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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\_scat which is also advertised to regrid on a sphere. However, the interpolated values are way off scale:

```
IDL> r=sph_scat(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

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