Subject: IDL puzzle
Posted by wolff on Sat, 20 Nov 1993 17:24:23 GMT
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I have an IDL puzzle for those interested.....

Suppose that you have data located via lat/lon, and want to average the data into a larger grid. For example, compute the average rain rate in N [deg] x N [deg] boxes over the area of the Amazon Basin given data from a network of gauges.

The data is stored in the following arrays:

```
x = site_lat  = fltarr(1000)
y = site_lon  = fltarr(1000)
z = site_rate = fltarr(1000)
```

In IDL, an easy, but incredibly slow way to do this would be in a loop such as the following (other variables added for clarity):

```
grid_size = 0.5

lat1 = -28
lat2 = -18
lon1 = -55
lon2 = -40

lon_pts = 0.
lat_pts = 0.
new_pts = 0

lon_pts = float(lon2-lon1)/grid_size
lat_pts = float(lat2-lat1)/grid_size
new_pts = lon_pts*lat_pts

   count_0 = intarr(new_pts) ; # of non-zero rainrates reported
   count = intarr(new_pts)  ; Total number of rainrates reported
   sum   = fltarr(new_pts)  ; Sum of rainrate reports
   cavg  = fltarr(new_pts)  ; Conditional average (Avg Rain when raining)
   uavg  = fltarr(new_pts)  ; Unconditional average (include 0's in avg)

ipts = 0
i=0.
j=0.
k=0
```

```
 print,'Computing the rain averages over the new grid.....'
 for i=float(lon1), float(lon2-grid_size), grid_size do begin
  print,i
  for j=float(lat1), float(lat2-grid_size), grid_size do begin
   for k=0,num_sites-1 do begin
    xx = x(k)
    yy = y(k)
    zz = z(k)
    if( (xx ge i  and  xx lt i+grid_size) and $
    (yy ge j  and  yy lt j+grid_size) ) then begin

     if(zz lt flagged_data) then begin
      sum(ipts) = sum(ipts) + zz
      count(ipts) = count(ipts) + 1
         if(zz lt 0.1) then count_0(ipts) = count_0(ipts) + 1
     endif
        endif
   endfor
   ipts = ipts + 1
    endfor
 endfor
```

I suppose there is a much faster way to do this. Using the where function?
I am somewhat new to IDL so would appreciate any tricks you may know of
to speed things up.

Thanks,

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