Subject: Gridding options
Posted by Ben Tupper on Tue, 29 Aug 2000 07:00:00 GMT
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Hello,

I'm staring (again) at largish set of CTD casts from a recent cruise. The cast data is comprised of sample information from every 0.5 meters from the surface to the seafloor. The 20 or so casts are separated from each other by about 10-20km and are nearly colinear. I need to interpolate a 2d grid from these values. In the past I have used the techniques described to grid the data. I list them here in hopes that someone familiar with this kind of data can suggest alternatives.

1. Triangulation and TRIGRID, this method works quickly and preserves the different 'clines' (pycno-, halo- thermo-, ...) very well. Since the seafloor is very irregular, I spend a good deal of effort fiddling with masks and blanking the boundaries. This method also accentuates the noisiness of the data (median filtering of each cast prior to gridding helps.) Despite having to play twister with the boundary/masking stuff, this is the method we use right now.

2. MIN_CURVE_SURF, this method is fairly fast but the details are lost.

3. A home grown Inverse-Distance-To-A-Power method, this method is slow for large datasets and tends to produce a bull's eye pattern around isolated features (especially common in the biological data set.) (Sorry, JD, it does have loopity-loops. You can flick a worm into the air... but that doesn't mean it knows how to fly! I'm still trying to figure out what .....

```
**************************************
tt=total(a[(((dy=((di=lindgen(((n=nx<ny)),nx+ny-1)))/n))*(nx gt
ny?1:nx)+ $
          (nx gt ny?1:-1)*((dx=di mod n))*(nx-1))>0<(nx*ny-1)]* $
        (dy ge dx AND (dy-dx) lt nx>ny),1)
**************************************
```

means. Maybe I need to drink less/more coffee.)

4. KRIG_2D, this method is so slow (for the size of the data set) that I haven't had the patience to wait for the result. I know that recent version of SURFER (Golden Software) has introduced an improved KRIGING routine that will interpolate large grids quickly (I have seen it produce a grid in a matter of minutes from similar data... I have waited hours for a similar result from IDL.)

So, are there alternatives for gridding in IDL?

Thanks,

Ben
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