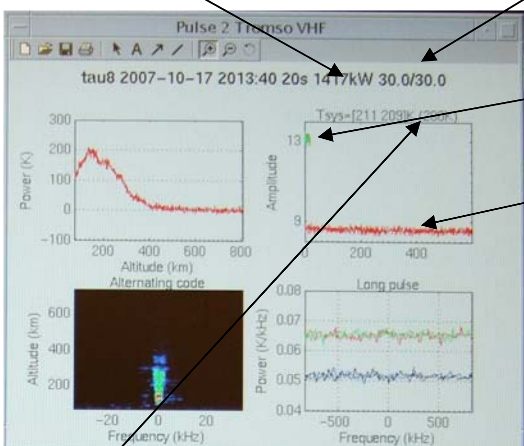
You can only run rtg on the machine for the site you are at. However you can look at the other sites rtg over the web by typing:

<site> webtg

The title of each rtg box will tell you what you are observing, as shown below:

An example of a raw data rtg window for the VHF running tau8 is shown below:

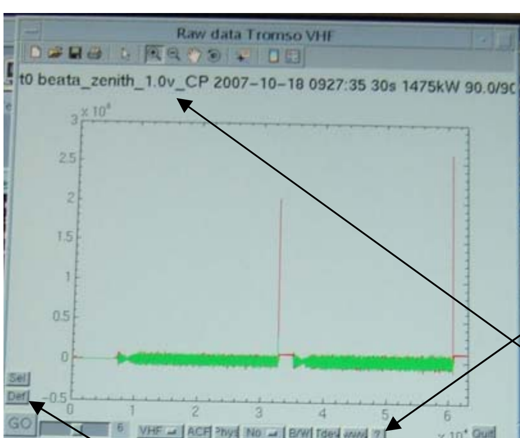
Transmitted Power Pointing direction of the dish in azimuth and elevation

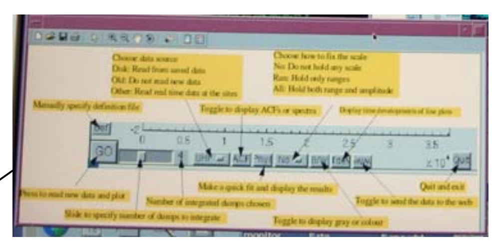


The calibration pulse is shown in green. This should be well above the actual pulse, shown in red. If not stop and restart the experiment.

The system temperature is shown above the top right hand plot in the square brackets. If this number is 'NaN' or extremely high (ie. So the building would have to be on fire!) then this is an indication that what forever reason the system is not synchronised. YOU MUST THEREFORE STOP AND RESTART YOUR EXPERIMENT. This should hopefully fix the problem.

The output shown in this window above are controlled using the buttons at the bottom of corresponding raw data spectra window shown below:





There is also a help window which appears by clicking on the '?' button in the raw data pulse window.

Check that rtg is loading up the correct raw data files. The experiment file names that are being shown in the window is shown at the top of the raw data spectra window. The RTG definition file can be changed by clicking on the 'def' (definition) button at the bottom left hand corner of the window and finding the appropriate file. RTG can also be used to look at old data on the disk.

N.B. Whenever changing any parameters. Stop the raw data display by pressing the 'Go' button. Perform the required changes, ie. definition files etc. then hit the 'Go' button to restart the display

The button which list the data type at the bottom of the window can also be used to change between dishes and data sources, ie KIR / SOD etc.

There is also a red folder on the work bench at the Tromsø site which has examples of the rtg windows for all the common programs run there as well as any common problems that can be diagnosed using rtg.

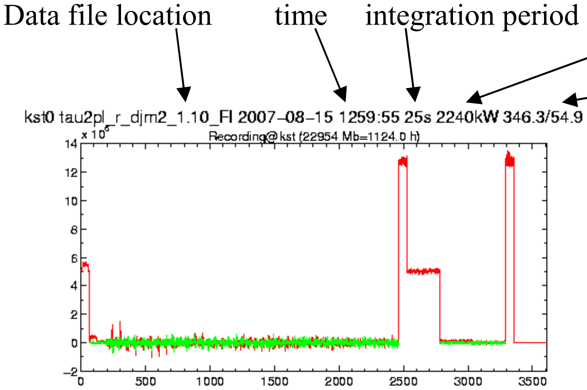
4.5.1. Rtg on the Web

As mentioned above, you can only run rtg locally (ie. Can't run rtg for Tromso on the machine in Kiruna). The command:

