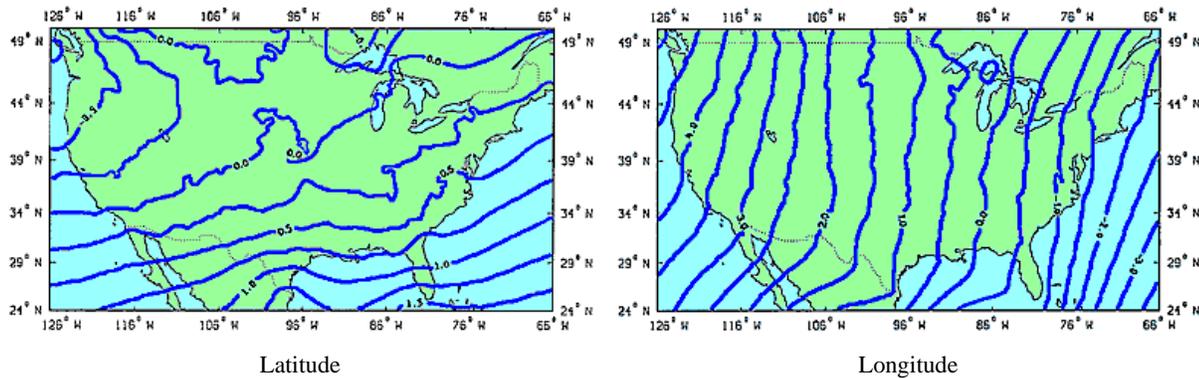


NADCON - North American Datum Conversion Utility

NAD 83 - NAD 27 Datum Shifts in Seconds of Arc



NADCON

The readjustment of the North American Datum of 1927 (NAD 27), Old Hawaiian Datum and Puerto Rico Datum to the North American Datum of 1983 (NAD 83 (1986)) in July 1986 was both a change in reference ellipsoid and a "clean up" of nearly 200 years of surveying data held by NGS. Based on this readjustment and redefinition, positions of points can change between 10 - 100 meters, in the conterminous United States, more than 200 meters in Alaska, Puerto Rico and the Virgin Island and in excess of 400 meters in Hawaii. Consequently, the shift between the various datums are not uniform across the United States and there is no single value that can be applied to latitudes or to longitudes based on old datums to convert them to NAD 83. NADCON was developed in order to facilitate conversion between the datums. The grids used by the program are based on more than 150,000 horizontal control points whose coordinates reside in NGS' data base, and provide transformed positions based on the shifts of the control nearest to the input position.

Advances in the accuracies now obtainable in geodetic surveys, specifically through use of differential GPS, has allowed for the creation of state High Precision Geodetic Networks (HPGNs), also referred to as High Accuracy Reference Networks (HARNs) throughout the country. NAD 83 coordinates based on the HPGN/HARN surveys changed approximately 0.2 to 1.0 meter relative to the original NAD 83 (1986) adjustment. As these high accuracy networks have been completed, the horizontal geodetic network of each state has been re-adjusted to be consistent with its network of A- and B-order control, thus creating a need for grids that allow for the transformation from the NAD 83(86) adjustment to the new adjusted values. These grids carry the designation 'HPGN' to distinguish them from the grids created from the original NAD 83(86) adjustment.

The accuracy of transformations between NAD 27 and NAD 83 (1986) are typically 12-18 cm and 5-6 cm between NAD 83 (1986) and HPGN.

NADCON is the [Federal standard](#) for NAD 27 to NAD 83 datum transformations.

- [NADCON Documentation](#)
- [Download the NADCON program and Data Grids for PC execution.](#)
- [Interactively compute a datum shift between NAD 27 and NAD 83.](#)
- [Interactively compute a datum shift between NAD 83 and a HPGN.](#)
- Also available on-line: [NADCON - The Application of Minimum-Curvature-Derived Surfaces in the Transformation of Positional Data From the North American Datum of 1927 to the North American Datum of 1983 - NOAA TM NOS NGS 50](#)
- NOAA's Coastal Services Center offers a [windows utility](#) that does NADCON conversions using shapefiles as input and output.
- See the text version of an [article](#) about NADCON that appeared in the *Professional Surveyor* magazine, February 2004 Volume 24, Number 2

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