A. Changes in 2012

Previously, the NGS "Old" ITRF00 coordinates exactly matched Trimble CBS "Offline" ITRF00 coordinates. Both referenced to ITRF00, values could be compared directly, that is, no transformations were necessary.

In October 2012, the "Offline" coordinates were removed from the Trimble CBS. With this change, the ability to directly compare coordinates on the CBS list with those on the NGS datasheets was lost. Our first demonstration shows that even with HTDP transformation, a match can no longer be found of NGS and Trimble CBS coordinates.

B. Trimble Pathfinder Office

When NGS released the NA2011, the Community Base Station (CBS) list showed coordinates in both –

"NEW": (CORS, GARLIC (GARL), NEVADA (ITRF00 (1997)-Derived from IGS08 (NEW)). The IGS08 epoch 2005.0 locations on the NGS datasheet have been transformed via HTDP software to ITRF00 epoch 1997.0, the chosen reference frame of Pathfinder Office

"Offline": The original ITRF00 epoch 1997 coordinates

C. National Geodetic Survey (NGS)

With the National Adjustment of 2011 (NA2011), NGS realigned all CORS stations with passive controls. Also in Sept 2011, NAD83(2011), the latest epoch of NAD83 was released. To help users with this transition, NGS Position and Velocity Coordinate datasheets provide reference station locations in –

"NEW" coordinates in both IGS08 and NAD83(2011). These are referenced to the latest **absolute**
antennae positions, and

"Old" coordinates in both ITRF00 and NAD83(CORS96). These preserve the original **relative**
antennae positions. NGS preserves this information as historical data but they will no longer be
updated. It is expected these will be accessible by ftp only by the end of 2013.

D. GOAL- Find the best workflow in light of these changes

In light of NA2011 and recent changes in PFO, this series of pages documents a months-long
exploration aimed at finding the best workflow for post-processing GPS data by varying the
below settings:

Differential correction (.ssf to .cor file)

- Compare "base file" vs. "base provider" options for Trimble CBS coordinates
- "Seed" (manually enter) coordinates from NGS datasheets in each of the 4 available
reference frames

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Export (.cor to .shp file)

- NAD83(Conus), a null transformation, i.e. all parameters set to 0
- NAD 1983 (2011), a 7-parameter transform from WGS84 to NAD83(2011)

Given the high level of accuracy expected from all GPS data, sub meter imagery and other GIS
datasets, users should be concerned when post-processing their carefully collected GPS data

introduces any amount of shift.

E. Recommendations

·   ALWAYS include the epoch of each datum in your metadata

·   Use only CORS base stations for differential correction of GPS data

·   Manually seed NGS NAD83(2011) values in Pathfinder Office differential correction

·   Avoid applying transformations within Trimble Pathfinder Office

·   Assign .prj file to ensure the correct transformation(s) is applied in ESRI ArcGIS

F. Request of Trimble

This series of pages is in no way meant to assign blame to Trimble, NGS or any agency. Rather it has sparked communication and revealed the mixed blessings brought by the latest high accuracy receivers, processing and imagery.

Users trust Trimble. This trust is not misplaced as it is a very powerful product on which many of us have relied upon for years. As an international company, Trimble literally has uses across the entire globe. However, a significant portion of the users are based in NAD83. Given NAD83(2011) has been adopted as the standard by NGS, USCG real-time beacons, OPUS solutions and the US federal government (i.e. NPS, BLM, USFS and BIA).

We trust Trimble will do the 'Right Thing' for North American users and move from ITRF00 epoch 1997 to the latest NAD83(2011)*… please*