

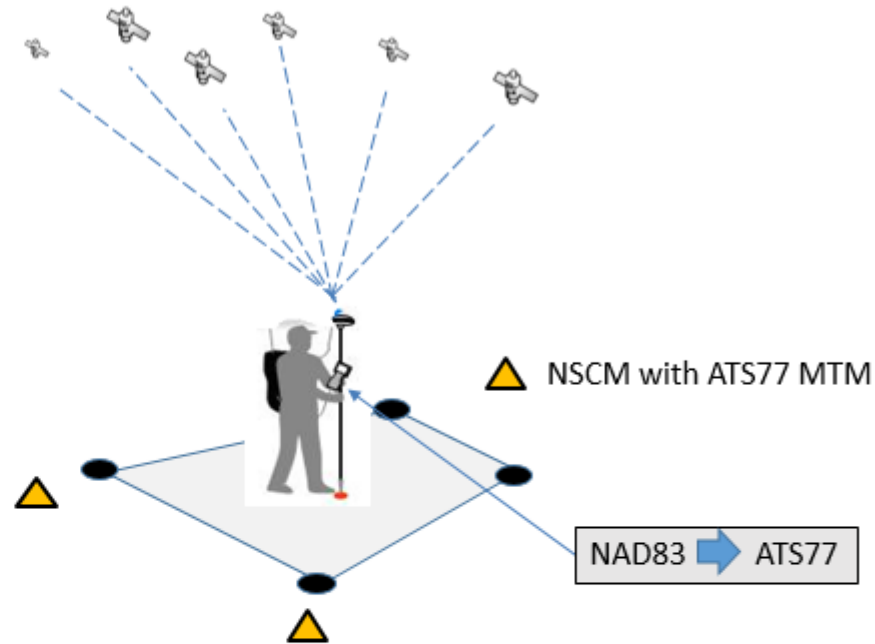
<p>What is localization?</p>	<p>Localization (sometimes referred to as “site calibration”) refers to transforming GNSS based coordinates to fit a local coordinate system. This is typically achieved by occupying 1 or more Nova Scotia Control Monuments (NSCMs) and determining transformation parameters to fit the local coordinate system. This is done directly on the GNSS controller of an RTK system. In Nova Scotia, localization is most often performed to transform back to ATS77.</p>
<p>When is localization useful?</p>	<p>Localization is useful when trying to replicate historic coordinates. For example, during a retracement survey it may be of interest to check coordinates from a plan by localizing to ATS77.</p>
<p>What are the disadvantages of localization?</p>	<p>Localization distorts accurate GNSS observations to fit a local representation of a coordinate system. In Nova Scotia, localization is often used to allow GNSS surveys to be performed in ATS77. Consequently, the coordinates derived from localization are dependent upon the NSCMs used to define the transformation parameters. If any of the NSCMs are disturbed or destroyed, it becomes difficult to recreate the same coordinates that were previously observed. Problems become magnified when one or more of the NSCMs used in localization have significant distortions.</p>
<p>What alternatives are there to localization?</p>	<p>Since ATS77 MTM and NAD83 MTM coordinate systems use the same projection, the distances and bearings shown on plans should be very similar. Boundary evidence can be shown on a NAD83 plan as measured values and these values can be compared with previous plan values. Coordinate values are typically 3-4 metres different between the two coordinate systems.</p> <p>To locate evidence coordinated in ATS77, a grid shift file can be used. For areas of the NSCCS network without significant distortion, the grid shift file will put you within ± 15 cm of the object of interest.</p> <p>It can be useful to setup a job or survey template for performing retracements in ATS77 and to create a separate job for new data collection in NAD83(CSRS)2010.0. By creating new plans in NAD83(CSRS), future surveys will benefit from not inheriting the distortion of the NSCCS network.</p> <p>If Nova Scotia is to fully migrate survey work to NAD83(CSRS), the practice of localizing to create new survey plans needs to end. Instead, new plans should embrace the highly accurate coordinate system in which they are observed so that future surveys can easily re-establish boundary evidence in NAD83(CSRS). The reverse process of localization can be thought of as “globalization”, moving to a coordinate system that is global in nature. The desired result is that at some point in the future, historic plans and new plans are both in NAD83(CSRS).</p>



Related Technical Support Documents:	<ul style="list-style-type: none">- Technical Support 0007 NAD83(CSRS)- Technical Support 0009 Grid Shift Files
Useful Links:	The Evolution of NAD83 - http://www.naref.org/transf/nad83_geomatica2006.pdf
Additional Illustrations:	

