

# ISO Geodetic Registry

|                           |  |   |
|---------------------------|--|---|
| <i>Item class</i>         | GeodeticCRS  |   |
| <i>Name</i>               | <b>ITRF2020 - LatLon</b>   |   |
| <i>Item status</i>        | VALID  |   |
| <i>Identifier</i>         | 804  |   |
| <i>Alias</i>              | International Terrestrial Reference Frame 2020                                       |   |
| <i>Alias</i>              | IERS Terrestrial Reference Frame 2020  |   |
| <i>Information source</i> | <i>Title</i>   | ITRF2020  |
|                           | <i>Author</i>  | International Earth Rotation and Reference Systems Service (IERS)   |
|                           | <i>Publisher</i>   | Institut National de l'Information Geographique et Forestiere (IGN)   |
|                           | <i>Revision date</i>   | 2022-04-15  |
|                           | <i>Other citation details</i>  | Webpage: <a href="https://itrf.ign.fr/en/solutions/itrf2020">https://itrf.ign.fr/en/solutions/itrf2020</a> (accessed 2022-04-18)          |
| <i>Information source</i> | <i>Title</i>   | ITRF2020 is available on line   |
|                           | <i>Author</i>  | Z. Altamimi   |
|                           | <i>Publisher</i>   | International Earth Rotation and Reference Systems Service (IERS)   |
|                           | <i>Publication date</i>  | 2022-04-19  |
|                           | <i>Series/Journal name</i>   | IERS Message  |
|                           | <i>Issue identification</i>  | 456   |
|                           | <i>Other citation details</i>  | <a href="https://datacenter.iers.org/data/2/message_456.txt">https://datacenter.iers.org/data/2/message_456.txt</a> (accessed 2022-04-19) |
| <i>Data source</i>        | ISO Geodetic Registry  |   |
| <i>Remarks</i>            | Replaces ITRF2014 - LatLon.  |   |
| <i>Scope</i>              | Spatial referencing  |   |
| <i>Datum</i>              | International Terrestrial Reference Frame 2020                                       |   |
| <i>Coordinate System</i>  | Ellipsoidal 2D CS. Axes: latitude, longitude. Orientations: north, east. UoM: degree |   |

## Extent

|                                |                             |        |
|--------------------------------|-----------------------------|--------|
| <i>Description</i>             | <b>World</b>                |        |
| <i>Geographic Bounding Box</i> | <i>West-bound longitude</i> | -180.0 |
|                                | <i>North-bound latitude</i> | 90.0   |
|                                | <i>East-bound longitude</i> | 180.0  |
|                                | <i>South-bound latitude</i> | -90.0  |

# ISO Geodetic Registry

|                                   |  |   |
|-----------------------------------|--|---|
| <i>Item class</i>                 | GeodeticDatum  |   |
| <i>Name</i>                       | <b>International Terrestrial Reference Frame 2020</b>  |   |
| <i>Item status</i>                | VALID  |   |
| <i>Identifier</i>                 | 801  |   |
| <i>Alias</i>                      | IERS Terrestrial Reference Frame 2020  |   |
| <i>Alias</i>                      | ITRF2020   |   |
| <i>Information source</i>         | <i>Title</i>   | ITRF2020 is available on line   |
|                                   | <i>Author</i>  | Z. Altamimi   |
|                                   | <i>Publisher</i>   | International Earth Rotation and Reference Systems Service (IERS)   |
|                                   | <i>Publication date</i>  | 2022-04-19  |
|                                   | <i>Series/Journal name</i>   | IERS Message  |
|                                   | <i>Issue identification</i>  | 456   |
|                                   | <i>Other citation details</i>  | <a href="https://datacenter.iers.org/data/2/message_456.txt">https://datacenter.iers.org/data/2/message_456.txt</a> (accessed 2022-04-19) |
| <i>Information source</i>         | <i>Title</i>   | ITRF2020  |
|                                   | <i>Author</i>  | International Earth Rotation and Reference Systems Service (IERS)   |
|                                   | <i>Publisher</i>   | Institut National de l'Information Geographique et Forestiere (IGN)   |
|                                   | <i>Revision date</i>   | 2022-04-15  |
|                                   | <i>Other citation details</i>  | Webpage: <a href="https://itrf.ign.fr/en/solutions/itrf2020">https://itrf.ign.fr/en/solutions/itrf2020</a> (accessed 2022-04-18)          |
| <i>Data source</i>                | ISO Geodetic Registry  |   |
| <i>Remarks</i>                    | Replaces ITRF2014. This is a purely Cartesian reference frame with no ellipsoid defined. GRS80 is the ellipsoid recommended by the IAG and IERS.   |   |
| <i>Anchor definition</i>          | Realisation of the IERS Terrestrial Reference System (ITRS) at reference epoch 2015.0. Origin of the long-term frame is defined using the concept of internal constraints such that there are zero translation parameters at epoch 2015.0 and zero translation rates between the ITRF2020 and the ILRS SLR long-term frame over the time-span 1993.0-2021.0. Scale of the long-term frame is defined using the concept of internal constraints such that there are zero scale and scale rate between ITRF2020 and the scale and scale rate averages of VLBI selected sessions up to 2013.75 and SLR weekly solutions covering the time-span 1997.7-2021.0. Orientation is defined such that there are zero rotation parameters at epoch 2015.0 and zero rotation rates between the ITRF2020 and ITRF2014. The datum is defined by a set of 3 dimensional Cartesian station coordinates, velocities, annual and semi-annual seasonal terms, and post-seismic deformation models given by the citations. |   |
| <i>Release date</i>               | 2022-04-15   |   |
| <i>Coordinate Reference Epoch</i> | 2015.0   |   |
| <i>Scope</i>                      | Spatial positioning  |   |
| <i>Ellipsoid</i>                  | GRS 1980   |   |
| <i>Prime Meridian</i>             | Greenwich  |   |

