Evaluation of Network RTK in Southern Ontario

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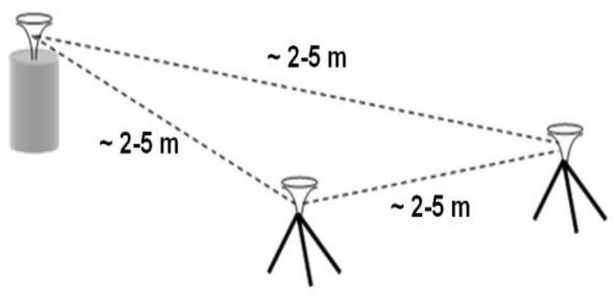
Introduction

In Ontario, network RTK services were established and are operated by private companies with little governmental regulation. MTO requested that York, in part, evaluate the performance of network RTK in Southern Ontario. A small subset of results from various companies and analysis is presented here.

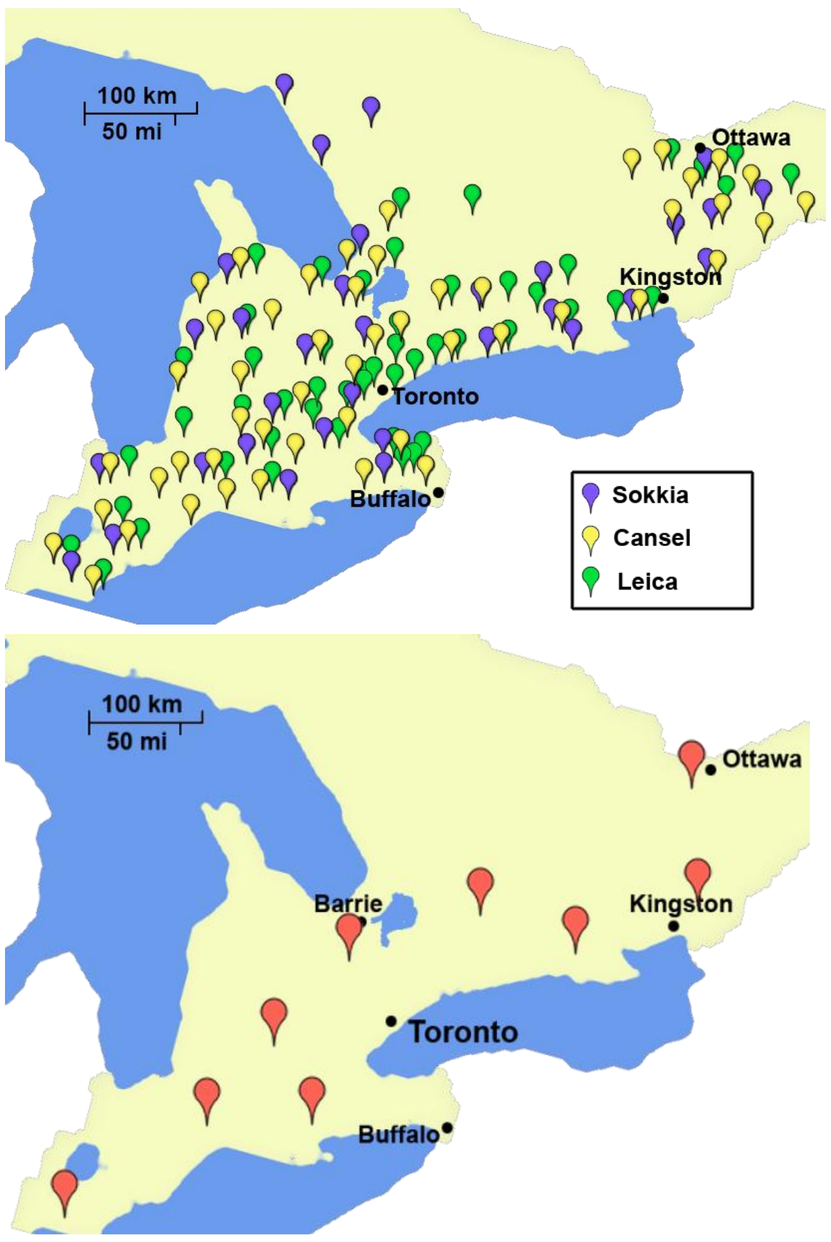
Methodology

Network RTK receivers from three providers were set up adjacent to each other. 1 Hz ambiguity-fixed network RTK solutions were collected, as well as raw measurements, simultaneously over approx. 8 hours.



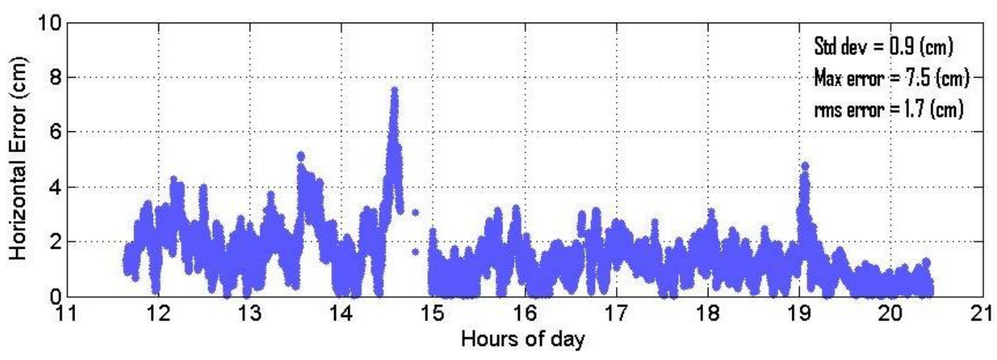
Company Reference Stations and Test Locations

Nine locations were selected to test varying geographies across southern Ontario, using similar network geometries between companies.



