



Leica FAQ

Question Which published coordinates should I use when processing CORS data in SKI-Pro?

Background Many surveyors in the United States are utilizing GPS data downloaded from the National Geodetic Survey's (NGS) Continuously Operating Reference Stations (CORS). This data is available at <http://www.ngs.noaa.gov/CORS/Data.html> in a RINEX (Receiver INdependent EXchange) format. This RINEX data has a three-dimensional position (latitude, longitude, and height) included with data. But this position is not necessarily the correct position of the reference station but only a "raw" or "navigated" position of the reference station's antenna. For this CORS' coordinates to fit with other CORS or other surveyor's work, the correct coordinates must be entered. There are two sources for coordinates of a CORS: the "Data Sheet" and the "Coordinates" sheet.

Answer The proper coordinates to use are the ones associated with the NAD_83 Position of the Antenna Reference Point (ARP) in the "Coordinates" sheet. This FAQ will explain where to find these coordinates.

Step	Action	Display
1	<p>From your web browser:</p> <ul style="list-style-type: none"> Go to the URL: http://www.ngs.noaa.gov/CORS/Data.html. <p>This takes you to the "CORS DATA" web page.</p>	
2	<p>From the "CORS Data" web page:</p> <ul style="list-style-type: none"> Select the site in the "SITE (sorted by state)" column. Select "Coordinates (NAD83 & ITRF)" in the "OPTION" column. Press the Find Files button. <p>This takes you to the "Coordinates" document.</p>	



Step	Action	Display
3	<p>From the “Coordinates” document:</p> <ul style="list-style-type: none"> • Search for where it says “Antenna Reference Point”. • Look for “NAD_83 POSITION (EPOCH 2002.0)”. <p>This has the correct latitude, longitude, and ellipsoid height that you should enter as the control coordinates of the associated RINEX data.</p>	<pre> ***ITRF 00*** ATLANTA (ATL1), GEORGIA Retrieved from NGS DataBase on 10/29/02 at 15:40:46. ----- Antenna Reference Point(ARP): ATLANTA CORS ARP ----- PID = AP9657 ITRF00 POSITION (EPOCH 1997.0) Published by the IERS in Mar. 2001. X = 505865.080 m latitude = 33 56 08.25996 N Y = -5273284.628 m longitude = 084 31 13.42437 W Z = 3540689.627 m ellipsoid height = 295.326 m ITRF00 VELOCITY Published by the IERS in Mar. 2001. VX = -0.0156 m/yr northward = -0.0014 m/yr VY = -0.0074 m/yr eastward = -0.0162 m/yr VZ = 0.0023 m/yr upward = 0.0062 m/yr NAD_83 POSITION (EPOCH 2002.0) Transformed from ITRF00 (epoch 1997.0) position in Mar. 2002. X = 505865.614 m latitude = 33 56 08.23641 N Y = -5273286.146 m longitude = 084 31 13.40931 W Z = 3540689.803 m ellipsoid height = 296.720 m NAD_83 VELOCITY Transformed from ITRF00 velocity in Mar. 2002. VX = -0.0007 m/yr northward = -0.0016 m/yr VY = -0.0059 m/yr eastward = -0.0013 m/yr VZ = 0.0020 m/yr upward = 0.0059 m/yr </pre>

Further Reading

For more information on post processing with CORS data, please see the following:

Use your web browser to go to <http://www.ngs.noaa.gov/CORS/> and click on the FAQ link at the bottom of the page. Then click on FAQ number 39 for NGS' explanation.

At the Advantage Support web site:

There is a paper explaining how to process CORS data in SKI-Pro. This paper addresses the antenna-phase-center offset issue:
http://www.leicaatl.com/support/gps/Technical_papers/LeicaCORS.pdf.