Question

How do I create a NAD27 Canadian coordinate system 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 UTM zones), an ellipsoid, and a geoid model (if you wish to have orthometric heights). But they can also contain transformations or 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.

The files necessary to create Canadian CSCS models are available at the Advantage web site at
http://www.leicaatl.com/support/gps/gps_faqs/faqs/SKI_Pro_Questions/NAD27Canada/NAD27Canada.exe.
This is a self-extracting WinZip file. Download the file and store it in a directory of your choice. Then navigate to that directory and double-click on the file. Select a target directory for the decompressed files to reside. In this example, the files will be stored in a directory called “Canadian CSCS Model Files” that resides in the Leica Geosystems folder.

Answer

To create an NAD27 coordinate system in SKI-Pro, you must have an appropriate map projection, ellipsoid, CSCS model, and WGS84 geoid model (if you wish to use orthometric heights).

This document will show you how to create an NAD27 Canadian coordinate system in SKI-Pro using a CSCS model. It will also show you how to create a CSCS model to attach to the coordinate system.

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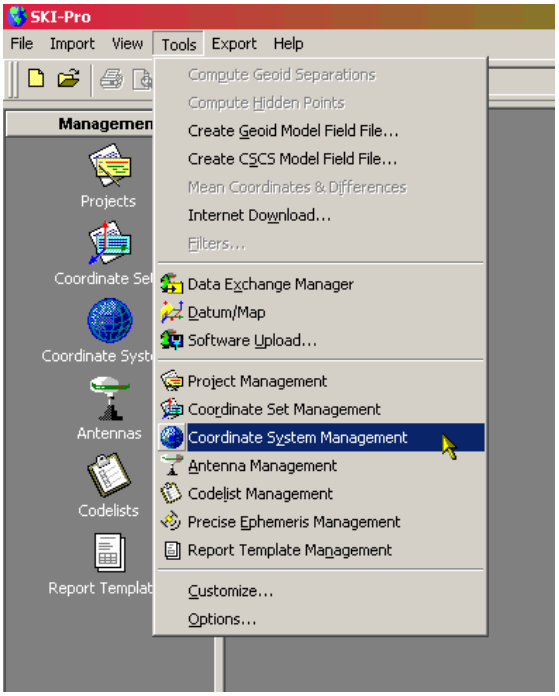
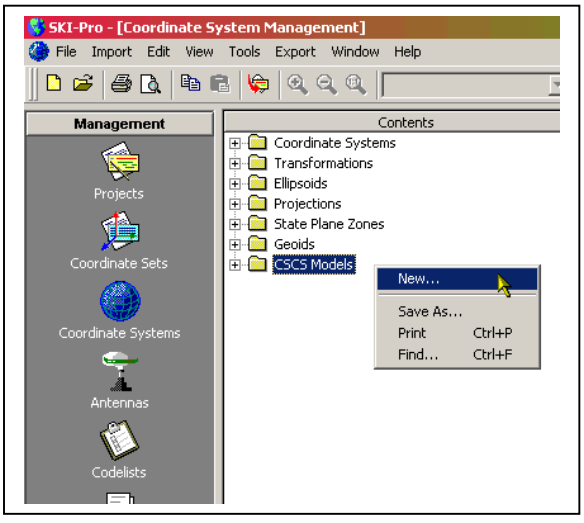
Creating a CSCS Model

First we will create a CSCS model. In this example we will create a CSCS model for the Eastern Canada. This does not include the Atlantic provinces.

Step	Action	Display
1	From anywhere in SKI-Pro: • Click on the “Tools” pull-down menu. • Select “Coordinate System Management”. This takes you to the Select “Coordinate System Management” screen.	
2	From within the Select “Coordinate System Management” screen: • Right-click on the “CSCS models” folder. • Select “New…”. This opens the “New CSCS Model” window.	

