

Accepted Manuscript

Climate change impacts on groundwater and soil temperatures in cold and temperate regions: Implications, mathematical theory, and emerging simulation tools

Barret L. Kurylyk, Kerry T.B. MacQuarrie, Jeffrey M. McKenzie

PII: S0012-8252(14)00114-7
DOI: doi: [10.1016/j.earscirev.2014.06.006](https://doi.org/10.1016/j.earscirev.2014.06.006)
Reference: EARTH 1999

To appear in: *Earth Science Reviews*

Received date: 1 June 2013
Accepted date: 21 June 2014



Please cite this article as: Kurylyk, Barret L., MacQuarrie, Kerry T.B., McKenzie, Jeffrey M., Climate change impacts on groundwater and soil temperatures in cold and temperate regions: Implications, mathematical theory, and emerging simulation tools, *Earth Science Reviews* (2014), doi: [10.1016/j.earscirev.2014.06.006](https://doi.org/10.1016/j.earscirev.2014.06.006)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Climate change impacts on groundwater and soil temperatures in cold and temperate regions: Implications, mathematical theory, and emerging simulation tools

Barret L. Kurylyk¹, Kerry T.B. MacQuarrie², and Jeffrey M. McKenzie³

¹Corresponding author, Department of Civil Engineering, University of New Brunswick, PO Box 4400, Fredericton, NB, Canada E3B 5A3, (506) 453-4521, barret.kurylyk@unb.ca.

²Professor, Department, of Civil Engineering, University of New Brunswick, PO Box 4400, Fredericton, NB, Canada E3B 5A3, ktm@unb.ca.

³Associate Professor, Earth and Planetary Sciences Department, McGill University, 3450 University Street, Montreal, PQ, Canada H3A 0E8, jeffrey.mckenzie@mcgill.ca.

Abstract

Climate change is expected to increase regional and global air temperatures and significantly alter precipitation regimes. These projected changes in meteorological conditions will likely influence subsurface thermal regimes. Increases in groundwater and soil temperatures could impact groundwater quality, harm groundwater-sourced ecosystems, and contribute to the geotechnical failure of critical infrastructure. Furthermore, permafrost thaw induced by rising subsurface temperatures will likely alter surface and subsurface hydrology in high altitude and latitude regions and exacerbate the rate of anthropogenic climate change by releasing stored carbon into the atmosphere.

Download English Version:

<https://daneshyari.com/en/article/6443055>

Download Persian Version:

<https://daneshyari.com/article/6443055>

[Daneshyari.com](https://daneshyari.com)