Subject: Re: Converting map altitude coordinates (Z)
Posted by mankoff on Mon, 07 Feb 2011 16:01:20 GMT

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On Feb 5, 4:37 pm, David Fanning <n...@dfanning.com> wrote:
> mankoff writes:
>> I can use the MAP_PROJ routines to convert a lat/lon vector from one
>> coordinate system (WGS84) to another (IDL Cylindrical). But if I have
>> a 3rd vector of altitude, how do I convert this?
>
>> The coordinates are currently WGS84 and the altitude is -28 m over the
>> ocean, so I think this is a spheroid issue, and converting to a
>> different system should give 0 m over the ocean. I could just add 28
>> to everything, but I presume there is a more 'official' method.
>
> I don't know the answer to this question, exactly,
> but I do thing your thinking (or maybe only your
> explanation) is a bit fuzzy. WGS84 is a datum, not
> a map projection. (A map projection consists of a
> datum and a data coordinate system.) The MAP_PROJ
> routines will convert from one map projection to
> another, and I presume if there is a datum transformation
> (for example, from WGS84 to a spherical datum) they
> might handle some of that for you, but it isn't
> exposed to you.
>
> I find it a little hard to know what "altitude" would
> mean in terms of a datum transformation. What is the
> altitude measured from? Is it the height above the
> datum, or the height above the geoid (which is different
> from the datum and typically represents the mean sea
> level). You would have to know, I would think, to make
> sense of this question.
>
> If you are looking for a good book to explain all this,
> I *highly* recommend Datums and Map Projections, 2nd Ed.,
> by Jonathan Iliffe and Roger Lott. Very clear, very
> thorough treatment of a confusing and difficult subject.
>
> Cheers,
>
> David
>
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming:http://www.idlcoyote.com/
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Hi David,

Thanks for the clarification and suggested reading. Yes my thinking is a bit fuzzy. I've been doing mapping work for several years now but there is *always* another layer of complexity to unravel.

Each data point has an elevation (ellipsoid height) and a geographic lat and lon. This isn't helpful as you mention datum and geoid, but not ellipsoid. I think the ellipsoid is probably a simple geoid model? Except you state that geoid is mean sea level, in which case I shouldn't have values of -28 above this, so perhaps ellipsoid isn't geoid.

Any hints how to convert from ellipsoid to something where local sea level is 0 m?

Thanks,

 -k.