The Vertical Cross Section Panel

The first thing to do when the panel appears is to click on any of the three top buttons : "**New Profile of Xsection**", "**Scan Profile**" or "**Scan Xsection**". In this example, we click on "**New Profile of Xsection**".

Then a new window appears :

Once enlarged, you get a black window with some instructions written :
"In the drawing window...
click left button --> profile
drag middle button + click --> cross section
click right button --> exit"

That is, clicking with the left mouse button gives a vertical profile, clicking and dragging the left mouse button draws a line, which will yield a vertical cross-section.

The "**Scan Profile**" button lets you explore vertical profiles across the grid area. Simply press and hold the left mouse button and watch the vertical profiles being dynamically updated.

The **"Scan XSection"** button lets you generate and explore vertical cross-sections across the grid area. Simply press and hold the left mouse button and watch the cross-sections being dynamically updated.
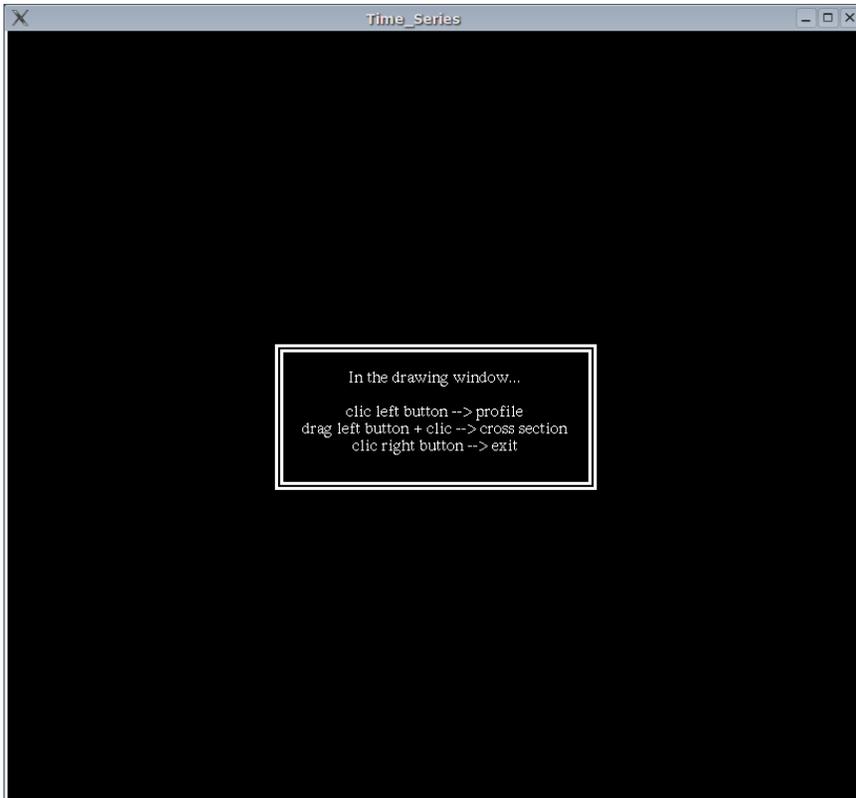
A vertical profile obtained by clicking over Southern Alberta, at the location marked by a cross. By default, all the vertical levels present in the standard file are loaded.
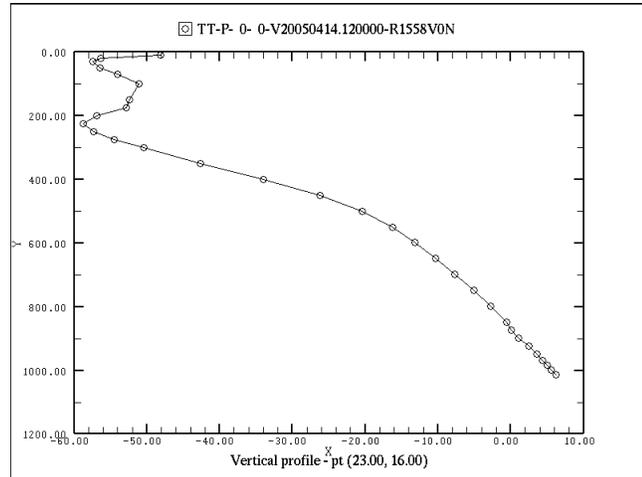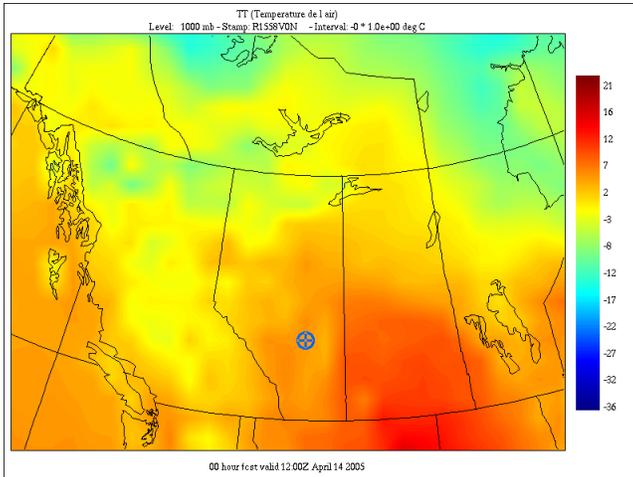
A vertical cross-section obtained by clicking and dragging over Southern Alberta.
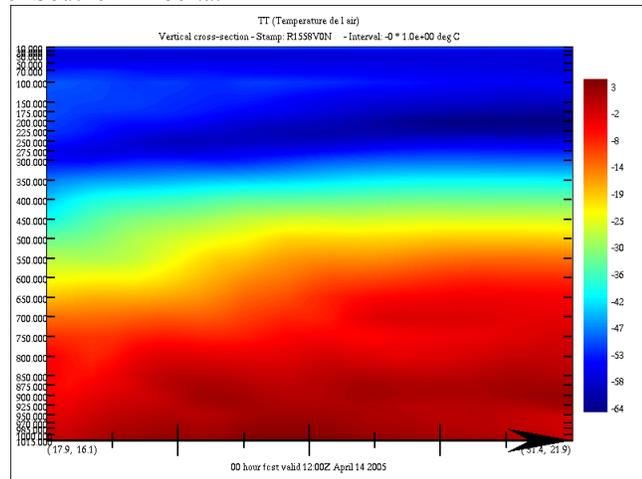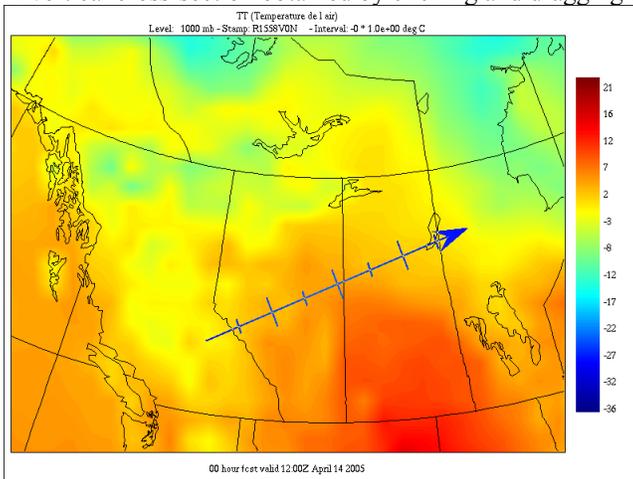
The vertical scale can be changed to log instead of linear
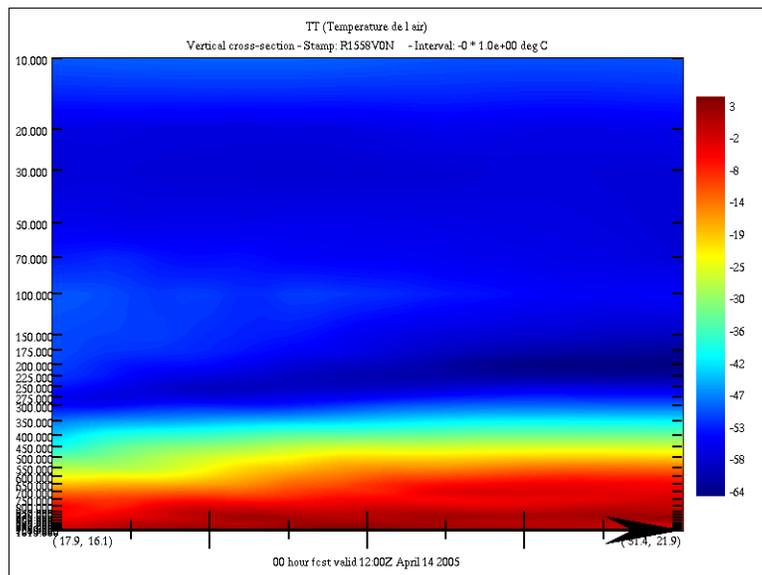
The vertical scale can also be reversed
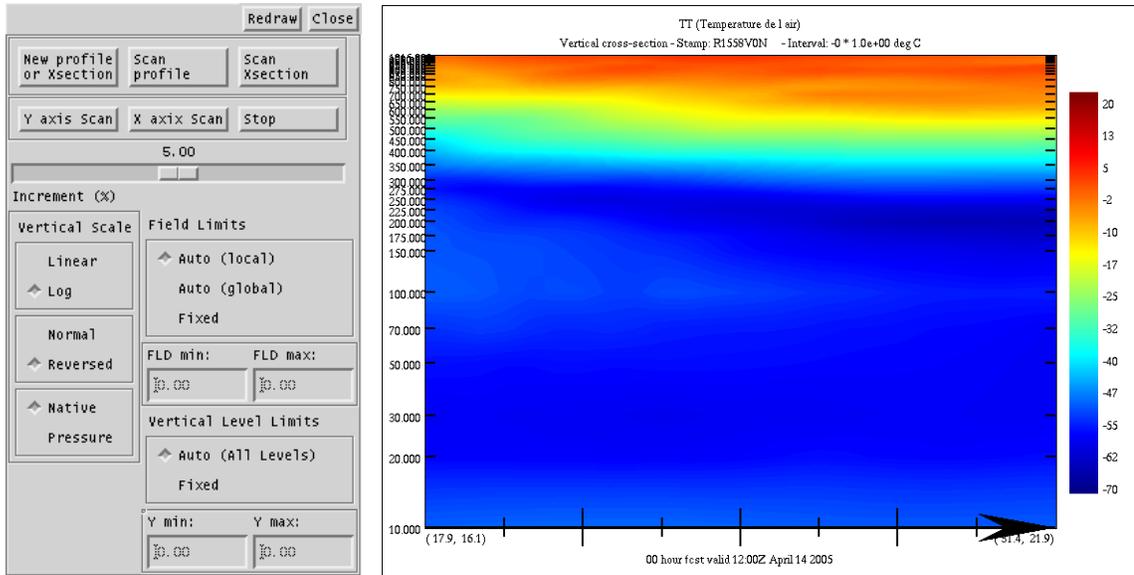
A new option has been implemented in xrec5.62 and above that maps the vertical cross-section in eta coordinates into pressure coordinates, warping the surface with the underlying topography. For this mapping to work a corresponding P0 pressure field has to be present with the same validity date and the same 'ETIKET' as the field in the cross section.

