Subject: floating underflow errors
Posted by patrick on Thu, 11 Apr 2002 00:15:41 GMT
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Greetings All-

I've read through the fairly extensive history of posts regarding floating underflow arithmetic error messages on the group and wanted to see if anyone can suggest a fix for the problems I'm having. My code is a simple interpolation to create a 2d contour of oceanographic data values. Strangely enough I haven't always had the floating underflow message popping up in my code but the data can be variable depending on what coastal area the data is collected in. I believe the problem is occurring either because there are actual zeros appearing in the data files or as a result of the simple interpolation function I'm using. I would ignore the message other than the code sometimes crashes. Below is an example of the routine I'm running on a number of fields and adjusting the scale appropriately. My question is can I work around the problem by using a combination of 1) notification about a floating underflow occurrence by using the !EXCEPT system variable, and 2) applying the WHERE function to replace occurrences of 0 with a NaN or some other null value that won't otherwise affect the outcome of my contour plot?

The data are organized as ascii arrays that interpolate between two locations at the same depth for various fields.

Any suggestions are greatly appreciated,

Regards,

Patrick

code:

```
if (event.index eq 1) then begin


x1 = reform((*pstate).profiledata(4,*,0))  ; depth at 1
y1 = reform((*pstate).profiledata(4,*,1))  ; depth at 2

x2 = reform((*pstate).profiledata(6,*,0))  ; density at 1 f(x1)
y2 = reform((*pstate).profiledata(6,*,1))  ; density at 2 f(y1)



x2=x2[sort(x1)]
y2=y2[sort(y1)]
```

```
x1=x1[sort(x1)]
y1=y1[sort(y1)]

;print,(size(x1))[1],(size(y1))[1]
;print, x1, y1

x1=x1[0:(size(x1))[1]-1]
y1=y1[0:5684]
x2=x2[0:(size(x2))[1]-1]
y2=y2[0:5684]


; interpolate 1st data onto 2nd data alt grid
x2i = interpol(x2, x1, y1) ; density at 1 f(y1)
;x2i(0) = ABS(x2i(0))
badnum=fltarr(1)
badnum = FINITE(x2i, /INFINITY)
ndepth=(size(x2i))[1]
nsep=100

print,max(x2i),min(x2i),max(y2),min(y2)

dens=DBLARR(ndepth,nsep)
for d=0,ndepth-1 do begin
  for s=0,nsep-1 do begin
    dens[d,s]=x2i[d]+(y2[d]-x2i[d])*s/(nsep-1)
  endfor
endfor

print,min(dens),max(dens)

sep=DINDGEN(nsep)/(nsep-1)
dep=DINDGEN(ndepth)/(ndepth-1)*(MAX(y1)-MIN(y1))+MIN(y1)

nlevels=10
 levels=DINDGEN(nlevels)/(nlevels-1)*(max(dens)-min(dens))+mi n(dens)
labels=INTARR(nlevels)+1


contour,transpose(dens),sep,dep ,YRANGE=[max(y1),min(y1)], $
  levels = [20.5,21.5,21.6, 21.7, $
 21.8,21.9,22.0, 22.1] ,c_labels=labels, $
 c_annotation = ['3.0','3.5','3.6', '3.7', $
 '4.0','4.1','4.3', '4.6'],XTITLE = 'Space', YTITLE = 'Depth (m)', $
 c_colors=[60,120,250], TITLE = 'Density (sigma-t)'


endif
```