Total Electron Content (TEC) measured using the Global Positioning System (GPS) are affected by hardware biases associated with the satellite and the GPS receiver. These biases, known as differential code biases (DCBs), create an offset in the TEC measurements and must be accounted for prior to the use of GPS TEC measurements for applications that requires accurate TEC values. The DCBs for each satellite are made available by the University of Bern [ftp://ftp.unibe.ch/aiub/CODE/]. However the receiver bias is not only unique between receiver models, but can vary slightly between receivers of the same model and hardware as well. This requires that an accurate method be created to generate the DCBs for each receiver used in TEC measurements.

The Canadian High Arctic Ionospheric Network (CHAIN) has recently begun an expansion of new high latitude stations (ECHAIN). These new stations use a new receiver, the Septentrio PolarXs Pro. Due to the recent introduction of this receiver, very little work has been published with regards to its performance for ionospheric TEC measurements.

The minimization of standard deviations method, first proposed by Ma et al. [1], was used to find receiver DCBs for six PolarXs receivers located within the ECHAIN network. These values will serve as a starting point for further work regarding the PolarXs receiver DCBs. A look at using Ionosphere Map Exchange (IONEX) maps as a method for high latitude receiver DCB estimation, as well as the use of a summed variances variation of the minimization of standard deviations method is also examined.

Receiver biases calculated using both variations of the minimization of standard deviations method range from -9.89 to 9.36 TECU while the biases calculated using the IONEX method range from -8.84 to 11.57 TECU. Errors among all methods do not exceed 1.10 TECU. The IONEX derived TEC shows a consistent overestimation compared to TEC derived by the ECHAIN stations. This overestimation explains the difference in biases calculated using the minimization of standard deviations method and the IONEX method.