This option can be controlled in the left lowest third box. "Native" will display the cross-section in native coordinates, and "Pressure" will display the field in pressure coordinates.

This option also allows the superimposition of fields in pressure and hybrid coordinates, and of fields that do not have necessarily the same number or distribution of vertical pressure levels.

Cross-section in hybrid coordinates   Cross-section in pressure coordinates
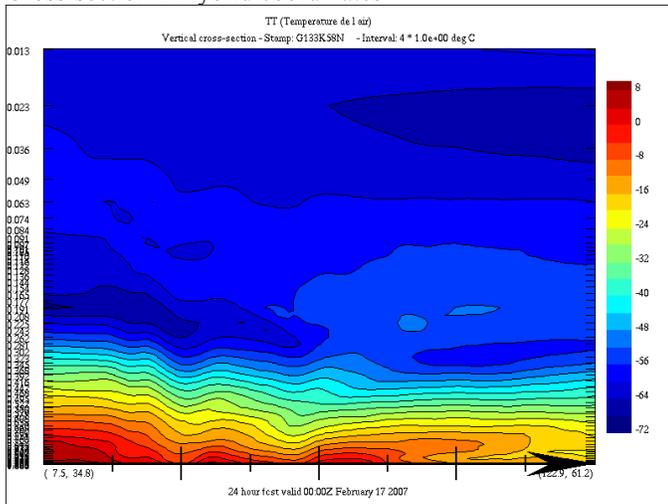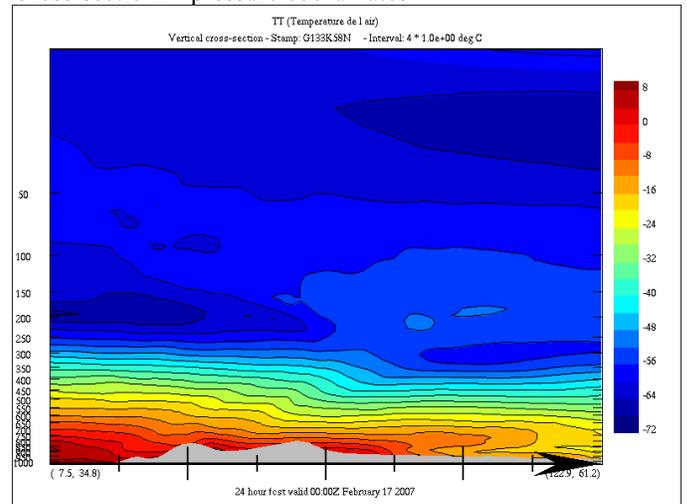
The data range of the profiles or cross-sections can be changed three ways : by using the min-max values from the cross-section only **(Auto (local))**, the min-max values from the whole 3-D domain **(Auto (global))**, or set to arbitrary values by the user **(Fixed)**.

