

**Base 9 Geodetic Consulting Services
Dave Doyle
NGS Chief Geodetic Surveyor (Retired)**



GNSS-DERIVED HEIGHTS

This program discusses the various types of heights, their relationships and how accurately each type can be independently determined. It further details methods for using Global Navigation Satellite System (GNSS) observations and the proper use of hybrid geoid models published by the National Geodetic Survey (NGS) to derive orthometric heights related to the North American Vertical Datum of 1988 (NAVD 88) and the other island datums of the United States. The presentation reviews the use of tools available from NGS such as the On Line Positioning User Service (OPUS) and how effectively NAVD 88 heights can be determined. It also covers DSWorld and its benefits to reconnaissance and updating information in the National Spatial Reference System (NSRS). The program further discusses ways in which surveyors can provide NGS with data for the improvement of future geoid models and vertical datum transformations tools.