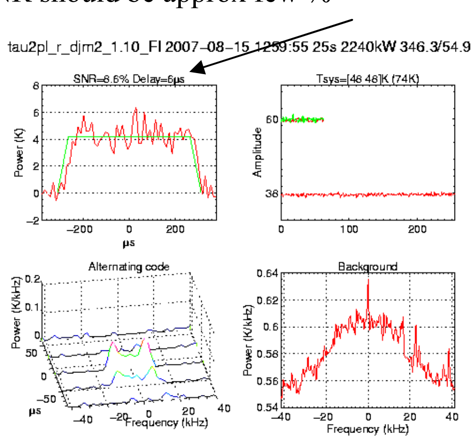
<site> webtg

typed into EROS will start the rtg on the web for the site you require. Each site has slightly different rtg displays but there are many familiar plots. Below is the webtg from Kiruna.

Data file location time integration period received power pointing azimuth/elevation



SNR should be approx few %



4.6 GUISDAP - Real Time Analysis

Only ion Line data can be analysed using this method.

1. To start the real-time analysis go to the Analysis screen (ana uhf or ana vhf) and log onto the machine (if there is not a shell available already) which does all the analysis from a terminal shell by typing:

Tromsø: **ssh tana** (full address: tana.eiscat.uit.no)

Kiruna: **ssh kana** (full address: kana.eiscat.irf.se)

Sodanklya **ssh sana** (full address: sana.eiscat.sgo.fi)

2. If you wish to run the analysis for the radar at the site you are located at, type:

guisdap –a

3. If you want to run the analysis for the radar at a different site (ie. You want to analyse the UHF data from the experiment but you are sat at Sodankyla), type:

guisdap -at

This will start the guisdap for dummies widgets.

4. Hit the reset button. This should hopefully set all the parameters for the latest experiment correctly. Make sure to check them. If this doesn't happen then you have to manually input the parameters as outlined below. You still might have to change the integration period for the data manually however.

4.6.1.Maunally Inputting Parameters into GUISDAP

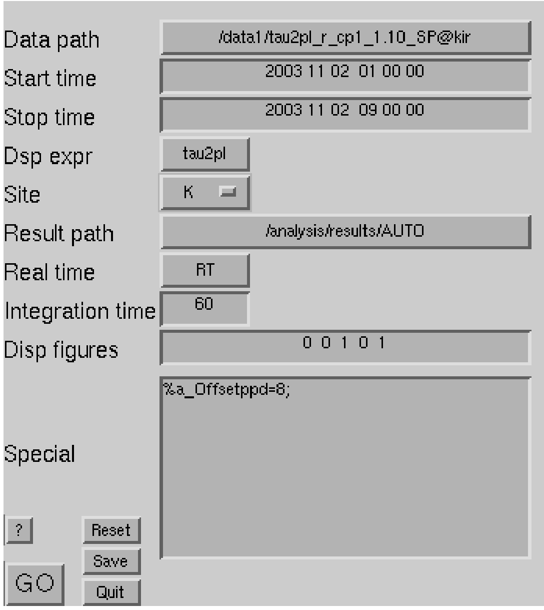
Chose the correct data directory for the raw data files (make sure you give it the whole data directory to look into and not just an hourly directory)

Eg. /data2/steffel_fixed_42m_1.40_UK@42m/**.**

NOT: /data2/steffel_fixed_42m_1.40_UK@42m/

Notice the '.' is at the end of the correct one…this is very important!!

Add the start and end times, check the experiment type is correct (Dsp expr) and site are correct and chose an integration period in the little guisdap gui:



If you are running a scanning experiment, use a 0 sec integration and it will integrate until the antenna moves.

If the dish is remaining in a fixed position a 60s integration time will do.

A '-' sign in front of an integration time i.e. -60 will cause the data to be integrated for either that amount of seconds or until something moves, i.e. the dish is moved or a satellite appears in the field of view.

Check that the RT (real time) button is depressed if you are running real-time.

