

Question How do I create a NAD 27 state plane coordinate system to use in SKI-Pro?

Background Coordinate Systems are used to convert WGS 1984 coordinates into “local” coordinates. The term “local” is used to describe any coordinate type other than WGS 1984 coordinates. For example, “local” coordinates could be UTM, state plane, NAD27, etc.

Coordinate systems typically consist of a map projection (which includes state plane zones), an ellipsoid, and a geoid model (if you wish to have orthometric heights). But they can also contain transformations and CSCS models.

CSCS Models

Several countries have produced tables of conversion factors to directly convert between GPS measured coordinates given in WGS84 and the corresponding local mapping coordinates, taking the distortions of the local coordinate system into account. Using these tables it is possible to directly convert into the local grid system without having to calculate your own transformation parameters. **Country Specific Coordinate System Models (CSCS Models)** are an addition to an already defined coordinate system, which interpolates corrections from a grid shift file and applies the interpolated corrections.

NADCON

NADCON is the standard model for conversions between the old **North American Datum of 1927 (NAD27)** and the new **North American Datum of 1983 (NAD83)**. The shift between the two datums is given by a grid of geodetic correction values provided by NGS.

The NADCON conversion is supported in SKI-Pro 2.5 (or higher) through Geodetic CSCS Models.

Answer You must create a coordinate system that contains the map projection parameters for the NAD27 state plane zone, the Clarke 1866 ellipsoid, and NADCON CSCS model, and a WGS84 geoid model (if you wish to have orthometric heights).

Note: You must have SKI-Pro version 2.5 or higher to utilize the NADCON CSCS model.

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NAD27 State Plane Zones

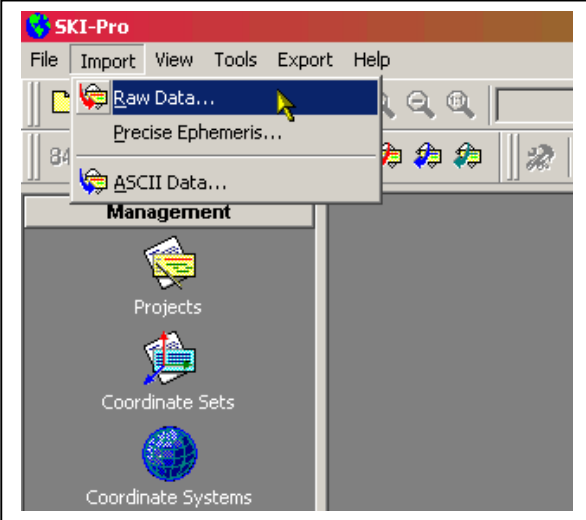
To create a coordinate system for an NAD27 state plane zone in SKI-Pro, you must know the map projection parameters for that particular zone.

You can either create a map projection and then attach it to a coordinate system yourself or you can read in all the NAD27 State plane coordinate systems from a specially created GPSTRF.DAT file that the Advantage Support team has created for you.

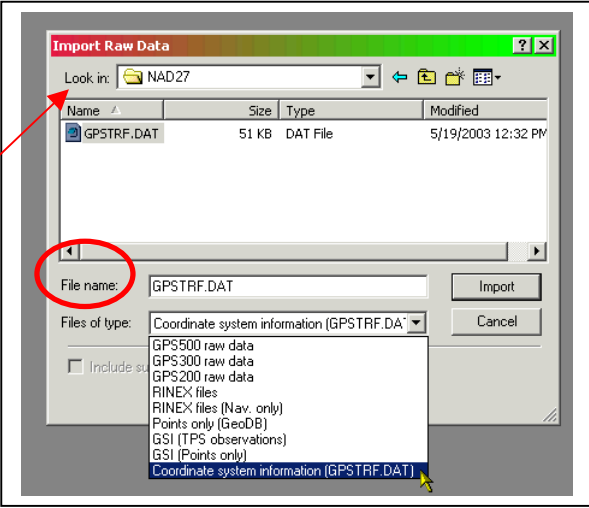
This FAQ will explain how to read in all the NAD27 state plane zone coordinate systems using the GPSTRF.DAT file and then attach a CSCS and geoid model to the coordinate system.

Importing the GPSTRF.DAT file.

