Subject: Re: What is the problem ?
Posted by Chris[6] on Wed, 28 Oct 2009 06:58:05 GMT
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On Oct 27, 8:28 pm, Ruby <wuqiao...@gmail.com> wrote:
> I wrote a simple program to caculate the distance between two location
> (lon1,lat1), (lon2,lat2)
>
> function earth_dis ,lon1,lon2,lat1,lat2
>
> b1 = !pi*lat1/180.0
> b2 = !pi*lat2/180.0
> a1 = !pi*lon1/180.0
> a2 = !pi*lon2/180.0
>
> dis = 6378.1*acos(cos(b1)*cos(b2)*cos(a1-a2)+sin(b1)*sin(b2))
>
> RETURN,dis
> END
>
> But When I tried to test the program, the results turned to be like
> IDL> print,earth_dis(4.0,4.0,4.0,4.0)
> -NaN
> IDL> print,earth_dis(8.0,8.0,8.0,8.0)
> 2.20215
>
> In both cases, the result should be straightforwardly equal 0. Then
> what is the problem with my program or IDL ?

Check out the wikipedia entry on great circle distances:
http://en.wikipedia.org/wiki/Great-circle_distance

The formula you use doesn't work well on a computer with the distance is small (roundoff errors become large). They reference a better formula. Alternatively, use the GCIRC function in the IDL Astronomy user's library.

Chris