

Description

The `clegend()` option allows you to control the contents, appearance, and placement of the contour-plot legend.

Contour-plot legends have a single key that displays all the colors used to fill the contour areas. They also have a *c* axis that provides a scale for the key and associated contour plot. That axis is controlled using the *c*-axis option described in [\[G-3\] *axis_options*](#).

Quick start

Increase the width of the contour key by 20%

```
twoway contour z y x, clegend(width(*1.2))
```

Place the key's axis on the alternate side of the key

```
twoway contourline z y x, clegend(altaxis)
```

Add the title “My Key Title” to the top of the key

```
twoway (contour z y x), clegend(title("My key title"))
```

Suppress display of the contour key

```
twoway (contour z y x), clegend(off)
```

Syntax

<i>clegend_option</i>	Description
<code>clegend([suboptions])</code>	contour-legend contents, appearance, and location
<code>clegend()</code> is <i>merged-implicit</i> ; see [G-4] Concept: repeated options .	
<i>suboptions</i>	Description
Contour legend appearance	
<code>width(size)</code>	width of contour key
<code>height(size)</code>	height of contour key
<code>altaxis</code>	move the contour key's axis to the other side of the contour key
<code>bmargin(marginstyle)</code>	outer margin around legend
<code>title_options</code>	titles, subtitles, notes, captions
<code>region(options)</code>	borders and background shading
Contour legend location	
<code>off</code> or <code>on</code>	suppress or force display of legend
<code>position(clockposstyle)</code>	where legend appears
<code>ring(ringposstyle)</code>	where legend appears (detail)
<code>bplacement(compassdirstyle)</code>	placement of legend when positioned in the plotregion
<code>at(#)</code>	allowed with <code>by()</code> only
See <i>Where contour legends appear</i> under <i>Remarks and examples</i> below, and see <i>Positioning of titles</i> in [G-3] <i>title_options</i> for definitions of <i>clockposstyle</i> and <i>ringposstyle</i> .	
<i>options</i>	Description
<code>style(areastyle)</code>	overall style of region
<code>color(colorstyle)</code>	line and fill color of region
<code>fcolor(colorstyle)</code>	fill color of region
<code>lstyle(linestyle)</code>	overall style of border
<code>lcolor(colorstyle)</code>	color of border
<code>lwidth(linewidthstyle)</code>	thickness of border
<code>lpattern(linepatternstyle)</code>	border pattern (solid, dashed, etc.)
<code>lalign(linealignmentstyle)</code>	line alignment (inside, outside, center)
<code>margin(marginstyle)</code>	margin between border and contents of legend

Option

`clegend(suboptions)` specifies the appearance of a contour-plot legend, along with how it is to look, and whether and where it is to be displayed.

Content and appearance suboptions for use with `clegend()`

- `width(size)` specifies the width of the contour key. See [G-4] *size*.
- `height(size)` specifies the height of the contour key. See [G-4] *size*.

`altaxis` specifies that the contour key's axis be placed on the alternate side of the contour key from the default side. For most *schemes*, this means that the axis is moved from the right side of the contour key to the left side.

`bmarg`*n*(*marginstyle*) specifies the outer margin around the legend. That is, it specifies how close other things appearing near the legend can get. Also see `suboption margin()` under *Suboptions for use with clegend(region())* below for specifying the inner margin between the border and contents. See [G-4] *marginstyle* for a list of margin choices.

title_options allow placing titles, subtitles, notes, and captions on contour-plot legends. See [G-3] *title_options*.

`region(roptions)` specifies the border and shading of the legend. You could give the legend a gray background tint by specifying `clegend(region(fcolor(gs9)))`. See *Suboptions for use with clegend(region())* below.

Suboptions for use with `clegend(region())`

`style(areastyle)` specifies the overall style of the region in which the legend appears. The other suboptions allow you to change the region's attributes individually, but `style()` provides the starting point. See [G-4] *areastyle* for a list of choices.

`color(colorstyle)` specifies the color of the background of the legend and the line used to outline it. See [G-4] *colorstyle* for a list of color choices.

`fcolor(colorstyle)` specifies the background (fill) color for the legend. See [G-4] *colorstyle* for a list of color choices.

`lstyle(linestyle)` specifies the overall style of the line used to outline the legend, which includes its pattern (solid, dashed, etc.), its thickness, and its color. The other suboptions listed below allow you to change the line's attributes individually, but `lstyle()` is the starting point. See [G-4] *linestyle* for a list of choices.