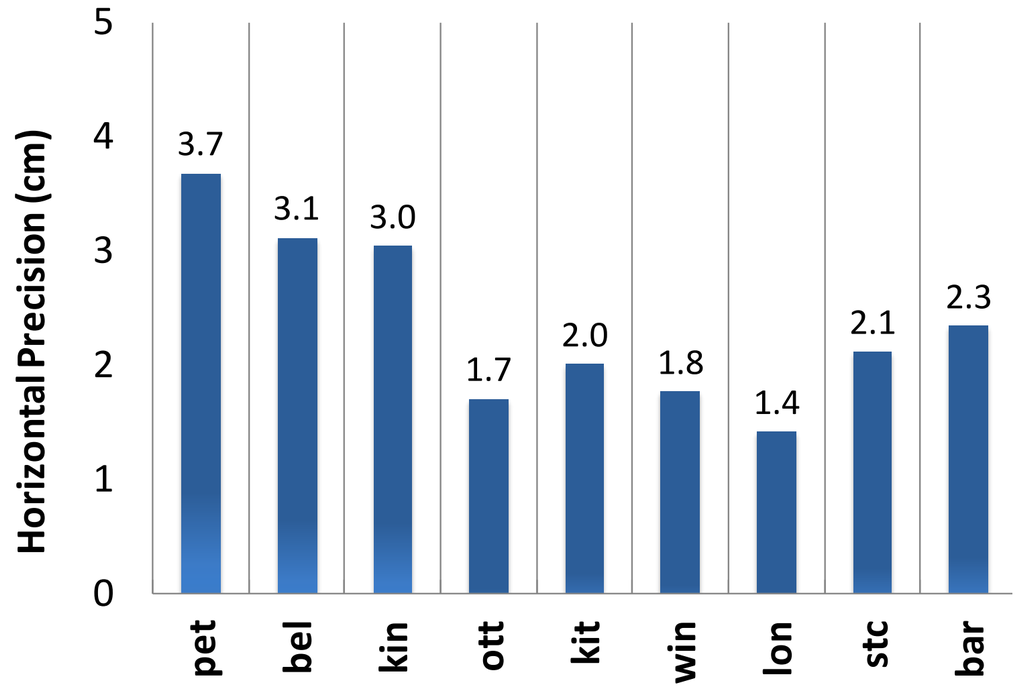
Solution Quality

Example of 1 Hz horizontal error from one company over 8 hours.



Precision

Precision varied from site-to-site and between companies. (Example of one company given.) Overall precision of 1.5 to 4 cm (95% horizontal) observed across southern Ontario.

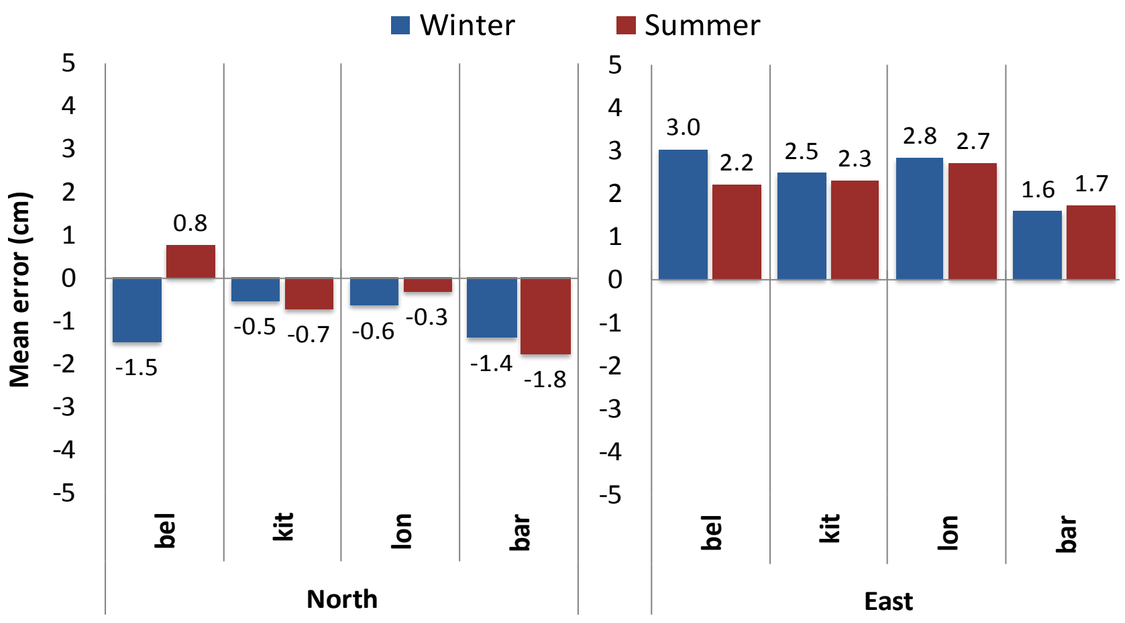


Accuracy

Many hours of network RTK position averages were compared to reference coordinates. Biases of 0.5 to 4 cm (horizontal) were observed, indicating possible reference frame concerns. (Example for one company given.)

Long-Term Repeatability

Some test sites were revisited six months later. Many hour averaged network RTK coordinate determinations are compared and show repeatability at the sub-centimetre level. (Example of one company given.)



Conclusions

Overall network RTK accuracy performance of approx. 3 cm (horizontal, 1σ) observed, with noticeable geographic variation. Service quality typical of expected network RTK performance.

Acknowledgements

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