## Extent

|                                |                             |        |
|--------------------------------|-----------------------------|--------|
| <i>Description</i>             | <b>World</b>                |        |
| <i>Geographic Bounding Box</i> | <i>West-bound longitude</i> | -180.0 |
|                                | <i>North-bound latitude</i> | 90.0   |
|                                | <i>East-bound longitude</i> | 180.0  |

*South-bound latitude*

-90.0

# ISO Geodetic Registry

|                             |  |              |                                |               |           |                  |                                      |                         |         |                            |                     |                             |                  |             |         |
|-----------------------------|--|--------------|--------------------------------|---------------|-----------|------------------|--------------------------------------|-------------------------|---------|----------------------------|---------------------|-----------------------------|------------------|-------------|---------|
| <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>Information source</i>  | <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>Publication date</i>       | 2010  |
|                            | <i>Edition date</i>           |   |
|                            | <i>Series/Journal name</i>    | IERS Technical Notes  |
|                            | <i>Issue identification</i>   | 36.0  |
| <i>Data source</i>         | <i>Other citation details</i> | ISSN: 1019-4568   |
|                            | ISO Geodetic Registry         |   |
| <i>Greenwich longitude</i> | 0.0 °                         |   |

# ISO Geodetic Registry

|                           |   |   |
|---------------------------|---|---|
| <i>Item class</i>         | EllipsoidalCS   |   |
| <i>Name</i>               | <b>Ellipsoidal 2D CS. Axes: latitude, longitude. Orientations: north, east. UoM: degree</b>   |   |
| <i>Item status</i>        | VALID   |   |
| <i>Identifier</i>         | 43  |   |
| <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 geographic 2D coordinate reference systems. Coordinates referenced to this CS are in degrees. Any degree representation (e.g. DMSH, decimal, etc.) may be used but that used must be declared for the user by the supplier of data. |   |

## Axes

|                           |   |   |
|---------------------------|---|---|
| <i>Item class</i>         | CoordinateSystemAxis  |   |
| <i>Name</i>               | <b>Geodetic latitude</b>  |   |
| <i>Item status</i>        | VALID   |   |
| <i>Identifier</i>         | 38  |   |
| <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 geographic 2D and geographic 3D coordinate reference systems. |   |
| <i>Abbreviation</i>       | Lat   |   |
| <i>Direction</i>          | north   |   |
| <i>Unit</i>               | degree (supplier to define representation)                            |   |

  

|                           |                           |   |
|---------------------------|---------------------------|---|
| <i>Item class</i>         | CoordinateSystemAxis      |   |
| <i>Name</i>               | <b>Geodetic longitude</b> |   |
| <i>Item status</i>        | VALID                     |   |
| <i>Identifier</i>         | 34                        |   |
| <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 geographic 2D and geographic 3D coordinate reference systems. |
| <i>Abbreviation</i> |                             | Lon   |
| <i>Direction</i>    |                             | east  |
| <i>Unit</i>         |                             | degree (supplier to define representation)                            |