
Subject: Re: Nautical Miles to Lat/Lon Degrees
Posted by [Charlie Snedaker](#) on Sat, 11 Sep 1999 07:00:00 GMT
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David,

A nautical mile is, by definition, 1/60 th of a degree of latitude (I can only give you a reference to Webster's unabridged dictionary as most of my technical references are at work). The only problem comes when converting from nautical miles to degrees of longitude since that will vary according to the latitude. The relations then are

$$\text{deg_latitude} = 1/60 * \text{nm_distance_lat}$$
$$\text{deg_longitude} = (1/60) * \text{nm_distance_long} / \text{COS}(\text{latitude} * \text{!DTOR})$$

The longitude relationship has a singularity at +/- 90 degrees since at the North or South poles an arbitrarily small change in position can cause a large change in longitude. I would think trapping that condition and setting the conversion to 180 degrees would be better than letting it blow up.

Of course, if the distance of interest does not lie along a parallel of latitude or a meridian of longitude then you have to decompose the distance into a 'latitudinal' distance and 'longitudinal' distance before applying the above formulas. Lets say the distance of interest makes an angle theta with respect to a parallel of latitude. Then just decompose the distance via

$$\text{nm_distance_lat} = \text{nm_distance} * \text{SIN}(\text{theta} * \text{!DTOR})$$
$$\text{nm_distance_long} = \text{nm_distance} * \text{COS}(\text{theta} * \text{!DTOR}) .$$

Charlie

David Fanning wrote:

> Hi Folks,
>
> Does anyone know off-hand the formula for converting nautical
> miles to degrees of latitude and longitude for a given
> latitude and longitude? Pointers to appropriate reference
> materials is also appreciated.
>
> Thanks,
>
> David
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> --
> David Fanning, Ph.D.

- > Fanning Software Consulting
 - > Phone: 970-221-0438 E-Mail: davidf@dfanning.com
 - > Coyote's Guide to IDL Programming: <http://www.dfanning.com/>
 - > Toll-Free IDL Book Orders: 1-888-461-0155
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