

- 1) Use the VDATUM software (download or run online, both available from <http://vdatum.noaa.gov>), to complete the following table. Note that longitudes are West, entered as negative numbers, and you don't enter the degrees, seconds, or minutes specifiers (° ' ") if you use DMS notation. Also note that in some browsers, and some times, the online version doesn't work, giving you 99999 or similar values for the outputs. The download version uses the Java runtime environment, and works on almost all macs, linux, and windows computers I've tested.

NAD27				NAD83(2011)			
Pnt	State	latitude	longitude	elevation (m)	latitude	longitude	elevation (m)
2	Minnesota	45°00'00"	-95°00'00"	200	45°59'59.8684"	-95°00'01.0170"	200.169
4	Texas	30°15'00"	-97°45'00"	200			
6	Colorado	38°00'00"	-107°45'00"	3000			
8	N. Carolina	35°40'00"	-82°30'00"	500			

- 2) Use the the VDATUM software to calculate the NAVD88 orthometric height change in centimeters for the listed NAD83(2011) coordinates when switching from the Geoid12A source to geoids 2009, and 1996. Set the horizontal coordinates to NAD83(96/2007/2011/ HARN) for both input and output, the vertical reference to NAVD88 in both input and output, and activate and change the geoid option from the input to the output as needed.

Pnt	State	latitude	longitude	geoid12A elevation (m)	Δheight (cm), to geoid09	Δheight (cm), to geoid99	Δheight (cm), to geoid96
1	Calif.	32°40'00"	-117°00'00"	200	0	4.5	6.1
3	Washington	48°30'00"	-122°00'00"	200			
5	Maine	47°00'00"	-69°00'00"	200			
7	Florida	25°00'00"	-81°30'00"	1			

- 3) What is the height "offset" between the NAD83(96/2007/2011/HARN) ellipsoid and the WGS84/ITRF2008 ellipsoid for the California, Washington, Maine, and Florida points in the table for question 2 above, that is, the height difference for a zero height in the NAVD88/ NAD83(96/2007/2011) to the ITRF2008/WGS84 system?

Use the VDATUM software to convert the zero NAVD88 surface height of the NAD83(96/2007/2011) datum to the WGS84/ITRF2008 surface heights. Compare that to the Geoid12B geoid height (N) calculated from the NOAA/NGS tool found at <http://>

www.ngs.noaa.gov/cgi-bin/GEOID_STUFF/geoid12B_prompt1.prl, which are described in the page <http://www.ngs.noaa.gov/GEOID/GEOID12B/>