

# ISO Geodetic Registry

|                           |  |  |
|---------------------------|--|--|
| <i>Item class</i>         | GeodeticCRS  |  |
| <i>Name</i>               | <b>NAD83(CSRs) v2 - XYZ</b>  |  |
| <i>Item status</i>        | VALID  |  |
| <i>Identifier</i>         | 432  |  |
| <i>Alias</i>              | NAD83v2  |  |
| <i>Alias</i>              | Canadian Spatial Reference System 1998   |  |
| <i>Alias</i>              | NAD83  |  |
| <i>Alias</i>              | NAD83(CSRs)  |  |
| <i>Alias</i>              | North American Datum 1983 v2   |  |
| <i>Alias</i>              | NAD83(CSRs98)  |  |
| <i>Alias</i>              | CSRS98   |  |
| <i>Alias</i>              | Canadian Spatial Reference System  |  |
| <i>Alias</i>              | NAD83(CSRs)v2  |  |
| <i>Alias</i>              | CSRS   |  |
| <i>Information source</i> | <i>Title</i>   | The Canadian Spatial Reference System (CSRS)   |
|                           | <i>Author</i>  | Canadian Geodetic Survey   |
|                           | <i>Publisher</i>   | Canadian Geodetic Survey, Surveyor General Branch, Earth Sciences Sector, Natural Resources Canada, Government of Canada |
|                           | <i>Publication date</i>  | 2016-08-30   |
| <i>Information source</i> | <i>Title</i>   | The Evolution of NAD83 in Canada   |
|                           | <i>Author</i>  | M. Craymer   |
|                           | <i>Publisher</i>   | Canadian Institute of Geomatics  |
|                           | <i>Publication date</i>  | 2006   |
|                           | <i>Series/Journal name</i>   | Geomatica  |
|                           | <i>Issue identification</i>  | Volume 60, No. 2   |
| <i>Data source</i>        | <i>Page</i>  | 151-164  |
|                           | <i>ISO Geodetic Registry</i>   |  |
| <i>Scope</i>              | Spatial referencing  |  |
| <i>Datum</i>              | North American Datum of 1983 (CSRS) version 2  |  |
| <i>Coordinate System</i>  | Geocentric 3D right-handed Cartesian CS. Axes: Geocentric X,Y,Z. Orientation: Z to North Pole, [X and Y in the equatorial plane, X at Prime Meridian   X in the equatorial plane at the Prime Meridian]. 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, 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   |

