Subject: Finding distance with longitude and latitude
Posted by gpeterso on Sun, 14 Apr 2013 23:22:44 GMT
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Hey I am wondering if anyone could look at my code and verify that I am heading in the right direction. Here is a summary of my project thus far. I have a contour plot of elevation points of a known latitude and longitude section. Next I made contour profiles of desired locations on the contour map, explained here:
http://www.idlcoyote.com/ip_tips/image_profile.html

Now I am trying to find the distance between longitude and latitude points using the vincenty formula form here: http://en.wikipedia.org/wiki/Great-circle_distance. I have completed this and I am getting logical answers I am just wondering if it is accurate or a correct.

```
Pro ariel


openr, lun, 'arial.txt',/get_lun

data=dindgen(824,914)
readf, lun, data
close,lun



                ; CONTOURING ARIEL

s=Size(data,/dimensions)
lons=scale_vector(dindgen(s[0]), 270, 360)
lats=scale_vector(dindgen(s[1]), 0, -90)



nlevels = 850
step = (Max(data) - Min(data)) / nlevels
levels = IndGen(nlevels) * step + Min(data)

device, decomposed=0
loadct, 1



window, 1, retain=2


;contour, data, lons, lats, background=cgcolor('white'), color=cgcolor('black'), xstyle=1, ystyle=1,
```

```
title='Ariel', ytitle='Latitude', xtitle='Longitude', levels=levels


; obtaining the x1,x2,y1,y2 values needed for interpolation and contour profile

 mousebutton=!mouse.button & !mouse.button=0
print,'right click to quit'
while !mouse.button ne 4 do begin

   wset,1



 print,'click on the starting point.'
   cursor,x1,y1, 3,/data
    if  x1 gt s(0) || y1 gt s(1) then begin
     print,'first point is off the image.'
      goto,skip
  endif



 print,'click on the ending point.'
   cursor,x2,y2,3,/data
   if x2 gt s(0) || y2 gt s(1) then begin
     print,'second point is off the image.'
      goto,skip
   endif




     wset,1
 plots,[x1,x2],[y1,y2], color=150



              ;MAKING IMAGE PROFILES

window, 2, retain=2
 ;npoints= ABS(x2-x1+1) >  ABS(y2-y1+1)

npoints=150

xloc= x1+(x2-x1)*findgen(npoints)/(npoints-1)
yloc= y1+(y2-y1)*findgen(npoints)/(npoints-1)
```

```
profile=interpolate(data, xloc, yloc)

plot, profile



            ;CALCULATING THE DISTANCE

lond1=lons[x1]
lond2=lons[x2]
latd1=lats[y1]
latd2=lats[y2]

lon1=lond1*!DTOR            ; converting to radians
lon2=lond2*!DTOR
lat1=latd1*!DTOR
lat2=latd2*!DTOR


dlon=abs(lon2-lon1)
dlat=ABS(lat2-lat1)
r=578.9
; vincenty formula
a=sqrt((cos(lat2)*sin(dlon))^2 +  (cos(lat1)*sin(lat2)-sin(lat1)*cos(lat2)*cos(dlon))^2)/(sin(
lat1)*sin(lat2)+cos(lat1)*cos(lat2)*cos(dlat))

c= atan(a)
d=r*c

print, d




wset,1



skip:
endwhile


; user  quites
!mouse.button=mousebutton

stop
```

END

Also I am wondering if anyone has any advice on how use my new distance value and plot it against my contour profile. Right now my x axis for my contour profile is just the number of npoints I used, which is 150 but I would like it to represent the distance.
