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Subject: Re: plot (x,y,z) triplets as a surface? When is regridding necessary ?

Posted by [Kristian Kjaer](#) on Sun, 14 Nov 1999 08:00:00 GMT

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David Fanning wrote:

- > I've been meaning to write an article about gridding
- > data for a SURFACE plot for about 5 years now. This
- > question finally pushed me over the edge. You can find
- > it here:
- > [http://www.dfanning.com/tips/grid\\_surface.html](http://www.dfanning.com/tips/grid_surface.html)

Nice, David.

You might want to include a few lines about when regridding is necessary, and when not.

Example:

We collect x-ray scattering data INT (nx x ny array) vs. angles x (nx-array) and y (ny-array). Then we can visualize the data by

```
IDL> contour INT,x,y ;or
```

```
IDL> surface INT,x,y
```

So far, so good. In fact, this also works with 2dimensional x and y arrays:

```
IDL> xx=x#(1.+y-y)
```

```
IDL> yy=(1.+x-x)#y
```

```
IDL> contour INT,xx,yy
```

Now we had to non-linearly transform the angles xx and yy to zz and ww (zz and ww reside in reciprocal space, if the truth be told).

For several years we were regridding the INT data, using trigrd, in order to get a regular grid in (z,w) space. This gave us INT\_regridded (nz x nw array) vs. z\_regridded (nz array) and w\_regridded (nw array).

Then we could visualize the data (in reciprocal space) by

```
IDL> contour INT_regridded,z_regridded,w_regridded
```

Only later did we discover that

```
IDL> contour INT,zz,ww
```

gave the desired plot without interpolation of the INT observations, and for much less cpu-time (back when that was a consideration).

In short: Even with non-rectangularly gridded data,

a) Regridding is not *\*always\** necessary !

b) When *\*is\** regridding necessary ?

BTW, in IDL3.6.1 there was a bug (somehow related to whether you refer to the centre or the corner of the pixel) such that, using trigrd, we ended up with the INT pattern displaced by one-half pixel. And, generally, interpolation should be avoided if at all possible.

- Kristian

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