`lcolor(colorstyle)` specifies the color of the line used to outline the legend. See [G-4] *colorstyle* for a list of color choices.

`lwidth(linewidthstyle)` specifies the thickness of the line used to outline the legend. See [G-4] *linewidthstyle* for a list of choices.

`lpattern(linepatternstyle)` specifies whether the line used to outline the legend is solid, dashed, etc. See [G-4] *linepatternstyle* for a list of choices. When `lpattern()` is specified, the line alignment is always center; thus, `lalign()` is ignored.

`lalign(linealignmentstyle)` specifies whether the line used to outline the legend is inside, outside, or centered. See [G-4] *linealignmentstyle* for a list of choices.

`margin(marginstyle)` specifies the inner margin between the border and the contents of the legend. Also see `bmarg`*n*`()` under *Content and appearance suboptions for use with clegend()* above for specifying the outer margin around the legend. See [G-4] *marginstyle* for a list of margin choices.

Location suboptions for use with `clegend()`

`off` and `on` determine whether the legend appears. The default is `on` when a *twoway contour* plot appears in the graph. In those cases, `clegend(off)` will suppress the display of the legend.

`position(clockposstyle)`, `ring(ringposstyle)`, and `bplacement(compassdirstyle)` override the default location of the legend, which is usually to the right of the plot region. `position()` specifies a direction [*sic*] according to the hours on the dial of a 12-hour clock, and `ring()` specifies the distance from the plot region.

`ring(0)` is defined as being inside the plot region itself and allows you to place the legend inside the plot. `ring(k)`, $k > 0$, specifies positions outside the plot region; the larger the `ring()` value, the farther away the legend is from the plot region. `ring()` values may be integers or nonintegers and are treated ordinarily.

When `ring(0)` is specified, `bplacement()` further specifies where in the plot region the legend is placed. `bplacement(seast)` places the legend in the southeast (lower-right) corner of the plot region.

`position(12)` puts the legend directly above the plot region (assuming `ring() > 0`), `position(9)` directly to the left of the plot region, and so on.

See [Where contour legends appear](#) under *Remarks and examples* below and [Positioning of titles](#) in [G-3] [title_options](#) for more information on the `position()` and `ring()` suboptions.

`at(#)` is for use only when the *twoway_option* `by()` is also specified. It specifies that the legend appear in the $\#$ th position of the $R \times C$ array of plots, using the same coding as `by(..., holes())`. See [Use of legends with by\(\)](#) under *Remarks and examples* below, and see [G-3] [by_option](#).

Remarks and examples

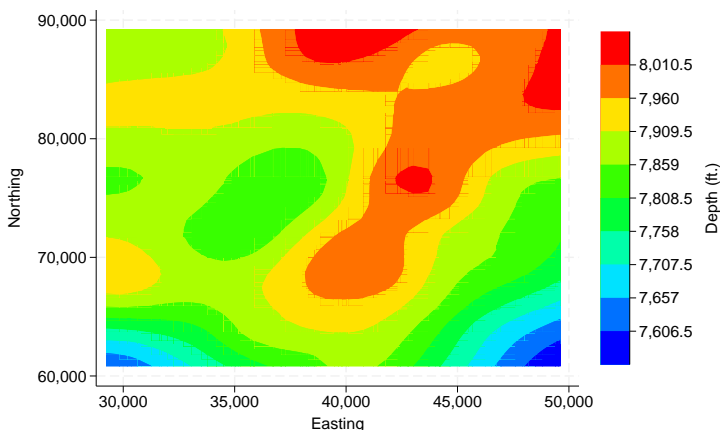
Remarks are presented under the following headings:

[When contour legends appear](#)
[Where contour legends appear](#)
[Putting titles on contour legends](#)
[Controlling the axis in contour legends](#)
[Use of legends with by\(\)](#)