Data range set to **Auto (local)**
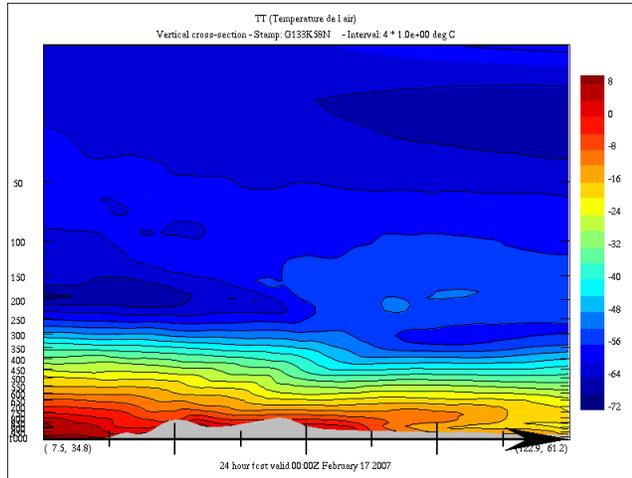
Data range set to **Auto (global)**
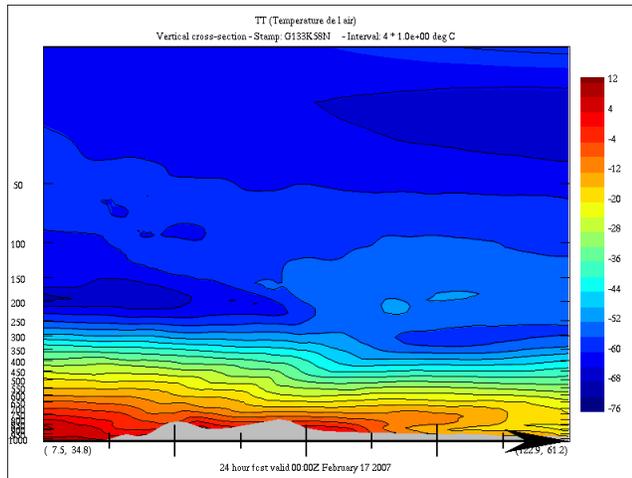
Data range set to **Fixed**

On the second row of buttons, the "**Y axis scan**" and "**X axis scan**" buttons let the user generate dynamic vertical cross-sections that scan the whole domain back and forth, along the horizontal or vertical axes. The increment between each step can be fine tuned by playing with the cursor just below. This allows you to concentrate on the data, and to analyze the whole domain very rapidly. To stop the scan, simply press the "**Stop**" button. During the scan process, all the elements from the Display menu can be changed (like colors, contours, labels, hi-lo values, etc.).

Additional remarks

Xrec can superimpose as many vertical profiles or cross-sections as there are fields on the Main Display window. The only limitations are that the vertical levels must be the same for all the fields, and that loading fields defined on huge grids and/or having a large number of vertical levels can have adverse effects on the system memory.

