
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
```

```
lon1=lons[x1]
```

```
lon2=lons[x2]
```

```
latd1=lats[y1]
```

```
latd2=lats[y2]
```

```
lon1=lon1*!DTOR ; converting to radians
```

```
lon2=lon2*!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.
