



Notice of University Oral Examination

Geodesy and Geomatics Engineering

Doctor of Philosophy

Jonathan Beaudoin

**Tuesday, January 12, 2010
Head Hall – ADI Studio @ 9:00 am**

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| Supervisor: | Dr. John Hughes Clarke, GGE |
| Examining Board: | Dr. David Wells, GGE Dr. Yun Zhang, GGE Dr. Karl Butler, Geology |
| External Examiner: | Dr. Charles Hannah, Bedford Institute of Oceanography |
| Chair: | Dr. John Neville, School of Graduate Studies |

Estimation of Sounding Uncertainty from Measurements of Water Mass Variability

ABSTRACT

Analysis techniques are proposed that allow for estimation of potential sounding uncertainty due to water mass variability from high temporal and/or spatial resolution oceanographic observations. The techniques do not require sounding data, thus analyses can be tailored to match any survey system; this allows for pre-analysis campaigns to optimize survey instrumentation, sound speed profiling locations/rates and survey line spacing such that a desired sounding accuracy can be maintained. In addition to this, the output of the methods can provide a higher fidelity estimation of sounding uncertainty due to water mass variability as compared to existing uncertainty models in common use.

The analysis techniques are used to assess an extensive oceanographic data set collected in the Canadian Arctic Archipelago (CAA) in an effort to provide water mass sampling guidelines for current and future seabed mapping efforts in the CAA. In particular, the problem of mapping while in transit is investigated with oceanographic climatological grids of temperature and salinity being examined as a potential source of sound speed information when underway sampling of the water column is not possible.

Faculty Members and Graduate Students are invited to attend this presentation