Subject: Re: matching 2 grids
Posted by Mark Hadfield on Thu, 09 Mar 2006 00:17:24 GMT
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Jenny wrote:
> Hi all,
>
> I have 2 sets of lat/lon pairs in different grids - grid1 and grid2,
> both in irregular shape and I've filled some zero numbers to make them
> regular. grid2 is a subset of grid1. I want to find the coordinates of
> x1,y1 in grid1 (lat1/lon1) which are closest to each of the nonzero
> lat2/lon2 paris in grid2.
>
> I made a programm with several loops, it is kind of did what I want,
> but it is very slow and the boundary is not tidy. my grid1 is 600*600,
> and I have 10 grid2 to process.
>
> Is there an IDL function that I could use in this case?

The key to solving a problems like this is to make use of any geometric structure in the grid (and here I mean the grid you're trying to locate yourself in, ie. grid1). How irregular is grid1? I presume it's not rectangular (ie. lon varies in one direction, lat in the other). Is it curvilinear? Ie, does it look like a rectangular grid that has been rotated and deformed? Or are the grid1 points just scattered with no particular relation to each other?

For a rectangular grid, you would have a pair of 1-D location problems of the sort that were discussed yesterday in this group under the title "Interpolating a regular grid".

For a curvilinear grid you have a 2-D location problem. As my message yesterday said, the Motley library has 1-D and 2-D location functions.

For a scattered set of points, I don't know. I suspect you could approach it by first constructing a Delaunay triangulation for grid1 (see function TRIANGULATE) and then performing a nearest-neighbour interpolation with GRIDDATA. Give each grid1 point a unique data value, then the interpolated value on the grid2 points is the value associated with the nearest grid1 point--something like that.

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