Subject: Nautical Miles to Lat/Lon Degrees
Posted by davidf on Thu, 09 Sep 1999 07:00:00 GMT
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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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Subject: Re: Nautical Miles to Lat/Lon Degrees
Posted by Struan Gray on Fri, 10 Sep 1999 07:00:00 GMT
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William Thompson, thompson@orpheus.nascom.nasa.gov writes:

> http://physics.nist.gov/cuu/Units/outside.html

I'd be the first to agree that my dim recollection of a sailing navigation course I took twenty years ago isn't exactly an NIST-traceable standard. It's nice to know that the old grey matter got close enough. Thanks for the ref.

Struan

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

deg_latitude = 1/60 * nm_distance_lat
deg_longitude = (1/60) *nm_distance_long / COS(latitude*!DTOR)

The longitude relationshop 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

nm_distance_lat = nm_distance * SIN(theta * !DTOR)
nm_distance_long = nm_distance * COS(theta * !DTOR) .

Charlie

David Fanning wrote:

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> miles to degrees of latitude and longitude for a given
> latitude and longitude? Pointers to appropriate reference
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> Thanks,
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> David
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