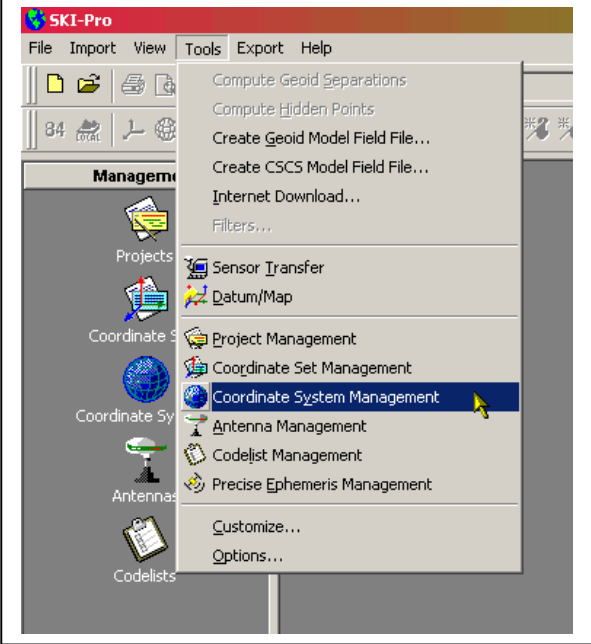
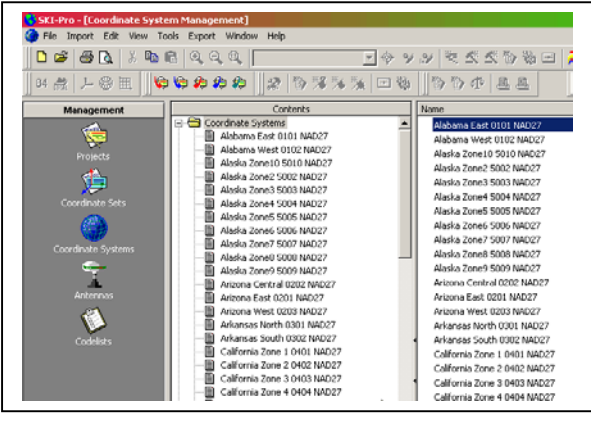
Download the GPSTRF.DAT file from the Advantage site at http://www.leicaatl.com/support/gps/gps_faqs/faqs/SKI_Pro_Questions/GPSTRF.DAT and save it to your hard drive. Start SKI-Pro version 2.5 (or higher).

Step	Action	Display
1	<p>From anywhere within SKI-Pro 2.5:</p> <ul style="list-style-type: none">• Click on the “Import” pull-down menu.• Select “Raw Data...” from the drop-down menu. <p>This opens the “Import Raw Data” window.</p>	 <p>The screenshot shows the SKI-Pro application window. The menu bar includes File, Import, View, Tools, Export, and Help. The 'Import' menu is open, showing options: Raw Data..., Precise Ephemeris..., and ASCII Data... The 'Raw Data...' option is highlighted. Below the menu, a 'Management' panel is visible with icons for Projects, Coordinate Sets, and Coordinate Systems.</p>

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Step	Action	Display
2	<p>From within the “Import Raw Data” window:</p> <ul style="list-style-type: none"> Click on the down arrow in the “Files of type:” field. <p>This opens a selection box.</p> <ul style="list-style-type: none"> Select “Coordinate system information (GPSTRF.DAT)”. <p>In the “Look in:” field:</p> <ul style="list-style-type: none"> Browse to the folder that contains the GPSTRF.DAT file that you stored on your hard drive. Select “GPSTRF.DAT” so it appears in the “File name” field. Press the Import button. <p>This imports all the NAD27 state plane coordinate systems into SKI-Pro.</p>	

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Step	Action	Display
3	<p>To view all the imported coordinate systems:</p> <ul style="list-style-type: none"> Click on the “Tools” pull down menu. Select “Coordinate System Management”. <p>This opens the “Coordinate System Management” view.</p>	 <p>The screenshot shows the SKI-Pro application window. The 'Tools' menu is open, displaying various options. The 'Coordinate System Management' option is highlighted with a mouse cursor. The background shows the main interface with a sidebar containing icons for Management, Projects, Coordinate Sets, Coordinate Systems, Antennas, and Codelists.</p>
4	<p>In the “Coordinate System Management” view:</p> <ul style="list-style-type: none"> Click on the “Coordinate Systems” folder to open it. <p>Here you can see all the newly imported NAD27 state plane coordinate systems.</p>	 <p>The screenshot shows the 'Coordinate System Management' window. The 'Coordinate Systems' folder is expanded, showing a list of coordinate systems. The list includes various zones for Alabama, Alaska, Arizona, Arkansas, and California, all listed as NAD27 systems. The 'Name' column shows the specific zone and NAD27 designation for each system.</p>