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|                           |   |   |
|---------------------------|---|---|
| <i>Item class</i>         | GeodeticDatum   |   |
| <i>Name</i>               | <b>North American Datum of 1983 (CSRS) version 2</b>  |   |
| <i>Item status</i>        | VALID   |   |
| <i>Identifier</i>         | 201   |   |
| <i>Alias</i>              | NAD83v2   |   |
| <i>Alias</i>              | Canadian Spatial Reference System 1998  |   |
| <i>Alias</i>              | NAD83   |   |
| <i>Alias</i>              | NAD83(CSRS)   |   |
| <i>Alias</i>              | NAD83CSRS   |   |
| <i>Alias</i>              | North American Datum 1983 v2  |   |
| <i>Alias</i>              | NAD83(CSRS98)   |   |
| <i>Alias</i>              | CSRS98  |   |
| <i>Alias</i>              | Canadian Spatial Reference System   |   |
| <i>Alias</i>              | NAD83(CSRS)v2   |   |
| <i>Alias</i>              | CSRS  |   |
| <i>Information source</i> | <i>Title</i>  | The Evolution of NAD83 in Canada: Addendum  |
|                           | <i>Author</i>   | M. Craymer  |
|                           | <i>Publisher</i>  | Canadian Institute of Geomatics   |
|                           | <i>Publication date</i>   | 2006  |
|                           | <i>Series/Journal name</i>  | Geomatica   |
|                           | <i>Issue identification</i>   | Volume 60, No. 4  |
|                           | <i>Page</i>   | 433.0   |
| <i>Information source</i> | <i>Title</i>  | Realisation and Unification of NAD83 in Canada and the US via the ITRF  |
|                           | <i>Author</i>   | M. Craymer, R. Ferland, R. Snay   |
|                           | <i>Publisher</i>  | Springer, Berlin - Heidelberg   |
|                           | <i>Publication date</i>   | 2000  |
|                           | <i>Series/Journal name</i>  | International Association of Geodesy Symposia   |
|                           | <i>Issue identification</i>   | Volume 120  |
|                           | <i>Page</i>   | 118–121   |
| <i>Information source</i> | <i>Other citation details</i>   | In Rummel R., Drewes H., Bosch W., Hornik H. (eds) Towards an Integrated Global Geodetic Observing System (IGGOS). International Association of Geodesy Symposia, Vol 120. Springer, Berlin, Heidelberg |
|                           | <i>Title</i>  | The Evolution of NAD83 in Canada  |
|                           | <i>Author</i>   | M. Craymer  |
|                           | <i>Publisher</i>  | Canadian Institute of Geomatics   |
|                           | <i>Publication date</i>   | 2006  |
|                           | <i>Series/Journal name</i>  | Geomatica   |
|                           | <i>Issue identification</i>   | Volume 60, No. 2  |
| <i>Information source</i> | <i>Page</i>   | 151-164   |
|                           | <i>Title</i>  | The Canadian Spatial Reference System (CSRS)  |
|                           | <i>Author</i>   | Canadian Geodetic Survey  |
|                           | <i>Publisher</i>  | Canadian Geodetic Survey, Surveyor General Branch, Earth Sciences Sector, Natural Resources Canada, Government of Canada  |
|                           | <i>Publication date</i>   | 2016-08-30  |
| <i>Data source</i>        | ISO Geodetic Registry   |   |
| <i>Remarks</i>            | Adopted by the Canadian federal government for use in Canada, and by provincial governments in Alberta, British Columbia, Manitoba, |   |

|                          |   |
|--------------------------|---|
| <i>Anchor definition</i> | New Brunswick, Prince Edward Island, Quebec and Saskatchewan. Replaces NAD83(CSRS96) v1. Replaced by NAD83(CSRS) v3. Realization of the North American Datum of 1983 for the second version of the Canadian Spatial Reference System, referred to as CSRS98 or CSRS. The frame is defined by a seven parameter transformation of ITRF96 3D geocentric Cartesian coordinates and velocities for Canadian and bordering U.S. and Greenland stations at reference epoch 1997.0. The frame is kept aligned to North America at other epochs using the NNR-NUVEL-1A estimate of three Cartesian rotation rates of change representing the tectonic plate motion of North America. The origin, scale and orientation of the frame are nominally defined to be that for the BIH Terrestrial System 1984 (BTS84). |
| <i>Release date</i>      | 1998-01-01  |
| <i>Scope</i>             | Spatial referencing   |
| <i>Ellipsoid</i>         | GRS 1980  |
| <i>Prime Meridian</i>    | Greenwich   |