Localization

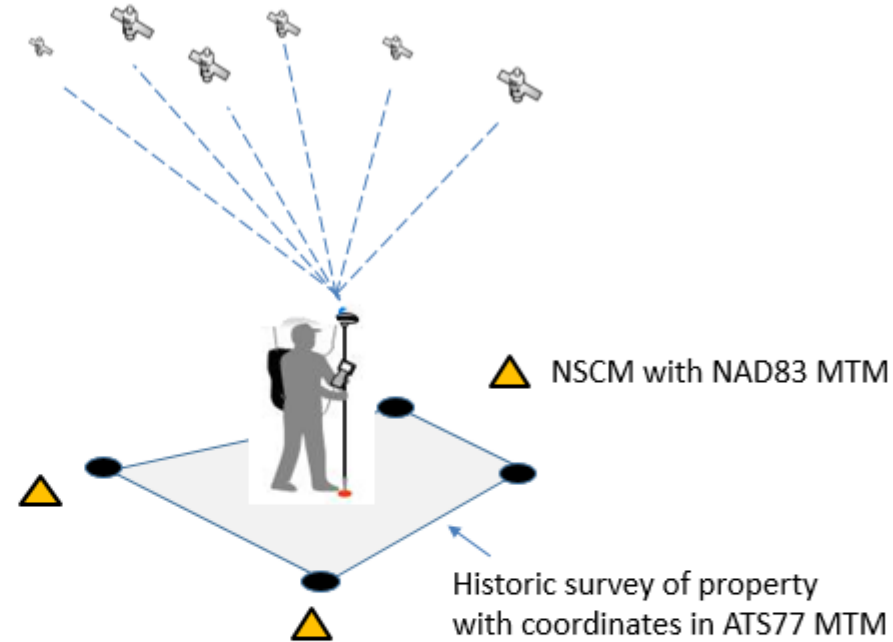
- Distorts accurate NAD83 observations to fit less accurate ATS77 values
- Coordinates are NSCM dependent
- What happens when these NSCMs are disturbed or destroyed?



Historic Plan	ATS77
Observations	NAD83
Transformation	NAD83 to ATS77
Plan	ATS77

Globalization

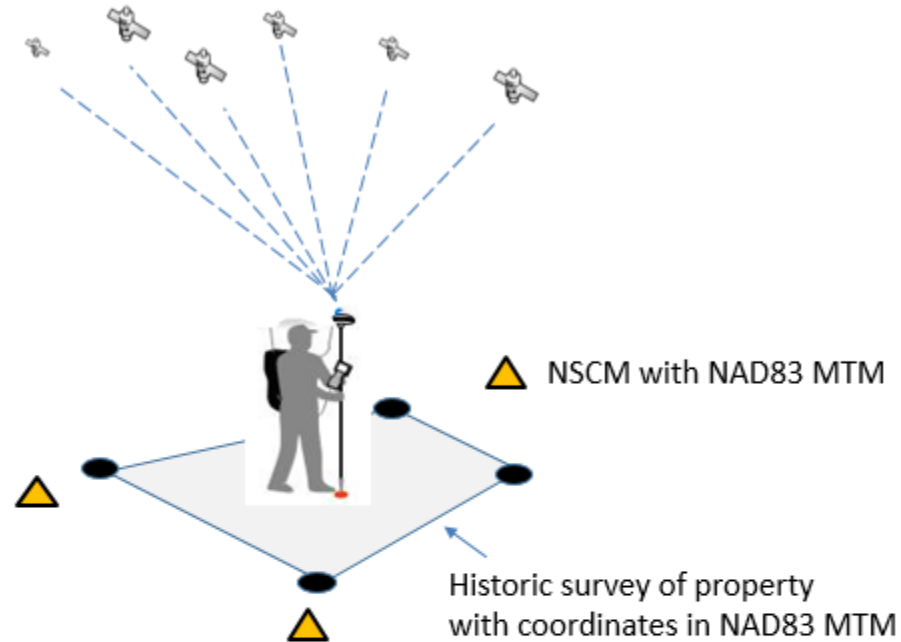
- Retain accuracy of NAD83 in new plans
- Coordinates are not monument dependent
- For retracement:
 - Leverage bearings & distances being the same
 - Transform historic plan to NAD83 using grid shift file



Historic Plan	ATS77
Observations	NAD83
Transformation	ATS77 to NAD83
Plan	NAD83

Desired Outcome

- Pure NAD83 system
- Need to start building NAD83 database of plans
- Investment will pay off in the long run:
 - Ease of tying to control
 - Ease of retracement (not dependent upon localization technique)
 - Fewer complications



Historic Plan	NAD83
Observations	NAD83
Transformation	None
Plan	NAD83