

# ISO Geodetic Registry

|                           |  |
|---------------------------|--|
| <i>Item class</i>         | VerticalCRS  |
| <i>Name</i>               | <b>CGVD2013(CG2013a) epoch 2002 - OHt</b>  |
| <i>Item status</i>        | VALID  |
| <i>Identifier</i>         | 966  |
| <i>Alias</i>              | Canadian Geodetic Vertical Datum of 2013 (Canadian Gravimetric Geoid of 2013a)   |
| <i>Alias</i>              | Canadian Geodetic Vertical Datum of 2013 (Canadian Gravimetric Geoid of 2013a) Epoch 2002  |
| <i>Information source</i> | <p><i>Title</i> Canadian Gravimetric Geoid 2013 – Version A (CGG2013a)</p> <p><i>Author</i> M. Veronneau, J. Huang</p> <p><i>Publisher</i> Geodetic Survey Division, Natural Resources Canada, Government of Canada</p> <p><i>Publication date</i> 2015-11</p> <p><i>Series/Journal name</i> Internal Report</p>   |
| <i>Information source</i> | <p><i>Title</i> The Canadian Geodetic Vertical Datum of 2013 (CGVD2013)</p> <p><i>Author</i> M. Veronneau, J. Huang</p> <p><i>Publisher</i> Canadian Institute of Geomatics</p> <p><i>Publication date</i> 2016</p> <p><i>Series/Journal name</i> Geomatica</p> <p><i>Issue identification</i> Volume 70, No. 1</p> <p><i>Page</i> 42997.0</p> <p><i>Other citation details</i> <a href="http://dx.doi.org/10.5623/cig2016-101">http://dx.doi.org/10.5623/cig2016-101</a> (accessed 2022-01-21).</p> |
| <i>Information source</i> | <p><i>Title</i> Geoid Models</p> <p><i>Author</i> Canadian Geodetic Survey</p> <p><i>Publisher</i> Geodetic Survey Division, Natural Resources Canada, Government of Canada</p> <p><i>Revision date</i> 2021-12-07</p> <p><i>Other citation details</i> Website. <a href="https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en">https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en</a> (accessed 2022-01-21).</p>  |
| <i>Information source</i> | <p><i>Title</i> Canadian Geodetic Vertical Datum of 2013</p> <p><i>Author</i> Judith Bosse</p> <p><i>Publisher</i> Government of Canada</p> <p><i>Publication date</i> 2015-12-05</p> <p><i>Series/Journal name</i> Canada Gazette</p> <p><i>Issue identification</i> Part I, December 5, 2015</p> <p><i>Page</i> 2587.0</p> <p><i>Other citation details</i> <a href="http://www.gazette.gc.ca/">http://www.gazette.gc.ca/</a> (accessed 2022-01-21).</p>   |
| <i>Data source</i>        | ISO Geodetic Registry  |
| <i>Remarks</i>            | CGVD2013 heights at epoch 2002.0.  |
| <i>Scope</i>              | Spatial referencing.   |
| <i>Datum</i>              | Canadian Geodetic Vertical Datum of 2013 (Canadian Gravimetric Geoid of 2013a) Epoch 2002  |
| <i>Coordinate System</i>  | Vertical CS. Axis: height (H). Orientation: up. UoM: m.  |

## Extent

|                    |   |
|--------------------|---|
| <i>Description</i> | <b>Canada - onshore and offshore - Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario,</b> |
|--------------------|---|

**Prince Edward Island, Quebec, Saskatchewan,  
Yukon.**

|                                |                             |         |
|--------------------------------|-----------------------------|---------|
| <i>Geographic Bounding Box</i> | <i>West-bound longitude</i> | -141.01 |
|                                | <i>North-bound latitude</i> | 90.0    |
|                                | <i>East-bound longitude</i> | -47.74  |
|                                | <i>South-bound latitude</i> | 40.04   |