## 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   |

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|                             |  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
|-----------------------------|--|--------------|--------------------------------|---------------|-----------|------------------|--------------------------------------|-------------------------|---------|----------------------------|---------------------|-----------------------------|------------------|-------------|---------|
| <i>Item class</i>           | Ellipsoid  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Name</i>                 | <b>GRS 1980</b>  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Item status</i>          | VALID  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Identifier</i>           | 27   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Alias</i>                | Geodetic Reference System 1980   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Alias</i>                | GRS1980  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Alias</i>                | IAG GRS80  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Alias</i>                | International 1979   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Alias</i>                | GRS80  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Information source</i>   | <table> <tr> <td><i>Title</i></td><td>Geodetic Reference System 1980</td></tr> <tr> <td><i>Author</i></td><td>H. Moritz</td></tr> <tr> <td><i>Publisher</i></td><td>Springer International Publishing</td></tr> <tr> <td><i>Publication date</i></td><td>2003-03</td></tr> <tr> <td><i>Series/Journal name</i></td><td>Journal of Geodesy</td></tr> <tr> <td><i>Issue identification</i></td><td>Volume 74, No. 1</td></tr> <tr> <td><i>Page</i></td><td>128–162</td></tr> </table>  | <i>Title</i> | Geodetic Reference System 1980 | <i>Author</i> | H. Moritz | <i>Publisher</i> | Springer International Publishing    | <i>Publication date</i> | 2003-03 | <i>Series/Journal name</i> | Journal of Geodesy  | <i>Issue identification</i> | Volume 74, No. 1 | <i>Page</i> | 128–162 |
| <i>Title</i>                | Geodetic Reference System 1980   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Author</i>               | H. Moritz  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Publisher</i>            | Springer International Publishing  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Publication date</i>     | 2003-03  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Series/Journal name</i>  | Journal of Geodesy   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Issue identification</i> | Volume 74, No. 1   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Page</i>                 | 128–162  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Information source</i>   | <table> <tr> <td><i>Title</i></td><td>Geodetic Reference System 1980</td></tr> <tr> <td><i>Author</i></td><td>H. Moritz</td></tr> <tr> <td><i>Publisher</i></td><td>International Association of Geodesy</td></tr> <tr> <td><i>Publication date</i></td><td>1984</td></tr> <tr> <td><i>Series/Journal name</i></td><td>Bulletin Geodesique</td></tr> <tr> <td><i>Issue identification</i></td><td>Volume 58, No. 3</td></tr> <tr> <td><i>Page</i></td><td>395-405</td></tr> </table> | <i>Title</i> | Geodetic Reference System 1980 | <i>Author</i> | H. Moritz | <i>Publisher</i> | International Association of Geodesy | <i>Publication date</i> | 1984    | <i>Series/Journal name</i> | Bulletin Geodesique | <i>Issue identification</i> | Volume 58, No. 3 | <i>Page</i> | 395-405 |
| <i>Title</i>                | Geodetic Reference System 1980   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Author</i>               | H. Moritz  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Publisher</i>            | International Association of Geodesy   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Publication date</i>     | 1984   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Series/Journal name</i>  | Bulletin Geodesique  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Issue identification</i> | Volume 58, No. 3   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Page</i>                 | 395-405  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Data source</i>          | ISO Geodetic Registry  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Remarks</i>              | Adopted by IUGG 1979 Canberra. Inverse flattening is derived from geocentric gravitational constant $GM = 3986005e8 \text{ m}^3/\text{s}^2$ , dynamic form factor $J_2 = 108263e-8$ and Earth's angular velocity = $7292115e-11 \text{ rad/s}$ .   |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Semi-major axis</i>      | 6378137.0 m  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
| <i>Inverse flattening</i>   | 298.257222101 m  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |

# ISO Geodetic Registry

|                            |                               |   |
|----------------------------|-------------------------------|---|
| <i>Item class</i>          | PrimeMeridian                 |   |
| <i>Name</i>                | <b>Greenwich</b>              |   |
| <i>Item status</i>         | VALID                         |   |
| <i>Identifier</i>          | 25                            |   |
| <i>Alias</i>               | Zero meridian                 |   |
| <i>Information source</i>  | <i>Title</i>                  | Why the Greenwich meridian moved                                |
|                            | <i>Author</i>                 | S. Malys, J.H. Seago, N.K. Pavlis, P.K. Seidelmann, G.H. Kaplan |
|                            | <i>Publisher</i>              | Springer International Publishing                               |
|                            | <i>Publication date</i>       | 2015-12   |
|                            | <i>Series/Journal name</i>    | Journal of Geodesy  |
|                            | <i>Issue identification</i>   | Volume 89, No. 12   |
|                            | <i>Page</i>                   | 1263–1272   |
|                            | <i>Title</i>                  | IERS Conventions (2010)   |
|                            | <i>Author</i>                 | G. Petit, B.J. Luzum (eds)                                      |
|                            | <i>Publisher</i>              | Verlag des Bundesamts für Kartographie und Geodäsie             |
| <i>Information source</i>  | <i>Publication date</i>       | 2010  |
|                            | <i>Edition date</i>           |   |
|                            | <i>Series/Journal name</i>    | IERS Technical Notes  |
|                            | <i>Issue identification</i>   | 36.0  |
|                            | <i>Other citation details</i> | ISSN: 1019-4568   |
| <i>Data source</i>         | ISO Geodetic Registry         |   |
| <i>Greenwich longitude</i> | 0.0 °                         |   |