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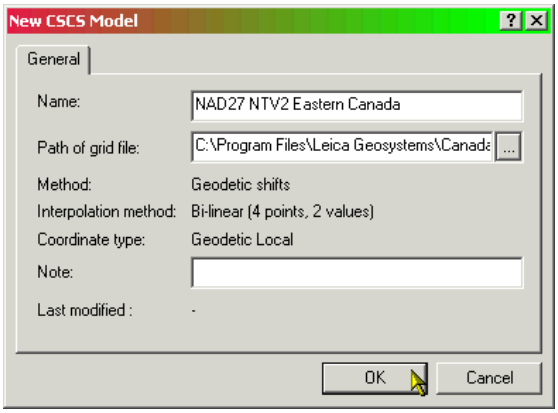
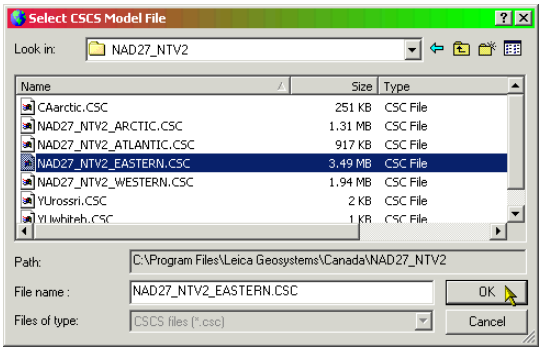
Step	Action	Display
3	From the “New CSCS Model” window: • Enter a name for the new CSCS model. In this example we are creating a CSCS model for Eastern Canada. • Click on the … button. This opens the “Select CSCS Model File” window. • Navigate to where you stored the CSCS model files. • Highlight the CSC file you wish to use. In this example we are using the “NAD27_NTV2_EASTERN.CSC” file. • Press the **OK** button. This returns you to the “New CSCS Model” window. Once the correct information has been entered: • Press the **OK** button. This stores the entered information, closes the “New CSCS Model” window and returns you to the Select “Coordinate System Management” screen.	 

Creating the Coordinate System

The following steps will describe how to create a NAD27 Canadian coordinate system and attach the CSCS model we just created.

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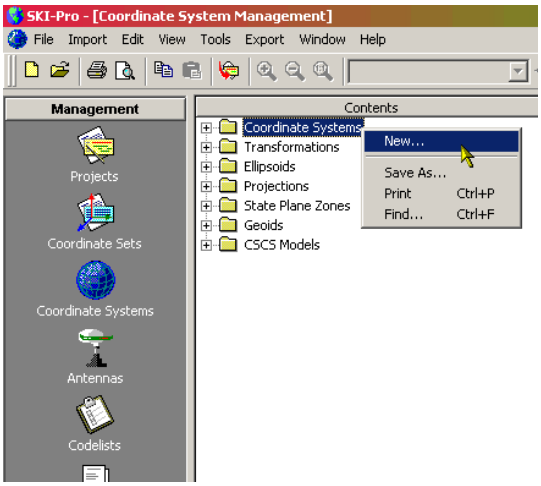
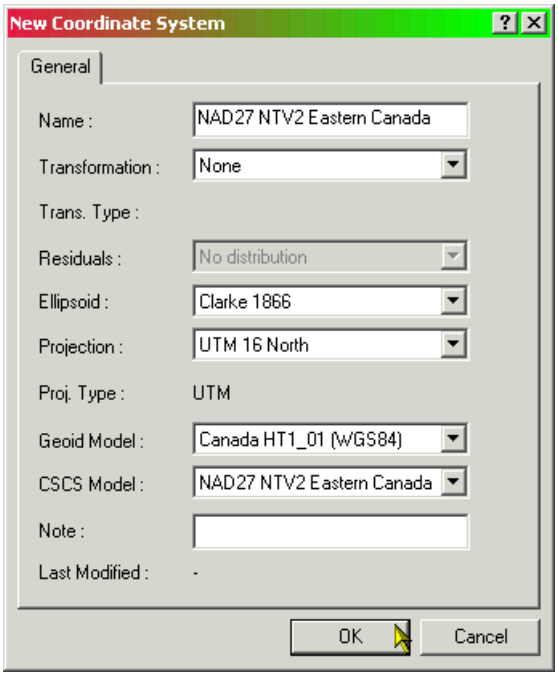
Step	Action	Display
4	Continuing in the “Coordinate System Management” view: • Right-click on the “Coordinate Systems” folder. • Select “New…”. This takes you to the “New Coordinate System” window.	
5	In the “New Coordinate System” window: • Enter a name for the new coordinate system. In this example we named the coordinate system the same name as the CSCS model. • Select “Clark 1866” as the ellipsoid. • Select the projection. In this example it is “UTM 16 North”. • Select a WGS84 Geoid model (if you wish to work in orthometric heights). • Select the CSCS model we created in the above *step 3*. • Press the **OK** button to create the new coordinate system. This closes the “New Coordinate System” window and returns you to the “Coordinate System Management” view.	

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Leica Geosystems

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 and Vol. 03, Number 06.