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|                               |   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
|-------------------------------|---|--------------|---|---------------|--------------------------|------------------|--|-------------------------|------------|-------------------------------|---|-----------------------------|--------------------------|-------------|---------|-------------------------------|--|
| <i>Item class</i>             | VerticalDatum   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Name</i>                   | <b>Canadian Geodetic Vertical Datum of 2013<br/>(Canadian Gravimetric Geoid of 2013a) Epoch<br/>2002</b>  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Item status</i>            | VALID   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Identifier</i>             | 964   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Alias</i>                  | Canadian Geodetic Vertical Datum of 2013 (Canadian Gravimetric Geoid of 2013a)  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Alias</i>                  | CGVD2013(CGG2013a)  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Alias</i>                  | CGG2013a  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Alias</i>                  | CGVD2013  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Information source</i>     | <table> <tr><td><i>Title</i></td><td>Canadian Geodetic Vertical Datum of 2013</td></tr> <tr><td><i>Author</i></td><td>Judith Bosse</td></tr> <tr><td><i>Publisher</i></td><td>Government of Canada</td></tr> <tr><td><i>Publication date</i></td><td>2015-12-05</td></tr> <tr><td><i>Series/Journal name</i></td><td>Canada Gazette</td></tr> <tr><td><i>Issue identification</i></td><td>Part I, December 5, 2015</td></tr> <tr><td><i>Page</i></td><td>2587.0</td></tr> <tr><td><i>Other citation details</i></td><td><a href="http://www.gazette.gc.ca/">http://www.gazette.gc.ca/</a> (accessed 2022-01-21).</td></tr> </table>   | <i>Title</i> | Canadian Geodetic Vertical Datum of 2013                | <i>Author</i> | Judith Bosse             | <i>Publisher</i> | Government of Canada   | <i>Publication date</i> | 2015-12-05 | <i>Series/Journal name</i>    | Canada Gazette  | <i>Issue identification</i> | Part I, December 5, 2015 | <i>Page</i> | 2587.0  | <i>Other citation details</i> | <a href="http://www.gazette.gc.ca/">http://www.gazette.gc.ca/</a> (accessed 2022-01-21).                         |
| <i>Title</i>                  | Canadian Geodetic Vertical Datum of 2013  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Author</i>                 | Judith Bosse  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publisher</i>              | Government of Canada  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publication date</i>       | 2015-12-05  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Series/Journal name</i>    | Canada Gazette  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Issue identification</i>   | Part I, December 5, 2015  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Page</i>                   | 2587.0  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Other citation details</i> | <a href="http://www.gazette.gc.ca/">http://www.gazette.gc.ca/</a> (accessed 2022-01-21).  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Information source</i>     | <table> <tr><td><i>Title</i></td><td>Geoid Models</td></tr> <tr><td><i>Author</i></td><td>Canadian Geodetic Survey</td></tr> <tr><td><i>Publisher</i></td><td>Geodetic Survey Division, Natural Resources Canada, Government of Canada</td></tr> <tr><td><i>Revision date</i></td><td>2021-12-07</td></tr> <tr><td><i>Other citation details</i></td><td>Website. <a href="https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en">https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en</a> (accessed 2022-01-21).</td></tr> </table>   | <i>Title</i> | Geoid Models  | <i>Author</i> | Canadian Geodetic Survey | <i>Publisher</i> | Geodetic Survey Division, Natural Resources Canada, Government of Canada | <i>Revision date</i>    | 2021-12-07 | <i>Other citation details</i> | Website. <a href="https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en">https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en</a> (accessed 2022-01-21). |                             |                          |             |         |                               |  |
| <i>Title</i>                  | Geoid Models  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Author</i>                 | Canadian Geodetic Survey  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publisher</i>              | Geodetic Survey Division, Natural Resources Canada, Government of Canada  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Revision date</i>          | 2021-12-07  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Other citation details</i> | Website. <a href="https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en">https://webapp.geod.nrcan.gc.ca/geod/data-donnees/geoid.php?locale=en</a> (accessed 2022-01-21).   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Information source</i>     | <table> <tr><td><i>Title</i></td><td>Canadian Gravimetric Geoid 2013 – Version A (CGG2013a)</td></tr> <tr><td><i>Author</i></td><td>M. Veronneau, J. Huang</td></tr> <tr><td><i>Publisher</i></td><td>Geodetic Survey Division, Natural Resources Canada, Government of Canada</td></tr> <tr><td><i>Publication date</i></td><td>2015-11</td></tr> <tr><td><i>Series/Journal name</i></td><td>Internal Report</td></tr> </table>  | <i>Title</i> | Canadian Gravimetric Geoid 2013 – Version A (CGG2013a)  | <i>Author</i> | M. Veronneau, J. Huang   | <i>Publisher</i> | Geodetic Survey Division, Natural Resources Canada, Government of Canada | <i>Publication date</i> | 2015-11    | <i>Series/Journal name</i>    | Internal Report   |                             |                          |             |         |                               |  |
| <i>Title</i>                  | Canadian Gravimetric Geoid 2013 – Version A (CGG2013a)  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Author</i>                 | M. Veronneau, J. Huang  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publisher</i>              | Geodetic Survey Division, Natural Resources Canada, Government of Canada  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publication date</i>       | 2015-11   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Series/Journal name</i>    | Internal Report   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
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| <i>Title</i>                  | The Canadian Geodetic Vertical Datum of 2013 (CGVD2013)   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Author</i>                 | M. Veronneau, J. Huang  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publisher</i>              | Canadian Institute of Geomatics   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Publication date</i>       | 2016  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Series/Journal name</i>    | Geomatica   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Issue identification</i>   | Volume 70, No. 1  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Page</i>                   | 42997.0   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Other citation details</i> | <a href="http://dx.doi.org/10.5623/cig2016-101">http://dx.doi.org/10.5623/cig2016-101</a> (accessed 2022-01-21).  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Data source</i>            | ISO Geodetic Registry   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Remarks</i>                | Heights are at epoch 2002.0.  |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |
| <i>Anchor definition</i>      | CGVD2013(CGG2013a) is a gravimetric datum defined by the Canadian Gravimetric Geoid of 2013a (CGG2013a), referenced to the NAD83(CSRs) v6 geodetic datum at epoch 2002.0. The geoid-based datum is defined by the equipotential surface $W_0=62,636,856.0 \text{ m}^2\text{m/s/s}$ , representing by convention the coastal mean sea level for North America. The definition and geopotential value comes from an agreement between Canada and the USA. The Canadian Gravimetric Geoid of 2013a (CGG2013a) is the second realization of   |              |   |               |                          |                  |  |                         |            |                               |   |                             |                          |             |         |                               |  |

