Subject: Re: GRIDDATA woes
Posted by Kenneth Bowman on Wed, 05 Mar 2008 14:14:03 GMT
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In article <MPG.223755c5d615d3ab98a2aa@news.frii.com>,
David Fanning <news@dfanning.com> wrote:

> Do you have a way of handling this situation? I mention
> this because in the perverse CCCMA climate model I am
> using, the longitude vector is evenly spaced, *except*
> for the two values at either end of the vector. (Don't
> ask me, I have no idea.) My "regularly spaced" interpolation
> vector blows up on me at either end.

I forgot to add that global spectral models, of which the CCCMA is an example, use a Gaussian grid in the latitudinal direction. This allows the use of Gaussian quadrature to compute the Legendre transforms that are essential to the way a spectral model works.

The Gaussian grid does not have points at the poles. Sometimes it is desirable to interpolate to a regular grid that does have points at the poles. In this case, I think the best approach is to treat the pole points as special. They can be calculated by *averaging* all of the points in the northernmost and southernmost rows of the Gaussian grid. That is, to estimate the value at 90 deg N, average the last row of points, which might be at 89.5 deg N. This makes good physical sense, because the northernmost row of points actually lie in a circle surrounding the pole.

If you chose your regular grid wisely (;-)), then the row of points closest to, but not at, the poles, will lie equatorward of the highest latitude points of the Gaussian grid.

If you need to interpolate to a row of points poleward of the highest latitude Gaussian points, then use your interpolated (averaged) value at the poles to extend the Gaussian grid to +/- 90 deg and do bilinear interpolation as usual.

If that isn't clear, I can draw some pictures.

Cheers, Ken