When the plot appears it will be a 24 hour plot. You can change the axis setting of the plot by clicking on the 'EDIT' option at the top left hand corner of the plot.

GUISDAP automatically creates .eps and .png plots of your data on tana in:

/analysis/results/'experiment directory name'

For more detailed information and far more handy diagrams on navigating around guisdap see:

https://e7.eiscat.se/groups/Documentation/UserGuides/usersguide/GUISDAP/doc/howto.html

4.7 Keeping the Log Up to Date

If you haven't already done so, write what you are doing in the log. Chose the log screen and there should be a web browser running and the current log-keeper page should be seen.

Type your name in the name box and enter the information into the log.

4.8 Things to Keep an Eye On:

Spectra on the rtg

Real-time analysed results

Log maintained and enter anything interesting

The power output of the radar

4.9 Ending the Experiment

Do exactly what you did to start up the experiment but in reverse:

Disable the data recording. In the EROS4 console (site) window on the EROS screen, type:

disablerecording **(**this command can be shortened to **disablerec)**

3. Stop the experiment. In the EROS4 console (site) window on the EROS screen, type:

stopexperiment <stoptime>

the <stoptime> parameter is optional, in the format hh:mm

If you want to stop the experiment immediately simply type:

Stopexperiment **(**this command can be shortened to **stopexp**)

The technician should appear to turn the power off to the transmitters.

5. The Radars

There are two dishes at the Tromsø site, the 32m UHF system:

and the parabolic 40x120m VHF system:

There are also 32m UHF receivers at Sodankyla:

And Kiruna:

All the UHF dishes are fully steerable from the command line at the experimental terminals. The VHF currently only has 1 klystron and only has limited moveability which is controlled by the engineers at the Tromsø site.

5.1 Moving the Dish

All commands are typed in the EROS4 console window at the terminal

1. The power to the dish motors should already be on at the mainland sites (unlike the ESR where you have to turn it on and off using EROS). Check that the power is on by looking at the Antenna Control Unit machine which should be underneath the UT clock in the control room.

The buttons on the unit should be able to tell you if the dish is disabled for whatever reason. There will be a yellow sign on it if for some reason the antenna is being worked on.

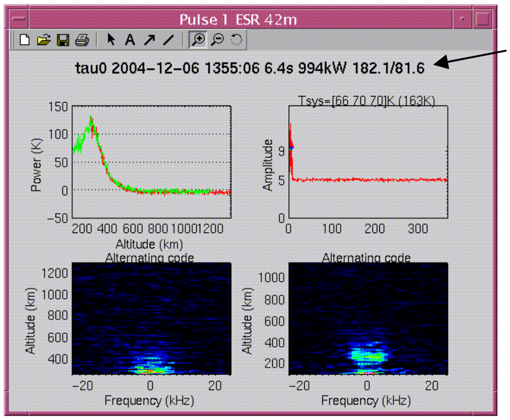
2. Give the co-ordinated you want to point the dish at

pointdirection <azimuth> <elevation> (this command can be shortened to **pointdir**)

eg. pointdirection 100 60

Field Aligned at Tromso –

pointdir 184.0 77.1



The title is in the format of:

Experiment name yyyy-mm-dd hhmm:ss integration period power azimuth / elevation

3. To check the dish is moving:

printant

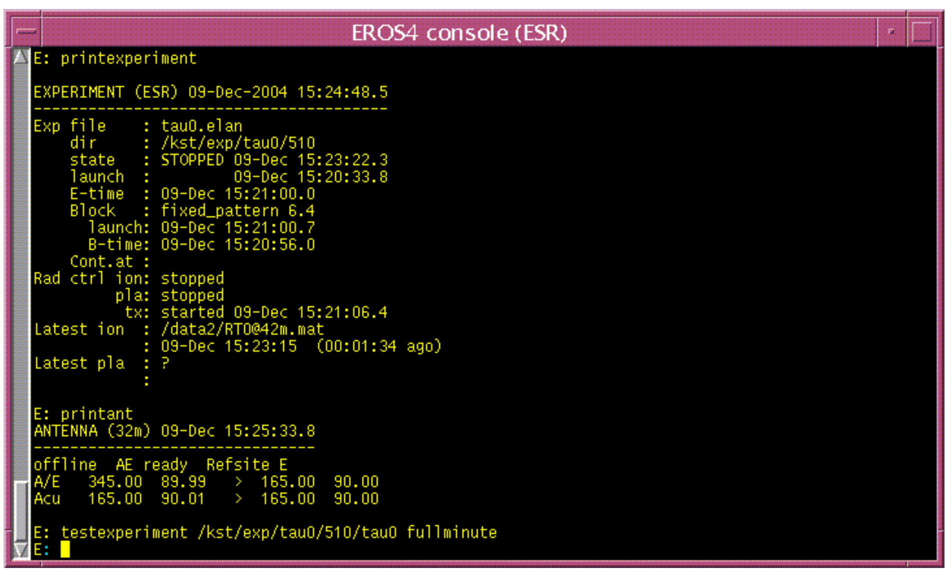
This will give you a read out of:

The on/off status of the radar

A/E The co-ordinates the radar started at > the co-ordinates it is moving to

Acu The current co-ordinates of the dish > the co-ordinates it is moving to

(as shown at the bottom in the panel below)

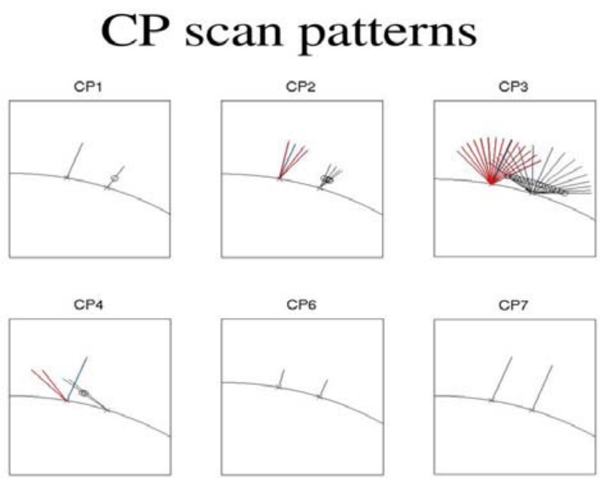


5.2 Moving the Dish During Experiments

If you want the dish to scan in different directions when doing an experiment, ie. 4 mins field aligned, 4 mins at +5° from field aligned etc. then it is easier to write an .elan file which will contain the different positions that you want the dish in rather than trying to do it manually. Several scan files already exist and many of the experiments run with a default scan file (see section 3.1 for more details). The scan files can be found in:

/kst/exp/scans/kst/

Examples of the positions of the dishes used in the common programs (eg. CP4 scan etc.) are shown below:



The circles denote the common volumes sampled by the mainland tri-static system. The mainland system is represented by the trace on the right and the ESR system by the trace on the left. In the case where the ESR 32m dish is not pointing field aligned a blue trace indicates the 42m antenna and a red indicates the 32m antenna. The table in section 3.1 of this guide indicates the default experiment type that will run with each CP.

For example, the CP1 schematic shows that the UHF is able to make tri-static measurements in a single position using the tau2pl experiment(the trace on the right) while the ESR will run the steffe experiment with either the 32m of 42m dish pointing field aligned (the 42m dish is fixed in the field aligned direction). The CP2 scan pattern shows the UHF running a tri-static scan with the tau2pl experiment in 4 different positions. The ESR is running the steffe experiment with the 42m field aligned and the 32m dish moving through 3 different positions

5.2.1 Changing the Height of the Inter-Section Volume for the Tri-Static System

Sometimes the situation occurs that you are running a tri-static experiment but you wish to change the altitude of the common volume (eg. the Tromsø beam indicates that most of the returned power is coming from a different height). This can be done in the following way using the pointrheight command:

At the Tromso UHF EROS command line type:

printant

As described earlier this will show you the pointing direction of the UHF. When running in tri-static mode it will also display the line:

pointrrange <azimuth> <elevation> <range of the common scattering volume>

Take the **<azimuth> <elevation>** values from this line and then change the remote sites to that azimuth and elevation and the height you would like the common volume to be at using the pointrheight command.

Eg. if the printant command at Tromso produces:

pointrrange 185.1 77.50 296.64

Then type the following into EROS to change the common volume height (in km) to height x:

Kir pointrheight 185.1 77.5 x

Sod pointrheight 185.1 77.5 x

The remote sites will now intersect the Tromso UHF beam at height x.