When contour legends appear

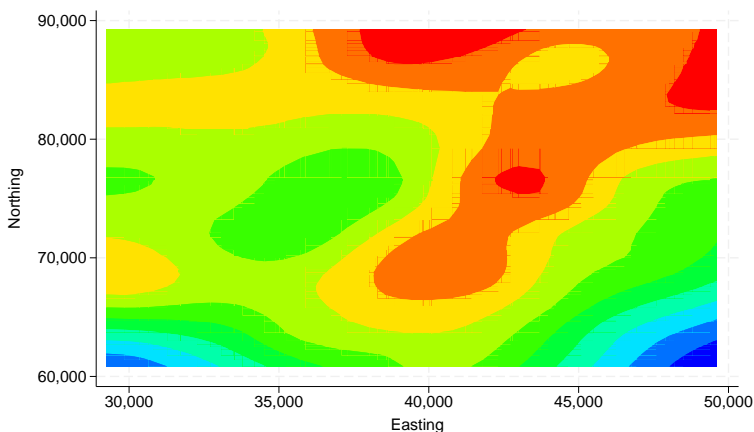
Contour legends appear on the graph whenever the graph contains a **twoway contour** plot.

```
. use https://www.stata-press.com/data/r19/sandstone
(Subsea elevation of Lamont sandstone in an area of Ohio)
. twoway contour depth northing easting, levels(10)
```



You can suppress the contour legend by specifying `clegend(off)`,

```
. twoway contour depth northing easting, levels(10) clegend(off)
```

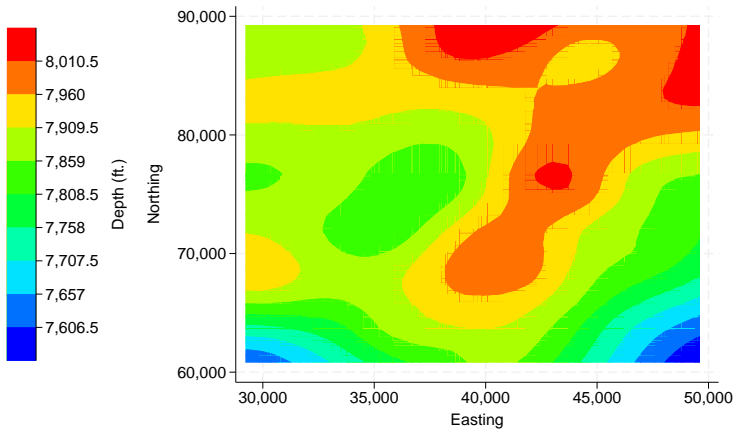


Where contour legends appear

By default, legends appear to the right of the plot region at what is technically referred to as `position(3) ring(3)`. Suboptions `position()` and `ring()` specify the location of the legend. `position()` specifies on which side of the plot region the legend appears—`position(3)` means 3 o'clock—and `ring()` specifies the distance from the plot region—`ring(3)` means farther out than the `title_option b2title()` but inside the `title_option note()`; see [G-3] *title_options*.

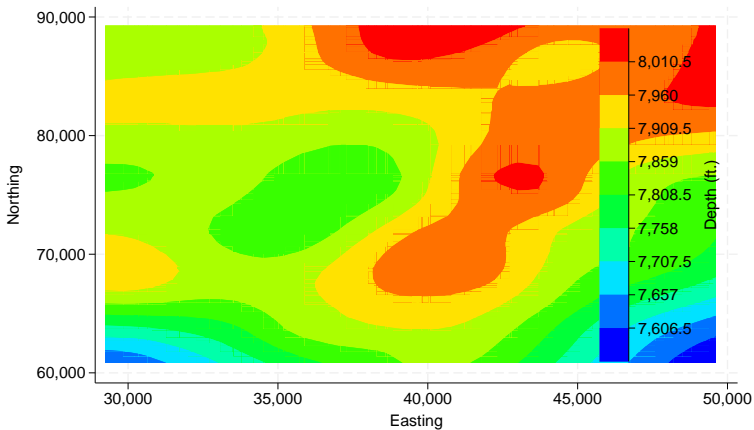
If we specify `clegend(position(9))`, the legend will be moved to the 9 o'clock position:

```
. twoway contour depth northing easting, levels(10) clegend(pos(9))
```



`ring()`—the suboption that specifies the distance from the plot region—is seldom specified, but, when it is specified, `ring(0)` is the most useful. `ring(0)` specifies that the legend be moved inside the plot region:

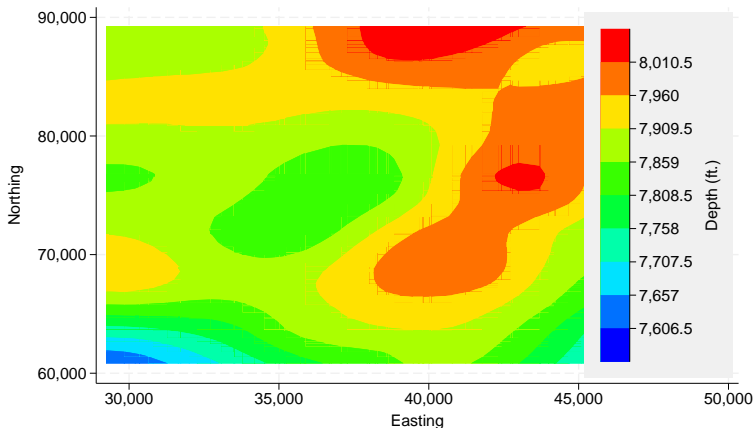
```
. twoway contour depth northing easting, levels(10) clegend(pos(5) ring(0))
```



Our use of `position(5) ring(0)` put the legend inside the plot region, at 5 o'clock, meaning in the bottom right corner. Had we specified `position(2) ring(0)`, the legend would have appeared in the top right corner.

We might now add a background color to the legend:

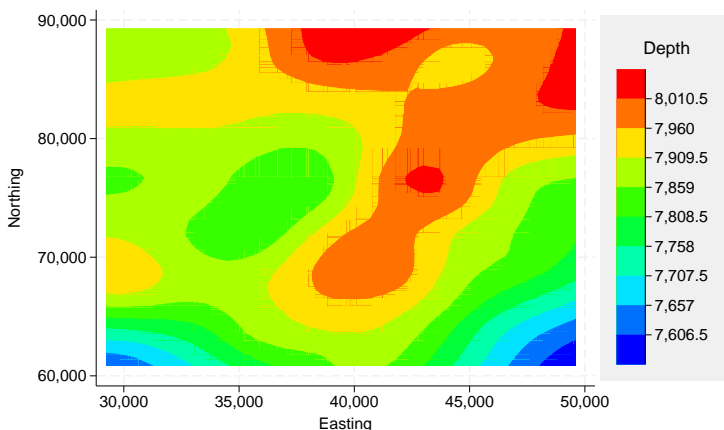
```
. twoway contour depth northing easting, levels(10) clegend(pos(2)
    ring(0) region(fcolor(gs15)))
```



Putting titles on contour legends

By default, the z axis of a contour legend displays the z variable label or variable name as a title. You can suppress this axis title. You can also add an overall title for the legend. We do that for the previous graph by adding the `ztittle("")` and `clegend(title("Depth"))` options:

```
. twoway contour depth northing easting, levels(10) ztittle("")
    clegend(title("Depth") region(fcolor(gs15)))
```

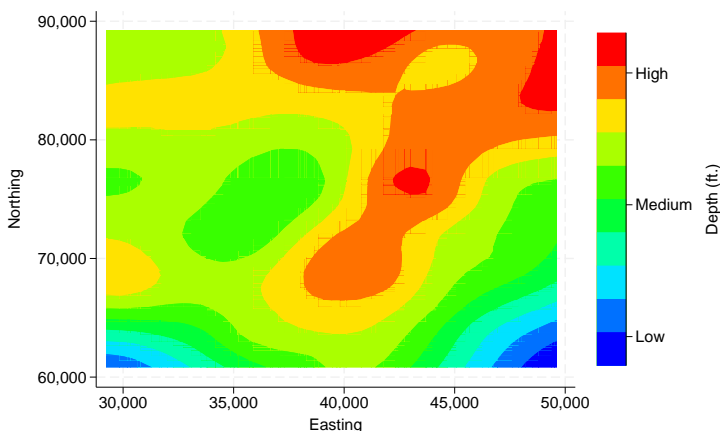


Legends may also contain `subtitles()`, `notes()`, and `captions()`, though these are rarely used; see [\[G-3\] title_options](#).

Controlling the axis in contour legends

Contour-plot legends contain a z axis. You control this axis just as you would the x or y axis of a graph. Here we specify cutpoints for the contours and custom tick labels using the `zlabel()` option,

```
. twoway contour depth northing easting, levels(10)
    xlabel(7600 "Low" 7800 "Medium" 8000 "High") region(fcolor(gs15)))
```