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CSCS Model and Geoid Model

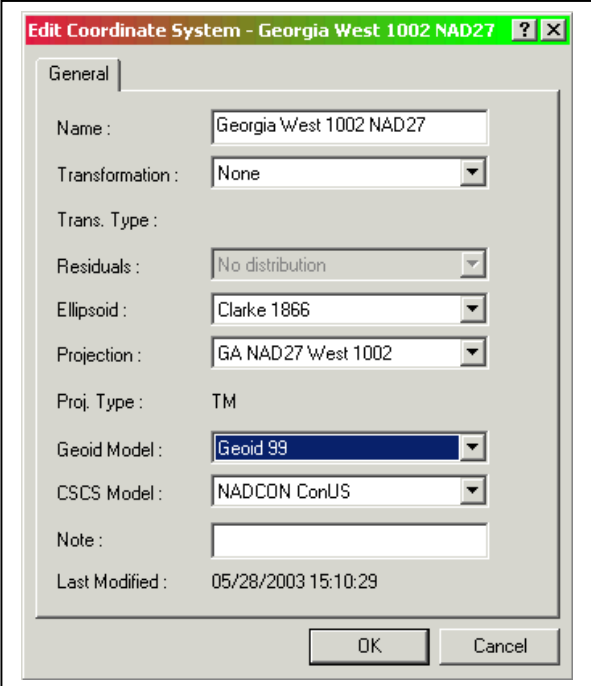
We have imported all the NAD27 Coordinate systems into SKI-Pro but we are not finished.

Now we must attach a CSCS model to the coordinate system. And if you want to work in orthometric heights, we must attach a geoid model.

Note: The geoid model must be based on the WGS 1984 ellipsoid even though the map projection is based on the Clarke 1866 ellipsoid. Therefore, it is correct to use the WGS 1984 ellipsoid that you used when you created the Geoid 99 geoid model. If you do not know how to create a Geoid model within SKI-Pro, follow this link: http://www.leicaatl.com/support/gps/gps_faqs/faqs/SKI_Pro_Questions/geoidmodelSKI-Pro.pdf

Step	Action	Display
5	<p>To attach a CSCS model:</p> <ul style="list-style-type: none"> Select a NAD27 coordinate system in the “Coordinate System Management” view (see Step 4). <p>In this example we will use the “Georgia West 1002 NAD27” coordinate system.</p> <ul style="list-style-type: none"> Right click on the NAD27 coordinate system and select “Properties” from the selection window. <p>This opens the “Edit Coordinate System” window.</p> <p>In the “Edit Coordinate System” window:</p> <ul style="list-style-type: none"> Click on the down arrow next to the “CSCS Model:” field. <p>This opens a list box.</p> <ul style="list-style-type: none"> Select “NADCON ConUS” from the list box. Select a geoid model in the “Geoid Model” field (if you wish to work in orthometric heights). 	

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Step	Action	Display
6	<p>When you have finished editing your NAD27 coordinate system, the parameters should look similar to the ones in the image on the right.</p> <ul style="list-style-type: none"> • Press the OK button to store these parameters. <p>Now you must attach this coordinate system to a project to have the project's coordinates displayed in an NAD27 coordinate format.</p> <p>To learn how to attach a coordinate system to a project, follow this link: http://www.leicaatl.com/support/gps/gps_faqs/faqs/SKI_Pro_Questions/How%20Do%20I%20Attach%20a%20Coordinate%20System%20to%20a%20project.pdf to an FAQ on the topic.</p>	

Further Reading

For more information on coordinate systems, geoid models, and CSCS models, see below. All the Newsletters below are available at the Advantage Support's GPS Newsletters page at http://www.leicaatl.com/support/gps/GPS_All_Newsletters.htm and the Newsletters Archive page: http://www.leicaatl.com/support/gps/GPS_Archives_Newsletters.htm.

For Coordinate Systems: Read GPS Newsletters: Vol. 00, Numbers 07, 08, 09, 20, 21, 22, and 23.

For Geoid Models: Read GPS Newsletters: Vol. 01, Numbers 19, 20, and 21.

For CSCS Models: Read GPS Newsletters: Vol. 02, Numbers 03 and 05.

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