

grdimage

grdimage - Project grids or images and plot them on maps

Synopsis

```
grdimage grd_z | grd_r grd_g grd_b [ -Aout_img[=driver] ] [ -B[p|s]parameters ] [ -Ccpt ] [
-D[r] ] [ -E[i|dpi] ] -Jparameters [ -G[f|b]color ] [ -I[intensfile|intensity|modifiers] ] [ -Jz|-
Zparameters ] [ -K ] [ -M ] [ -N ] [ -O ] [ -P ] [ -Q ] [ -Rwest/east/south/north[/zmin/zmax][+r] ] [
-U[stamp] ] [ -V[level] ] [ -Xx_offset] [ -Yy_offset] [ -fflags ] [ -nflags ] [ -pflags ] [ -tr ]
```

Note: No space is allowed between the option flag and the associated arguments.

Description

grdimage reads one 2-D grid file and produces a gray-shaded (or colored) map by plotting rectangles centered on each grid node and assigning them a gray-shade (or color) based on the z-value. Alternatively, **grdimage** reads three 2-D grid files with the red, green, and blue components directly (all must be in the 0-255 range). Optionally, illumination may be added by providing a file with intensities in the (-1,+1) range. Values outside this range will be clipped. Such intensity files can be created from the grid using `grdgradient` and, optionally, modified by `grdmath` or `grdhisteq`. Yet as a third alternative available when GMT is build with GDAL support the *grd_z* file can be an image referenced or not (than see **-Dr**). In this case the images can be illuminated with the file provided via the **-I** option. Here if image has no coordinates those of the intensity file will be used.

When using map projections, the grid is first resampled on a new rectangular grid with the same dimensions. Higher resolution images can be obtained by using the **-E** option. To obtain the resampled value (and hence shade or color) of each map pixel, its location is inversely projected back onto the input grid after which a value is interpolated between the surrounding input grid values. By default bi-cubic interpolation is used. Aliasing is avoided by also forward projecting the input grid nodes. If two or more nodes are projected onto the same pixel, their average will dominate in the calculation of the pixel value. Interpolation and aliasing is controlled with the **-n** option.

The **-R** option can be used to select a map region larger or smaller than that implied by the extent of the grid.

A (color) PostScript file is output.

Required Arguments

grd_z | *grd_r* *grd_g* *grd_b*

2-D gridded data set (or red, green, blue grids) to be imaged (See GRID FILE FORMATS below.)

-J*parameters* ([more ...](#))

Select map projection.

Optional Arguments

-A*out_img*[=*driver*]

Save an image in a raster format instead of PostScript. Use extension .ppm for a Portable Pixel Map format. For GDAL-aware versions there are more choices: Append *out_img* to select the image file name and extension. If the extension is one of .bmp, .gif, .jpg, .png, or .tif then no driver information is required. For other output formats you must append the required GDAL driver. The *driver* is the driver code name used by GDAL; see your GDAL installation's documentation for available drivers. Notes: (1) If a tiff file (.tif) is selected then we will write a GeoTiff image if the GMT projection syntax translates into a PROJ4 syntax, otherwise a plain tiff file is produced. (2) Any vector elements will be lost.

-B[*p*]*s**parameters* ([more ...](#))

Set map boundary frame and axes attributes.

-C*cpt*

Name of the CPT (for *grd_z* only). Alternatively, supply the name of a GMT color master dynamic CPT [*rainbow*] to automatically determine a continuous CPT from the grid's z-range. If the dynamic CPT has a default range then that range will be imposed instead. Yet another option is to specify **-C***color1,color2[,color3,...]* to build a linear continuous CPT from those colors automatically. In this case *color1* etc can be a r/g/b triplet, a color name, or an HTML hexadecimal color (e.g. #aabbcc).

-D[*r*]

Specifies that the grid supplied is an image file to be read via GDAL. Obviously this option will work only with GMT versions built with GDAL support. The image can be indexed or true color (RGB) and can be an URL of a remotely located file. That is **-D** <http://www.somewhere.com/image.jpg> is a valid file syntax. Note, however, that to use it this way you must not be blocked by a proxy. If you are, chances are good that it can work by setting the environmental variable *http_proxy* with the value 'your_proxy:port'

Append **r** to use the region specified by **-R** to apply to the image. For example, if you have used **-Rd** then the image will be assigned the limits of a global domain. The interest of this mode is that you can project a raw image (an image without referencing coordinates).

-E[*i*]**[dp]**

Sets the resolution of the projected grid that will be created if a map projection other than Linear or Mercator was selected [100]. By default, the projected grid will be of the same size (rows and columns) as the input file. Specify **i** to use the PostScript image operator to interpolate the image at the device resolution.

-G[*f*]**[b]***color*

This option only applies when the resulting image otherwise would consist of only two colors: black (0) and white (255). If so, this option will instead use the image as a transparent mask and paint the mask (or its inverse, with **-Gb**) with the given color combination.

-I[*intensfile*]*intensity*[*modifiers*]

Gives the name of a grid file with intensities in the (-1,+1) range, or a constant intensity to apply everywhere; this simply affects the ambient light. If just **+** is given then we derive an intensity grid from the input data grid *grd_z* via a call to `grdgradient` using the arguments **-A-45** and **-Nt1** for that module. You can append **+azimuth** and ****+n*args** to override those values. If you want more specific intensities then run `grdgradient` separately first. [Default is no illumination].

