ISBN 978-1-4868-3944-5 (DVD)
ISBN 978-1-4868-3945-2 (zip file)

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Ontario Geological Survey, Groundwater Resources Study 19
Geological Survey of Canada, Open File 8618

A Three-Dimensional Geological Model of the Paleozoic Bedrock of Southern Ontario

by T.R. Carter, F.R. Brunton, J.K. Clark, L. Fortner, C. Freckelton, C.E. Logan, H.A.J. Russell, M. Somers, L. Sutherland, and K.H. Yeung

Groundwater Resources Study 19 can be downloaded from
http://www.geologyontario.mndmf.gov.on.ca/mndmaccess/mndm_dir.asp?type=pub&id=GRS019

This digital product comprises a regional three-dimensional (3-D) lithostratigraphic model of the Paleozoic bedrock of southwestern and southcentral Ontario, covering an area of 110,000 km^2. The model, which was constructed over a five-year period (2015 to 2019), encompasses the entire Phanerozoic succession, comprising 54 Paleozoic bedrock layers representing 70 formations plus a Precambrian layer and Quaternary sedimentary layer. It was compiled at a spatial resolution of 400 m. The model was constructed using Leapfrog® Works, an implicit modelling software application, that enables support of numeric groundwater flow modelling. Included in this release are 1) a summary report, in portable document format (*.pdf*), outlining methodologies and scientific approach to formation picks and types of regional data sets used to create the model; 2) Leapfrog® Works model layers (*.lfview*), which can be viewed on the viewer provided; and the individual formation layers of the model in 2 formats (*.csv*, *.dxf*); and 3) a library of Leapfrog® scenes (*.pdf*) depicting the 3-D bedrock geology of southern Ontario, prepared using the viewer tool.

Contents

This release contains documentation and a 3-D model of 54 Paleozoic bedrock layers plus the Precambrian basement and overburden. Refer to the GRS19–OF8618 report for model layers and associated groups and formations. Topographic layers (i.e., highways, township and county boundaries, lakes, shorelines and major towns) are included for orientation. Borehole collar locations are provided for reference. A model overview tour is included in 1 portable document format (*.pdf*) file. The overview is a set of graphics and screen captures (or scenes) from the model, highlighting geological features of interest. The 3-D model in Leapfrog® Viewer format is provided for thorough visual inspection. To import the model into other 3-D modelling applications for further study, 2 additional formats are supplied: 1) Model layer sampled with a 3-D array of points at 400 m x 400 m x 10 m spacing in comma separated value (*.csv*) format. This can be translated to a 3-D block model with grid points as block centroids. 2) A set of model layer volumes in drawing exchange format (*.dxf*).

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This publication has the following files. It is advised to unzip files prior to use.

\GRS019_Readme.pdf (this file)	A readme file, providing instructions for use of the product
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\GRS019_Metadata.pdf	Metadata for GRS019–OF 8618
\Docs.zip	Supporting documents: 1) Summary report (*GRS019_Report.pdf*), and 2) A model overview (scenes) tour file (*.pdf*)
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\Ontario_Bedrock_Ver_1-0_CSV.zip	Model sampled with 3-D point grid
\Ontario_Bedrock_Ver_1-0_DXF.zip	Model layer volumes in DXF format

System Requirements

PC with 486 or greater processor, or Mac® with OS® X v.10.2.2 or later (documents only). To view model, Leapfrog® Viewer 4.13 or later is required on a PC with Microsoft® Windows 7 (64 bit) or later, 4 GB system memory and a graphics processor with at least 512 MB memory (refer to product specifications for detailed video requirements: http://www.leapfrog3d.com/products/leapfrog-geo/specifications). The current (as of publication date) installation file for the freely-accessible viewing software is provided as a convenience; however, it is advised that the most current version be obtained from Seequent Ltd.: https://www.leapfrog3d.com/products/leapfrog-viewer . Portable Document Format (*.pdf*) documents are viewable with Adobe® Reader® DC or later. Compression format is compatible with Microsoft® Windows 7 or later. URL paths are current as of publication date.

Author Contact Information

Terry Carter, MSc, P.Geo
Consulting Geologist, Cartergeologic
35 Parks Edge Cr.
London, Ontario
N6K 3P4
Tel : 519-473-4146
Email : terry.carter@cartergeologic.com

C.E. Logan (charles.logan@canada.ca)
Geological Survey of Canada
601 Booth Street
Ottawa, Ontario
K1A 0E8

Frank Brunton and Kei Yeung
Ontario Geological Survey
933 Ramsey Lake Road
Sudbury, Ontario
P3E 6B5
Tel : 705-670-5956 (Brunton) and 705-670-5938 (Yeung)
Email : frank.brunton@ontario.ca and kei.yeung@ontario.ca

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