A vertical profile of the temperature from the same prog, at 6 hr intervals
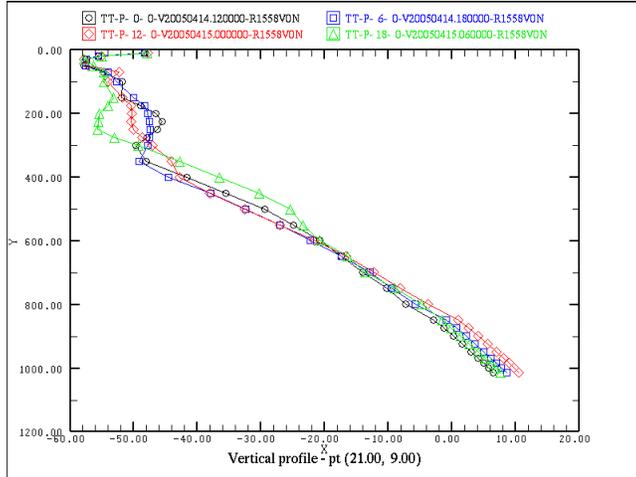
The same profiles, with the lower vertical limit set to 1000 mb.
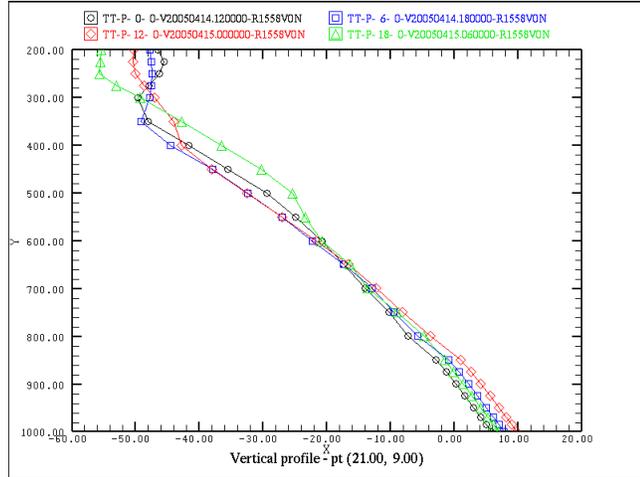
Using the topography as a mask

If the vertical coordinate of the field is in pressure, and the P0 field is available, then selecting the "**Topography**" option in the Display menu activates a mask in the vertical cross section window that shows the topography enveloppe.

Topography option off
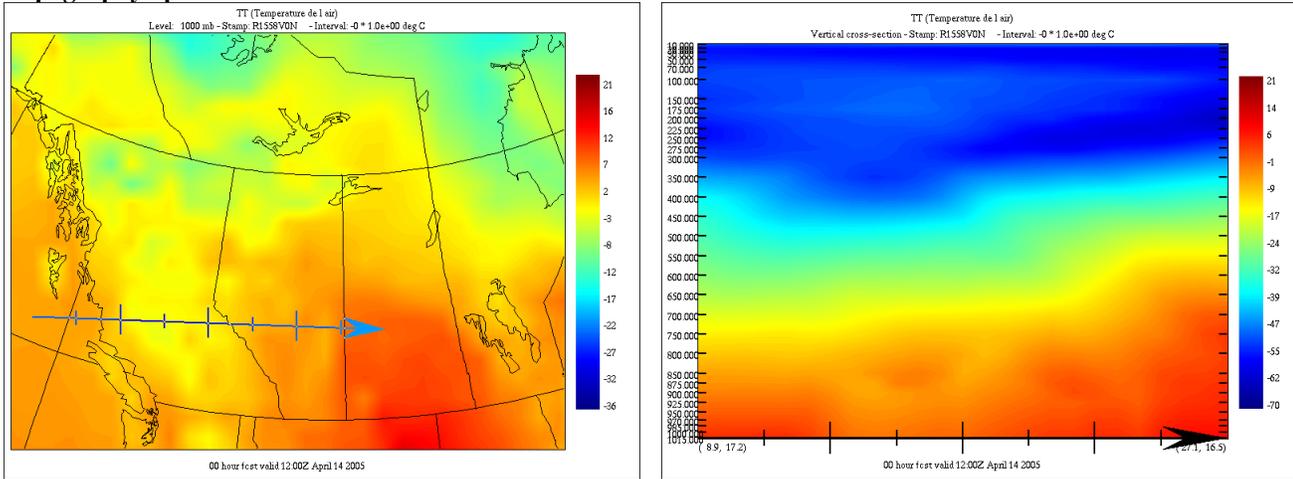
Topography option on
In the main drawing window, regions shaded in dark blue show the area where the data is "invalid", in the sense that it is below the ground.