Subject: Re: GRIDDATA woes
Posted by wgallery on Mon, 03 Mar 2008 19:00:55 GMT
View Forum Message <> Reply to Message

On Mar 2, 9:57 pm, "ben.bighair" <ben.bigh...@gmail.com> wrote:
> Hi All,
>
> I have been having a problem similar to this one...http://tinyurl.com/2spe3v
>
> The solution to the problem in the above posting was to use GRID_INPUT
> to filter and reorder the data *before* calling QHULL and GRIDDATA.
> That doesn't seem to be the case this time as I faithfully perform
> these steps. However, the error message indicates that it is
> something similar is going on.
>
> The big picture is that I have an irregular grid (actually it is
> regular in longitude but irregular in latitude) that I want to
> interpolate onto a regular grid. I have assembled a mockup of the
> situation in this procedure...http://www.tidewater.net/~pemaquid/counterclockw ise_fail.pro
>
> The error message when the above is run is ...
>
> SeaDAS> z=counterclockwise_fail()
> % GRIDDATA: Triangle 5 not in counterclockwise order.
> % GRIDDATA: Triangle 6 not in counterclockwise order.
> % GRIDDATA: Triangle 7 not in counterclockwise order.
> % GRIDDATA: Triangle 17 not in counterclockwise order.
> % GRIDDATA: Triangle 30 not in counterclockwise order.
> % GRIDDATA: Triangle 31 not in counterclockwise order.
> % GRIDDATA: Triangle 34 not in counterclockwise order.
> % GRIDDATA: Triangle 40 not in counterclockwise order.
> % GRIDDATA: Triangle 42 not in counterclockwise order.
> % GRIDDATA: Triangle 49 not in counterclockwise order.
>
> I have tried changing the values in the code to double. That results
> in a similar set of errors but for a different set of triangles.
>
> % GRIDDATA: Triangle 4 not in counterclockwise order.
> % GRIDDATA: Triangle 5 not in counterclockwise order.
> % GRIDDATA: Triangle 6 not in counterclockwise order.
> % GRIDDATA: Triangle 16 not in counterclockwise order.
> % GRIDDATA: Triangle 33 not in counterclockwise order.
> % GRIDDATA: Triangle 35 not in counterclockwise order.
> % GRIDDATA: Triangle 36 not in counterclockwise order.
> % GRIDDATA: Triangle 39 not in counterclockwise order.
> % GRIDDATA: Triangle 42 not in counterclockwise order.
> % GRIDDATA: Triangle 45 not in counterclockwise order.
>

> Bah!
>
> I have seen a number of messages on the newsgroup about interpolation
> from an irregular grid to a regular one. None appear to address the
> issues around gridding on a sphere. I don't think I can use anything
> as simple as INTERPOLATE since the input array is sampled at irregular
> intervals.
>
> So how is this kind of interpolation supposed to be done?
>
> Thanks!
> Ben
>
> ** Structure !VERSION, 8 tags, length=76, data length=76:
> ARCH STRING 'ppc'
> OS STRING 'darwin'
> OS_FAMILY STRING 'unix'
> OS_NAME STRING 'Mac OS X'
> RELEASE STRING '6.3'
> BUILD_DATE STRING 'Mar 23 2006'
> MEMORY_BITS INT 32
> FILE_OFFSET_BITS
> INT 64

Ben,

1. There is an error in your routine to generate longitude.

```
;;lon = FINDGEN(nLon)/(nLon-1) * PS[0] + lonRange[0]
lon = fINDGEN(nLon) * PS[0] + lonRange[0]
```

Otherwise, lon has only two unique points

2. Try using the first form of grid_data: without /sphere:

```
;filter and reorder the data
;;GRID_INPUT, lon, lat, zValue, xyz, newZ, /SPHERE, /DEGREES, EPSILON
= PS[0]/2.0
GRID_INPUT, lon, lat, zValue, x1, y1, newZ, /DEGREES, EPSILON = PS[0]/
2.0

;build the triangulation
;;QHULL, xyz[0,*], xyz[1,*], tr, /DELAUNAY
QHULL, x1, y1, tr, /DELAUNAY

;interpolate
;;Z = GRIDDATA(xyz[0,*], xyz[1,*], newZ, /SPHERE,/DEGREES, $
Z = GRIDDATA(x1, y1, newZ, /SPHERE,/DEGREES, $
```

```
   METHOD = "NaturalNeighbor", MISSING = !VALUES.F_NAN, $
   XOUT = oLon, YOUT = oLat, TRIANGLES = tr )
```

You will no longer get the dreaded "Triangle 0 not in counterclockwise order" error.

Cheers,

Bill Gallery
