

This demonstration again processes the same GPS data using both the “base files” and “base provider” reference position options to evaluate workflows for post-processing GPS data.

A. Settings

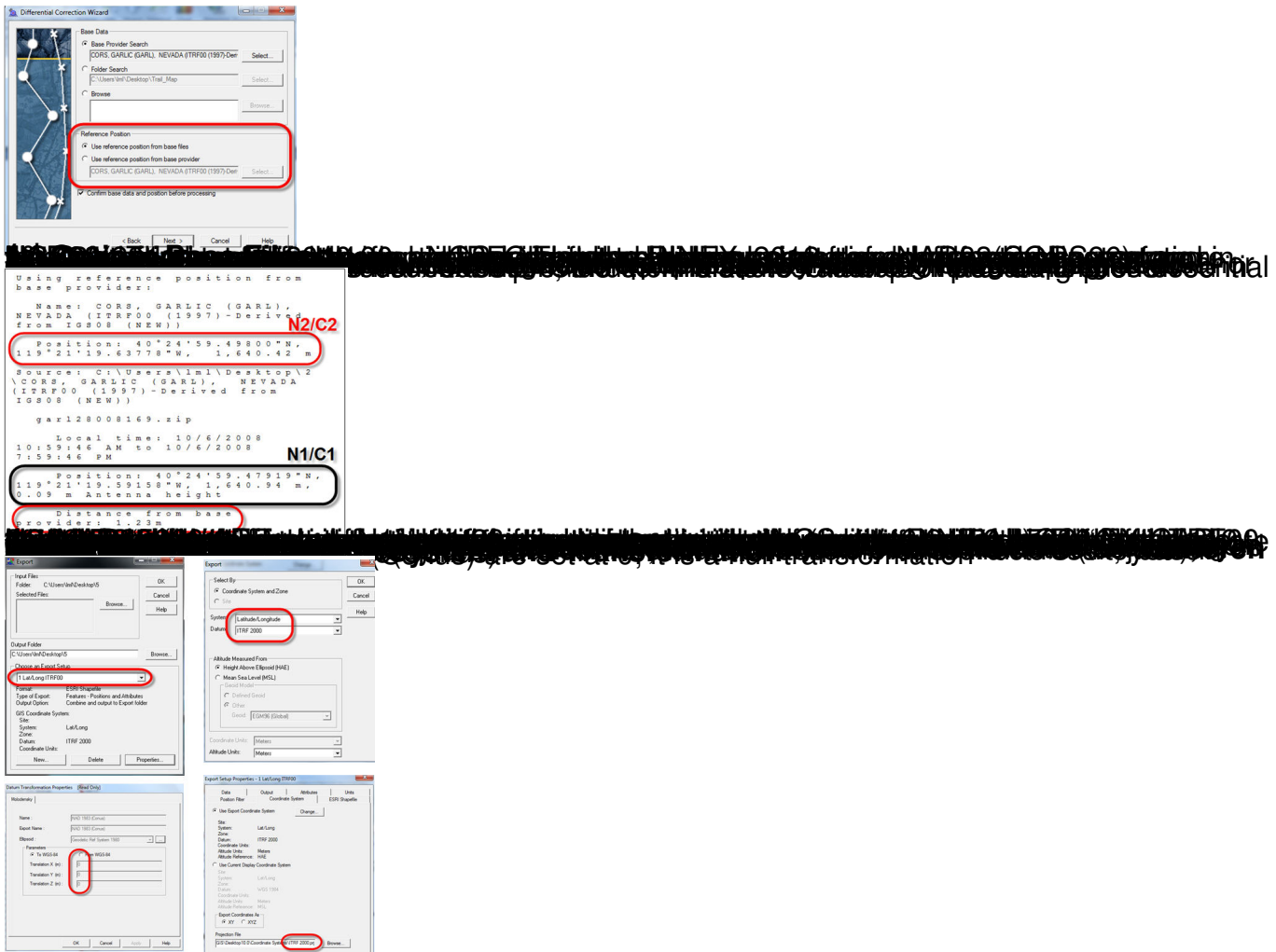
- Post-process the same .ssf file in duplicate N1 and N2 project folders
- Export .cor files with NAD83(Conus) null transformation
- Assign resulting .shp files ITRF00 projection files (.prj)

