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Poster title: Refinement of the UNB geoid model
(Progress report for GEOIDE project #10:
Precise geoid determination for geo-referencing
and oceanography)

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Abstract: The geoid is the most natural descriptor of the earth shape and an as such is also the reference surface for orthometric heights. It is now required to be known with one-centimetre accuracy. A geoid model for whole Canada was compiled at UNB last year and compared with GPS/levelling control points. The agreement with the control points was worse than expected, particularly in the Rocky Mountains.
Consequently, two experiments were performed: one focused on the computation time optimization - the compilation is very time consuming - and the second focused on the accuracy improvement in the mountains.
The most important result of the first experiment is the division of Canadian territory into 6 zones according to terrain roughness, which allows us to choose a minimal number of points from which to compute the mean terrain effect with sufficient accuracy. The application of this scheme saves (how much?????) computation time. The most important discovery from the second experiment is that the gravity stations in the Rocky Mountains are in such locations (mostly tops of hills and along valleys) which display significantly larger than the average terrain corrections for the area in question. If this fact is not accounted for correctly, the geoid model suffers from errors amounting to several metres in the Rocky Mountains.

Proper attention has to be paid to terrain effect modelling and the terrain correction has to be applied before the averaging of gravity data takes place.
The new results were used to compile the new geoid model in a part of the Rocky Mountains. (Are we not going to compute the geoid across Canada? We may have time to do it, may we not?)