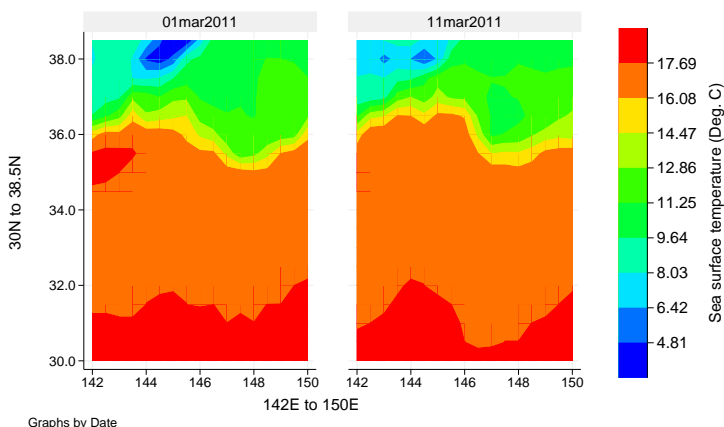


Minor ticks, axis scale (logged, reversed, etc.), and all other aspects of the z axis can be controlled using the `xlabel()`, `ylabel()`, `ztick()`, `zmtick()`, `zscale()`, and `ztitle()` options; see [\[G-3\] axis_options](#).

Use of legends with `by()`

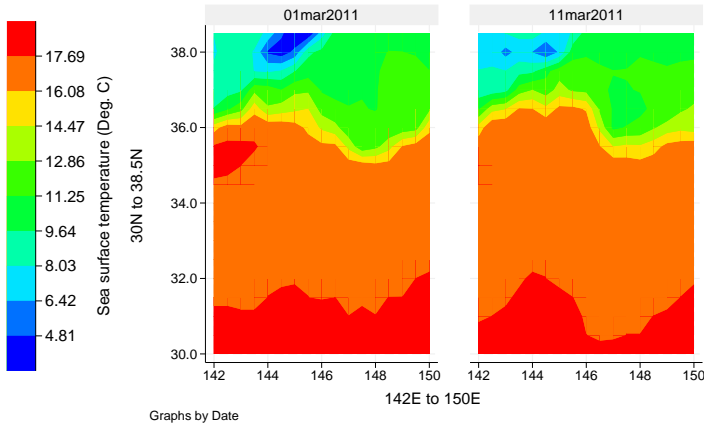
Legends are omitted by default when `by()` is specified. You can turn legends on by specifying `clegend(on)` within `by()`. It will show in the default location.

```
. use https://www.stata-press.com/data/r19/surface
    (NOAA sea surface temperature)
. twoway contour temperature longitude latitude, level(10)
    xlabel(format(%9.0f)) by(date, clegend(on))
```



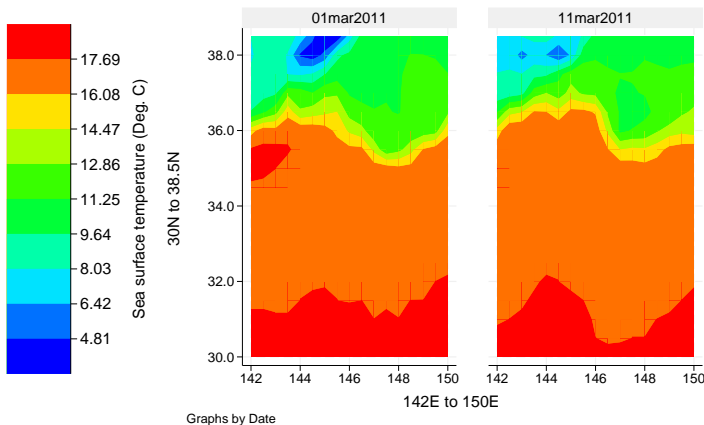
If you want to move the legend, consider the different options and their placement on the command line. *Location suboptions for use with clegend()* should be specified within the `by()` option, whereas *Content and appearance suboptions for use with clegend()* should be specified outside the `by()` option. For example, the `position()` option changes where the legend appears, so it would be specified within the `by()` option:

```
. twoway contour temperature longitude latitude, level(10)
  xlabel(,format(%9.0f)) by(date, clegend(on pos(9)))
```



If you want to also change the appearance of the legend, specify an additional `clegend()` option outside the `by()` option:

```
. twoway contour temperature longitude latitude, level(10)
  xlabel(,format(%9.0f)) clegend(on width(15)) by(date, clegend(on pos(9)))
```



If you specify the *location suboptions* outside the `by()` option, the location suboptions will be ignored.

Also see

[G-2] **graph twoway contour** — Two-way contour plot with area shading

[G-2] **graph twoway contourline** — Two-way contour-line plot

[G-3] **title_options** — Options for specifying titles

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