#	Choose Ref Position Source	Distance from base	Resulting cor file	Choose Ref System and Transformation	Assign .prj file & Resulting .shp
N1	1 st Option Base Files RINEX header	n/a	ITRF00	LatLong ITRF00 NAD83(Conus)	ITRF00.prj*
N2	2 nd Option Base Provider Trimble CBS list	1.23 m	*HTDP- ITRF00**	LatLong ITRF00 NAD83(Conus)	ITRF00.prj

* See Demo # 1 Conclusion for an explanation of the term *HTDP-ITRF00*

Choose Reference Position Source

Demo # 2: "Base file" vs. "Base provider" coords from Trimble CBS



Analysis of the results shows that the projection of our data is **Unknown**. It is assumed the NAD83 but it does keep **B. View results in ArcMap**

1. Start a new ArcMap document to ensure the data frame contains **no**

projection information

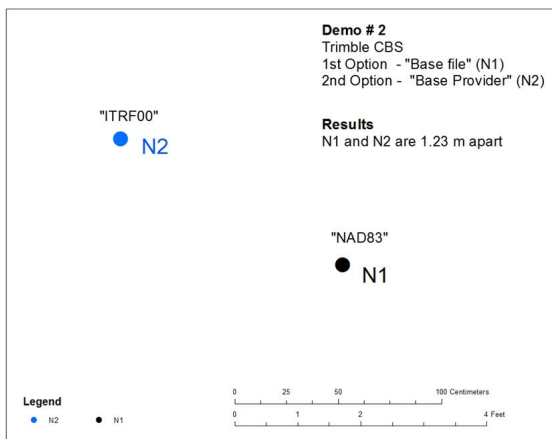
2. From View / Data Frame / Properties verify map projection is **Unknown**

3. Add **N1** and **N2** via the Add Data button or drag them in from ArcCatalog

4. From View / Data Frame / Properties verify map projection is now **ITRF00**

5. For both N1 and N2, right-click Properties / Source tab, verify each is in **ITRF00**

- N1 is 1.23 m southeast of N2
- 1.23 m corresponds to the "distance from base" observed for N2
- 1.23 m also corresponds to the NAD83 and ITRF00 difference in this area



C. Analysis

N1 and N2 originated from the same GPS- collected point. Both were post-processed in the exact same manner except the reference position source. N1 was from the 1st Option-coordinates in the RINEX header. N2 was from the 2

nd

Option- Trimble CBS coordinates.

Based on the observed 1.23 m distance between the 2 resulting locations, it is logical to conclude that -

1) the N1 location indicates the RINEX header coordinates are NAD83. While this fact is not apparent in PFO software or documentation, Giovanni Selli, NGS confirms that these are NAD83(2011).

2) the N2 location confirms that coordinates in Trimble CBS coordinates are ITRF00. As discussed in demo # 1, the N2 location is “HTDP-ITRF00,” not truly ITRF00. A shift was introduced when the original IGS08 coordinates were HTDP-transformed to ITRF00.

D. Conclusions

The resulting N1 location would be acceptable IF we were able to match CBS ITRF00 base station coordinates with those on the NGS datasheet. As was saw in demo # 1, we could not. **It impossible to recommend the N1 workflow** for post-processing your GPS data.

The resulting N2 location derived from the “HTDP-ITRF00” coordinates are shifted an unknown amount from its true ITRF00 location. It also fails to meet our original goal of a NAD83 export. **It impossible to recommend the N2 workflow** for post-processing your GPS data.

□

The next demonstration mutes this issue of comparison by manually entering base station coordinates directly from NGS datasheets.□