

### **Transformations move data between different projections**

For example, GPS coordinates are in WGS-84 but most GIS data is referenced to another datum such as NAD83, thus the need for a transformation.

### **Why are datums and moving between them so confusing?**

Various conventions and lack of standard terms between various software packages makes this topic more challenging than need be.

1. Despite "to" in the name, a transformation such as 'NAD\_1983\_to\_WGS\_1984' transformation moves data in either direction. This is because the name really refers to the "math" or parameters used to move between the two. The software knows which datum it is moving to and from and applies positive or negative values of the numerical parameters accordingly.

2. Sometimes, 'NAD\_1983\_to\_WGS\_1984' is referred to as 'WGS\_1984\_to\_NAD\_1983' - even though the result is the same as per the above line.

3. As datums are updated (which happens more often than you'd think!), the transforms and software should be updated accordingly. This isn't always the case.

### Online tools

As datums are updated, the transformations are updated. There are a number of online programs to move sets of coordinates from one reference system to another.

#### 1. NADCON

This NGS tool transforms positions between NAD27, NAD83(1986), or NAD83(HARN). Note, it only works for horizontal positions and not elevation data.

Link to [NGS NADCON tool](#)

#### 2. Horizontal Time-Dependent Positioning (HTDP)

This interactive NGS tool transforms positions between different epochs of ITRF, and between and epoch of ITRF and NAD83(CORS96).

Link to [NGS HTDP tool](#)

### **3. INVERSE and FORWARD**

More [NGS conversion tools](#)

### **4. New tool being developed to move between epochs of NAD83**

NGS and Richard Snay expect GeoCONN to be released in early 2013