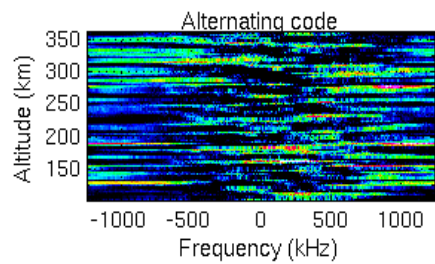
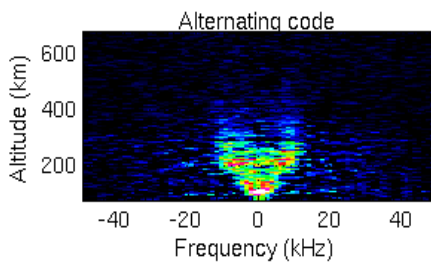
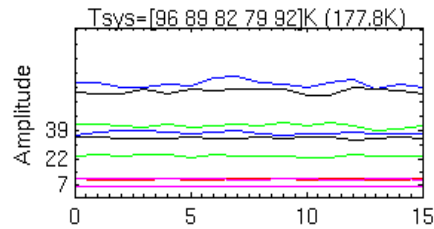
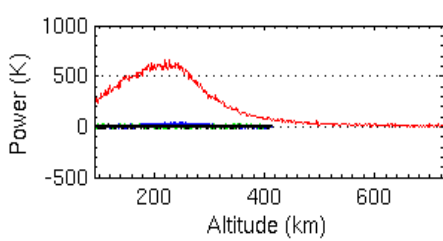
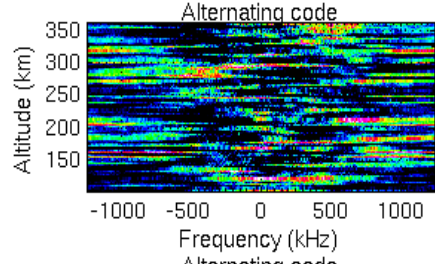
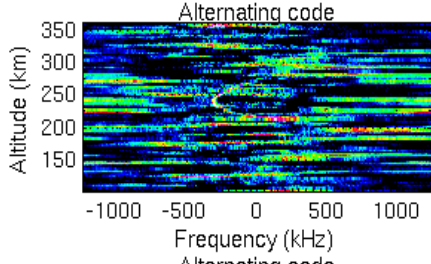


beata 2013-02-19 1113:30 5s 1143kW 186.2/77.5



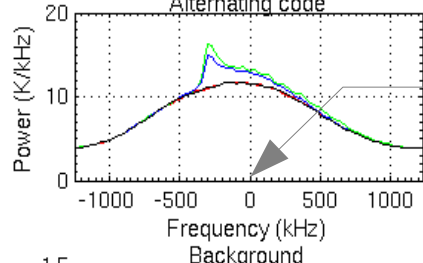
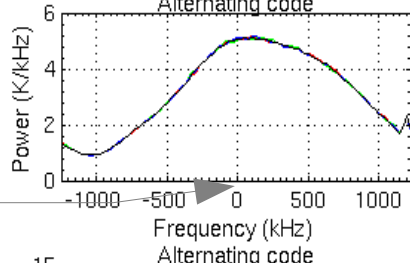
-3.6 MHz decoded plasma lines

-6.0 MHz decoded plasma lines



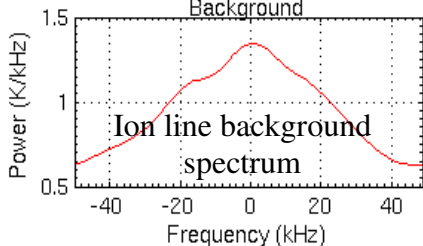
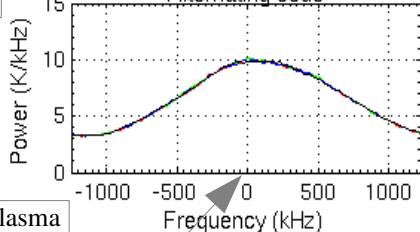
-8.4 MHz decoded plasma lines

0 kHz is the -3.6 MHz plasma line. The 4 curves are un-decoded range gates colour-coded as listed below



0 kHz is the -6.0 MHz plasma line. The 4 curves are un-decoded range gates colour-coded as listed below

0 kHz is the -8.4 MHz plasma line. The 4 curves are un-decoded range gates colour-coded as listed below



This example shows some natural plasma lines near the F-region peak.

The Matlab program **plasma\_summary** plots these three spectral bands in colour as a function of time for the four range gates. The gates in each of the three undecoded plasma line bands are colour-coded as:

- red 47-221 km
- green 128-302 km
- blue 209-383 km
- black 290-464 km

## To analyse and plot decoded (higher resolution) plasma line data.

One way (the more difficult and tedious way) is to use RT-graph **Sel** button. The text window then tells you to click on the plot window which you want to treat specially. Then you get a menu window asking what script to run. To save the data from this window to a file you would have a Matlab script which contains something like:

```
save selax <filename>
```

where selax is a structure with x,y,z axes.

You can then plot the saved data in whatever way you like.

The **easier and more flexible way** is to use GUIDAP. The following example is done for the UHF beata experiment. You start **guidap -a** as usual. In the menu box which appears, choose the Site **P** (for plasma lines). In the **Disp figures** box I suggest 0 1 0 1 0 .

In the special box type:

**phasepush=0;** (to avoid an error message)

**display\_spectra=1;** (1 is the default, but larger numbers up to maybe 10 ?? are possible to tweak things. It modifies the number ?? or weighting ?? of longer lags that are used. This option is also possible for ion line analysis.

**analysis\_range=[180:3:220];** (this is just one example. [from-range : range-separation : to-range] in km. 3 km is the range gate interval for beata).

In the integrated results from this analysis (Matlab files) the spectra are in the variable **r\_spec**. This will analyse the first (-3.6 MHz) of the three plasma line bands.

To analyse another band put the following line in **guizard.m** (in directory **guidap8/exps/beata**):

```
lpg_ra=lpg_ra+i*82232;
```

where i =1 for the second frequency band or i=2 for the third band.

Note that when using **display\_spectra=1** with the ion line analysis (site=T or V), the normal analysis is disabled. **r\_param** is not produced, but **r\_spec** is produced which contains the plasma line spectrum for each of the chosen ranges as one large array.