Subject: cosine weighting

Posted by Jennifer Genderson on Wed, 02 Feb 2011 00:52:25 GMT

I have global gridded surface temperature data. The data are monthly-means gridded on a 5x5 degree mesh. The matrix is size 612(rows) x 2592(columns). The first row is January 1958; the last row is December 2008.

For each row: The first 72 numbers correspond to data centered 87.5 degrees South: the first element centered at 2.5 E, the second 7.5 E ... the 72nd element at 357.5 E. Successive sets of 72 numbers correspond to data at 82.5 South, 77.5 South, and so on until 87.5 North.

I need to use cosine weighting, since grid boxes get smaller towards the poles. So each set of 72 numbers in each row needs to be multiplied by 87.5, then 82.5… etc. (converted to radians). Could I get some guidance on how to go about this? How to do this in a loop, or create a matrix with all the cosine weights in it?

Subject: Re: cosine weighting

Posted by Jeremy Bailin on Thu, 03 Feb 2011 03:37:58 GMT

I'd do something like:

```
latitudes = -87.5 + 5. * findgen(36)
latitudes_matrix = rebin(transpose(latitudes), 612, 2592, /sample)

matrix *= cos(latitudes_matrix * !dtor)
```