|                                   |  |
|-----------------------------------|--|
|                                   | the CGVD2013 vertical datum and is considered static. It is available in both the NAD83(CSRS) and ITRF2008 geometric reference frames using the GRS80 ellipsoid, making it compatible with space-based positioning techniques. Heights in CGVD2013(CGG2013a) epoch 2002.0 are orthometric and can be obtained from NAD83(CSRS) v6 or ITRF2008 ellipsoidal heights at epoch 2002.0 by subtracting the CGG2013a geoid height in either NAD83(CSRS) v6 or ITRF2008, respectively. |
| <i>Release date</i>               | 2015   |
| <i>Coordinate Reference Epoch</i> | 2002.0   |
| <i>Scope</i>                      | Spatial referencing  |

## Extent

|                                |  |         |  |
|--------------------------------|--|---------|--|
| <i>Description</i>             | <b>Canada - onshore and offshore - Alberta, British Columbia, Manitoba, New Brunswick, Newfoundland and Labrador, Northwest Territories, Nova Scotia, Nunavut, Ontario, Prince Edward Island, Quebec, Saskatchewan, Yukon.</b> |         |  |
| <i>Geographic Bounding Box</i> | <i>West-bound longitude</i>  | -141.01 |  |
|                                | <i>North-bound latitude</i>  | 90.0    |  |
|                                | <i>East-bound longitude</i>  | -47.74  |  |
|                                | <i>South-bound latitude</i>  | 40.04   |  |

# ISO Geodetic Registry

|                           |  |   |
|---------------------------|--|---|
| <i>Item class</i>         | VerticalCS   |   |
| <i>Name</i>               | <b>Vertical CS. Axis: height (H). Orientation: up. UoM: m.</b> |   |
| <i>Item status</i>        | VALID  |   |
| <i>Identifier</i>         | 42   |   |
| <i>Information source</i> | <i>Title</i>   | ISO 19111 Geographical information - Spatial referencing by coordinates |
|                           | <i>Author</i>  | International Organization for Standardization (ISO)                    |
|                           | <i>Publisher</i>   | International Organization for Standardization (ISO)                    |
|                           | <i>Publication date</i>  | 2007-07-01  |
|                           | <i>Edition</i>   | Second Edition  |
|                           | <i>Series/Journal name</i>                                     | International Standard  |
|                           | <i>Issue identification</i>                                    | ISO 19111:2007  |
|                           | <i>Data source</i>   | ISO Geodetic Registry   |
| <i>Remarks</i>            | Used in vertical coordinate reference systems.                 |   |

## Axes

|                           |  |   |
|---------------------------|--|---|
| <i>Item class</i>         | CoordinateSystemAxis                     |   |
| <i>Name</i>               | <b>Gravity-related height</b>            |   |
| <i>Item status</i>        | VALID                                    |   |
| <i>Identifier</i>         | 35                                       |   |
| <i>Information source</i> | <i>Title</i>                             | ISO 19111 Geographical information - Spatial referencing by coordinates |
|                           | <i>Author</i>                            | International Organization for Standardization (ISO)                    |
|                           | <i>Publisher</i>                         | International Organization for Standardization (ISO)                    |
|                           | <i>Publication date</i>                  | 2007-07-01  |
|                           | <i>Edition</i>                           | Second Edition  |
|                           | <i>Series/Journal name</i>               | International Standard  |
|                           | <i>Issue identification</i>              | ISO 19111:2007  |
|                           | <i>Data source</i>                       | ISO Geodetic Registry   |
| <i>Remarks</i>            | Used in a 1D vertical coordinate system. |   |
| <i>Abbreviation</i>       | H  |   |
| <i>Direction</i>          | up                                       |   |
| <i>Unit</i>               | metre                                    |   |