# ISO Geodetic Registry

|                    |   |   |
|--------------------|---|---|
| Item class         | CartesianCS   |   |
| Name               | <b>Geocentric 3D right-handed Cartesian CS.</b><br><b>Axes: Geocentric X,Y,Z. Orientation: Z to North Pole, [X and Y in the equatorial plane, X at Prime Meridian   X in the equatorial plane at the Prime Meridian]. UoM: m.</b>       |   |
| Item status        | VALID   |   |
| Identifier         | 45  |   |
| Alias              | Earth centred, earth fixed, right-handed 3D coordinate system, consisting of 3 orthogonal axes with X and Y axes in the equatorial plane, positive Z-axis parallel to mean earth rotation axis and pointing towards North Pole. UoM: m. |   |
| Alias              | ECEF  |   |
| Information source | Title   | ISO 19111 Geographical information - Spatial referencing by coordinates |
|                    | Author  | International Organization for Standardization (ISO)                    |
|                    | Publisher   | International Organization for Standardization (ISO)                    |
|                    | Publication date  | 2007-07-01  |
|                    | Edition   | Second Edition  |
|                    | Series/Journal name   | International Standard  |
|                    | Issue identification  | ISO 19111:2007  |
| Data source        | ISO Geodetic Registry   |   |
| Remarks            | Used in geocentric coordinate reference systems.  |   |

## Axes

|                    |                         |   |
|--------------------|-------------------------|---|
| Item class         | CoordinateSystemAxis    |   |
| Name               | <b>Geocentric X</b>     |   |
| Item status        | VALID                   |   |
| Identifier         | 33                      |   |
| Information source | Title                   | ISO 19111 Geographical information - Spatial referencing by coordinates |
|                    | Author                  | International Organization for Standardization (ISO)                    |
|                    | Publisher               | International Organization for Standardization (ISO)                    |
|                    | Publication date        | 2007-07-01  |
|                    | Edition                 | Second Edition  |
|                    | Series/Journal name     | International Standard  |
|                    | Issue identification    | ISO 19111:2007  |
| Data source        | ISO Geodetic Registry   |   |
| Abbreviation       | X                       |   |
| Direction          | Geocentre > equator/0°E |   |
| Unit               | metre                   |   |

|             |                      |  |
|-------------|----------------------|--|
| Item class  | CoordinateSystemAxis |  |
| Name        | <b>Geocentric Y</b>  |  |
| Item status | VALID                |  |
| Identifier  | 37                   |  |

|                           |                             |   |
|---------------------------|-----------------------------|---|
| <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>Abbreviation</i>       | Y                           |   |
| <i>Direction</i>          | Geocentre > equator/90°E    |   |
| <i>Unit</i>               | metre                       |   |

|                           |                             |   |
|---------------------------|-----------------------------|---|
| <i>Item class</i>         | CoordinateSystemAxis        |   |
| <i>Name</i>               | <b>Geocentric Z</b>         |   |
| <i>Item status</i>        | VALID                       |   |
| <i>Identifier</i>         | 39                          |   |
| <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>Abbreviation</i>       | Z                           |   |
| <i>Direction</i>          | Geocentre > north pole      |   |
| <i>Unit</i>               | metre                       |   |