



GEOTRANS (Geographic Translator)

U.S. ARMY CORPS OF ENGINEERS

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Description and Background

The National Geospatial-Intelligence Agency's (NGA) MSP GEOTRANS (Geographic Translator) is an application program which allows users to easily convert geographic coordinates among a wide variety of coordinate systems, map projections and datums. GEOTRANS runs in Microsoft Windows, LINUX and UNIX environments. The translator's user interface is similar to that of a calculator. To convert a set of coordinates, select the coordinate system or map projection, the datum, in which the user's coordinates are defined, then enter the source coordinates, select the coordinate system or map projection, and the datum, to which the coordinates are to be converted, and click on the 'Convert' button. The resulting coordinates will be displayed. Because the GEOTRANS application stores one's previous selections, the user can convert additional coordinate sets from the same source by just entering the new coordinates and clicking the 'Convert' button. The user can change any of the coordinate system, map projection, or datum selections at any time. Currently, there are twenty-five different coordinate systems, map projections, grids, coding schemes and over 200 different datums that are supported. GEOTRANS can also be used to efficiently convert large numbers of coordinates contained in either text files (.txt) or comma-separated values (.csv). The file format is very simple: a multiline file header defines the coordinate system or map projection, and datum, of the coordinates contained in the file. Following the header, each line contains a single set of coordinates, separated by commas. Using the GEOTRANS file processing interface, the user can select an existing file of coordinates to be converted, define the coordinate system or map projection, and the datum, to which one wants to convert the coordinates, and specify the name and location of the output file that is to be created. GEOTRANS then converts the input file and creates the output file as a single operation.

Key Capabilities

The underlying mathematical functions that perform the calculations are highly reusable software modules. Coding and documentation conforms to reuse guidelines developed by the Army Reuse Center. Users either type input coordinates into the GEOTRANS GUI or process coordinates in an ASCII file. GEOTRANS does one-step conversions to and from any NGA-supported datum and coordinate systems. GEOTRANS performs datum transformations primarily using the Molodensky method and NGA datum shift parameters. Near the poles GEOTRANS uses the full three-parameter transformation. In addition, GEOTRANS supports the seven-parameter method between WGS 84 and either European 1950 (EUR-M) or Great Britain 1936 (OGB-M). It uses a special algorithm to convert between WGS 72 and WGS 84 and transforms between ellipsoid height and elevation using the EGM96 model.

Current Status

Currently, NGA continues to update GEOTRANS, which is now available to U.S. citizens at no cost. GEOTRANS is nonproprietary and free of copyright restrictions. To download GEOTRANS see: <http://earth-info.nga.mil/GandG/geotrans/index.html>.

A full user's manual can be found in the directory `./geotrans3/docs/` after downloading and unzipping the file. The manual describes how to use GEOTRANS to convert coordinates both interactively and via file processing.

Point of Contact

For more information on GEOTRANS, please contact the NGA MSP Program helpline (858) 592-5677 or email msphelp@baesystems.com. AGC's GEOTRANS POC is Ray Caputo, raymond.caputo@us.army.mil, Commercial (703) 428-6784; DSN 364-6784.

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