Geophysical Research Abstracts,
Vol. 10, EGU2008-A-12033, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-12033
EGU General Assembly 2008
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Modelling current and future soil thermal and moisture regimes for North American permafrost zones

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Deepening of the active layer (i.e., the seasonally thawed layer overlying permafrost) was noted since the beginning of the 1990s in Northern Canada, which has already caused substantial environmental and socio-economic consequences. There is a strong consensus among projections of climate models used to study anticipated climate changes on the rise of the global average temperatures over the next century, with maximal changes being projected for high-latitude cold regions such as the permafrost regions. Given these projections, an evaluation of changes in the soil thermal regime becomes desirable for a number of reasons including assessments of possible ecosystem responses and impacts on man-made infrastructures. Work undertaken within the Canadian Regional Climate Modelling and Diagnostics Network towards such evaluations, using offline/online soil model simulations, will be presented in this talk.