
Subject: Random problem with Delaunay triangulation
Posted by [wgallery](#) on Tue, 11 Sep 2007 18:39:43 GMT
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I am interpolating satellite data (lat, lon, temperature) from a
irregular grid to a regular lat, lon grid using:

```
pro get_gridded_temp_image, ....  
.  
.  
.  
grid_lat=findgen(31)*2.0+30.0 ;30 to 90 deg @2 deg  
grid_lon=findgen(181)*2.0 ;0 to 360 deg @2 deg  
qhull, x, y, tri, /delaunay, sphere = s  
temp_grid = griddata( x, y, z, /sphere, /deg, $  
                    /grid, xout = grid_lon, yout = grid_lat, $  
                    method = 'NaturalNeighbor', $  
                    triangles=tri, $  
                    missing = !values.f_nan)
```

where x,y are longitude, latitude, and z is temperature (patterned
after Example 5 in the IDL help for griddata.pro)

Usually this procedure works fine, over thousands of different cases.
However, today I tried it and got the error message:

GRIDDATA: Triangle 652 not in counterclockwise order.
Execution halted at: GET_GRIDDED_TEMP_IMAGE 184

The ranges of the input variables are (mve is a routine that prints
the stats on a variable):

```
IDL> mve,x  
Variable type      mean    std dev   minimum  
maximum  n_elements NaN or I  
Float      178.55    102.79    0.070000  
358.05 (529) = 529      0  
IDL> mve,y  
Variable type      mean    std dev   minimum  
maximum  n_elements NaN or I  
Float      54.660    19.100    20.340  
82.930 (529) = 529      0  
IDL> mve,z  
Variable type      mean    std dev   minimum  
maximum  n_elements NaN or I  
Float      214.63    9.7416    192.56  
233.31 (529) = 529      0  
IDL> mve, tri
```

Variable type	mean	std dev	minimum
maximum n_elements	NaN or Inf		
Longword integer	249.43	149.12	0.00000
528.00 (3,966) = 2898	0		

Note: I tried the routine sph_scatter which is also advertised to regrid on a sphere. However, the interpolated values are way off scale:

```
IDL> r=sph_scatter(x,y,z,bounds=[0,30.0,360,90],gs=[2,2],bout=bout)
IDL> mve,r
```

Variable type	mean	std dev	minimum
maximum n_elements	NaN or Inf		
Double float	208.09	96.313	-480.31
869.93 (181,31) = 5611	0		

Any suggestions on how to trouble shoot, fix?

Thanks,

Bill Gallery