-Jz**[Zparameters** ([more ...](#))

Set z-axis scaling; same syntax as **-Jx**.

-K ([more ...](#))

Do not finalize the PostScript plot.

-M

Force conversion to monochrome image using the (television) YIQ transformation. Cannot be used with **-Q**.

-N

Do not clip the image at the map boundary (only relevant for non-rectangular maps).

-O ([more ...](#))

Append to existing PostScript plot.

-P ([more ...](#))

Select “Portrait” plot orientation.

-Q

Make grid nodes with $z = \text{NaN}$ transparent, using the colormasking feature in PostScript Level 3 (the PS device must support PS Level 3).

-R*xmin/xmax/ymin/ymax***[+r][+uunit]** ([more ...](#))

Specify the region of interest.

For perspective view **p**, optionally append */zmin/zmax*. ([more ...](#)) You may ask for a larger *w/e/s/n* region to have more room between the image and the axes. A smaller region than specified in the grid file will result in a subset of the grid [Default is the region given by the grid file].

-U*[just]/dx/dy/[c|label]* ([more ...](#))

Draw GMT time stamp logo on plot.

-V*[level]* ([more ...](#))

Select verbosity level [c].

-X*[a|c|f|r][x-shift[u]]***-Y***[a|c|f|r][y-shift[u]]* ([more ...](#))

Shift plot origin.

-f*[i|o]colinfo* ([more ...](#))

Specify data types of input and/or output columns.

-n*[b|c|l|n][+a][+bBC][+c][+tthreshold]* ([more ...](#))

Select interpolation mode for grids.

-p*[x|y|z]azim[/elev[/zlevel]][+wlon0/lat0/z0][+vx0/y0]* ([more ...](#))

Select perspective view.

-t[*transp*] ([more ...](#))

Set PDF transparency level in percent.

-^ or just **-**

Print a short message about the syntax of the command, then exits (NOTE: on Windows just use **-**).

-+ or just **+**

Print an extensive usage (help) message, including the explanation of any module-specific option (but not the GMT common options), then exits.

-? or no arguments

Print a complete usage (help) message, including the explanation of all options, then exits.

Grid File Formats

By default GMT writes out grid as single precision floats in a COARDS-complaint netCDF file format. However, GMT is able to produce grid files in many other commonly used grid file formats and also facilitates so called “packing” of grids, writing out floating point data as 1- or 2-byte integers. ([more ...](#))

Imaging Grids With Nans

Be aware that if your input grid contains patches of NaNs, these patches can become larger as a consequence of the resampling that must take place with most map projections.

Because **grdimage** uses the PostScript colorimage operator, for most non-linear projections we must resample your grid onto an equidistant rectangular lattice. If you find that the NaN areas are not treated adequately, consider (a) use a linear projection, or (b) use [grdview](#) **-Ts** instead.

Consequences of grid resampling

Except for Cartesian cases, we need to resample your geographic grid onto an equidistant projected grid. In doing so various algorithms come into play that projects data from one lattice to another while avoiding anti-aliasing, leading to possible distortions. One expected effect of resampling with splines is the tendency for the new resampled grid to slightly exceed the global min/max limits of the original grid. If this is coupled with tight CPT limits you may

find that some map areas may show up with fore- or background color due to the resampling. In that case you have two options: (1) Modify your CPT to fit the resampled extrema (reported with **-V**) or (2) Impose clipping of resampled values so they do not exceed the input min/max values (add **+c** to your **-n** option).

Examples

For a quick-and-dirty illuminated color map of the data in the file `stuff.nc`, with the maximum map dimension limited to be 6 inches, try

```
gmt grdimage stuff.nc -JX6i+ -I+ > quick.ps
```

To gray-shade the file `hawaii_grav.nc` with shades given in `shades.cpt` on a Lambert map at 1.5 cm/degree along the standard parallels 18 and 24, and using 1 degree tickmarks:

```
gmt grdimage hawaii_grav.nc -Jl18/24/1.5c -Cshades.cpt -B1
```

To create an illuminated color PostScript plot of the gridded data set `image.nc`, using the intensities provided by the file `intens.nc`, and color levels in the file `colors.cpt`, with linear scaling at 10 inch/x-unit, tickmarks every 5 units:

```
gmt grdimage image.nc -Jx10i -Ccolors.cpt -Iintens.nc -B5 >
```

To create an false color PostScript plot from the three grid files `red.nc`, `green.nc`, and `blue.nc`, with linear scaling at 10 inch/x-unit, tickmarks every 5 units:

```
gmt grdimage red.nc green.nc blue.nc -Jx10i -B5 > rgbimage.
```

When GDAL support is built in: To create a sinusoidal projection of a remotely located Jessica Rabbit

```
gmt grdimage -JI15c -Rd -Dr \
  http://larryfire.files.wordpress.com/2009/07/untooned_j
  -P > jess.ps
```

See Also

[gmt](#), [gmt.conf](#), [grd2rgb](#), [grdcontour](#), [grdview](#), [grdgradient](#), [grdhisteq](#)