6. Files and Data Disk

This section details the type of files contained and used by the programs. Unless you are going to run a completely new experiment or need to have the dish moving in a specific way that no-one has down before you will not need to edit these files.

6.1 Experiment Files

These are located in /kst/exp/*

.tlan files - these contain the specific pulse coding used in the experiment

6.2 Data Disks

The data are located on /data disk of each machine, ie. GOPPI for the VHF and CUEBRA for the UHF. The data are stored here for a few weeks after the experiments have been complete before they are sent to the Kiruna site where they are archived. To access them after you have left the site, please use the data page on the EISCAT website:

https://e7.eiscat.se/groups/datahandling

If you wish to record and save the raw data samples (ie. The individual μs pulses recorded by the radars and not the multi-second integrated standard data) then please contact the site beforehand to make special arrangements as this is not stored regularly due to its immense size.

7. Problems and Troubleshooting

There are any number of things that could go wrong, mostly an alarm will sound and a technician will turn up to fix the problem if it is to do with the radar itself (these can occur quite frequently so don't be alarmed). Below is a quick list of possible problems and solutions that could be down to the analysis and not the actual radar. Consult the red folder with the rtg examples also. Obviously this list is not exhaustive.

If all else fails stop the experiment, including the rtg windows, stop recording the data and start again from scratch (this fixes most problems).

Problem	Possible Cause	Solution
The dish won't move	1. The antenna is disabled 2. You haven't given the computer enough time to update the dish status on the printant command	1. Turn the power onto the dish. See 'Moving the dish' section 2. Wait a few more seconds and then retry the printant command
The experiment hasn't started	Check you have input the time in UT not LT	Stop the experiment and restart using the correct time or 'fm' command in the runexp command line
The data isn't being recorded	1. Check you have used the command enablerec 2. Check that you gave the radar long enough to start producing the actual data files before you tell it to record (ie. Give it about 20 secs after you start the exp)	1. Stop recording data with the disablerec command and restart using the enablerec command 2. Stop the experiment and restart it again making sure you have given it enough time.
The spectra don't look right	1. Check you are reading in the data from the correct definition file 2. The power output from the radar has dropped	1. See the section on looking at the raw data 2. Check the power output of the radar and check the radar interlocks are ok.

8. Analysis

All analysis must be done on the following machines (ssh onto the machines from your terminal if necessary):

At Sodankyla: sana (sana.eiscat.sgo.fi)

At Kiruna: kana (kana.eiscat.irf.se)

At Tromso tana (tana.eiscat.uit.no)

The EISCAT machines use matlab to analysis the data. The raw data matlab uses are from the /data directory:

There are 2 methods to analyse the data; either use matlab at the command line or fire up the guisdap gui to analyse the data.

The analysed data is written into:

/analysis/results/

8.1 Real Time Analysis

The real time matlab analysis is done using a GUISDAP gui and can be done while you are running the experiment. This is very useful as it allows you to monitor conditions more closely.

See section 4.6 for more details

8.2 Post Experiment Analysis

Use the guisdap gui as in the real time analysis method but make sure the ‘RT’ button is not pressed.

9. Plotting the Analysed Data

The integrated data can be plotted on the analysis machine using the VIZU software.

In a shell on the machine type:

vizu

This will load up matlab without the use of GUISDAP.

The help command will give you all the possible flags for vizu:

help vizu

To plot a full 24 hours plot the command is:

vizu dir exp_type antenna

Eg. vizu /analysis/results/2005-04-18_steffe_60@42m/ Lisa_experiement 42m

The plot will be a 24 hour summary plot. This can be now edited in the same manner as the realtime method by clicking on the ‘EDIT’ button at the top left hand corner of the plot.

To save the plot as both .eps and .png format:

vizu save [extra tail]

eg. vizu save lisa

will save the plot in the same data directory as the integrated data files and the original summary plots that were automatically generated if you ran real time analysis. The plot name will be the same but your new plot will have the text ‘lisa’ added:

Eg. 24 hour summary plot: 2005-05-18_steffe_60m@42m.eps

New plot produced using vizu: 2005-05-18_steffe_60mlisa@42m.eps