

# ISO Geodetic Registry

<i>Item class</i>	GeodeticCRS	
<i>Name</i>	<b>WGS 84 (G2139) - XYZ</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	796	
<i>Information source</i>	<i>Title</i>	Personal communication
	<i>Author</i>	Robert Wong
	<i>Publisher</i>	National Geospatial-Intelligence Agency
	<i>Publication date</i>	2021-10-25
	<i>Series/Journal name</i>	ISOGC Control Body Meeting
<i>Information source</i>	<i>Issue identification</i>	2021-10-25
	<i>Title</i>	Recent Update to WGS 84 Reference Frame and NGA Transition to IGS ANTEX
	<i>Author</i>	Office of Geomatics / GNSS Division, National Geospatial-Intelligence Agency
	<i>Publisher</i>	National Geospatial-Intelligence Agency
	<i>Publication date</i>	2021
	<i>Series/Journal name</i>	Public Release
	<i>Issue identification</i>	21-520
	<i>Other citation details</i>	<a href="https://earth-info.nga.mil/php/download.php?file=(U)WGS%2084(G2139).pdf">https://earth-info.nga.mil/php/download.php?file=(U)WGS%2084(G2139).pdf</a> (accessed 2021-09-24)
	<i>Data source</i>	ISO Geodetic Registry
	<i>Remarks</i>	Replaces WGS 84 (G1762) - XYZ.
<i>Scope</i>	Spatial referencing and GPS satellite navigation.	
<i>Datum</i>	World Geodetic System 1984 (G2139)	
<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   Y in the equatorial plane at the Prime Meridian]. UoM: m.	

## 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>World Geodetic System 1984 (G2139)</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	795	
<i>Alias</i>	WGS 84 (G2139)	
<i>Information source</i>	<i>Title</i>	Recent Update to WGS 84 Reference Frame and NGA Transition to IGS ANTEX
	<i>Author</i>	Office of Geomatics / GNSS Division, National Geospatial-Intelligence Agency
	<i>Publisher</i>	National Geospatial-Intelligence Agency
	<i>Publication date</i>	2021
	<i>Series/Journal name</i>	Public Release
	<i>Issue identification</i>	21-520
	<i>Other citation details</i>	<a href="https://earth-info.nga.mil/php/download.php?file=(U)WGS%2084(G2139).pdf">https://earth-info.nga.mil/php/download.php?file=(U)WGS%2084(G2139).pdf</a> (accessed 2021-09-24)
<i>Information source</i>	<i>Title</i>	Personal communication
	<i>Author</i>	Robert Wong
	<i>Publisher</i>	National Geospatial-Intelligence Agency
	<i>Publication date</i>	2021-10-25
	<i>Series/Journal name</i>	ISOGC Control Body Meeting
<i>Data source</i>	<i>Issue identification</i>	2021-10-25
	<i>ISO Geodetic Registry</i>	
<i>Remarks</i>	From 2021-01-03 replaces World Geodetic System 1984 (G1762), which has been redesignated World Geodetic System 1984 (G1762'). Tracking station coordinates changed on 2021-03-28 when NGA implemented the IGS definition of GPS satellite antenna phase centre offsets.	
<i>Anchor definition</i>	Defined through coordinates of 19 GPS tracking stations aligned to a subset of IGB14 stations at epoch 2016.0. The IGB14 station coordinates are considered to be equivalent to ITRF2014.	
<i>Release date</i>	2021-01-03	
<i>Coordinate Reference Epoch</i>	2016.0	
<i>Scope</i>	Spatial referencing and GPS satellite navigation	
<i>Ellipsoid</i>	WGS 84	
<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
	<i>South-bound latitude</i>	-90.0

# ISO Geodetic Registry

<i>Item class</i>	Ellipsoid
<i>Name</i>	<b>WGS 84</b>
<i>Item status</i>	VALID
<i>Identifier</i>	30
<i>Alias</i>	WGS84
<i>Information source</i>	<p><i>Title</i> Department of Defense World Geodetic System 1984: Its Definition and Relationships with Local Geodetic Systems, Version 1.0.0</p> <p><i>Author</i> National Geospatial-Intelligence Agency</p> <p><i>Publisher</i> National Geospatial-Intelligence Agency</p> <p><i>Publication date</i> 2014-07-08</p> <p><i>Series/Journal name</i> Standardization Document</p> <p><i>Issue identification</i> NGA.STND.0036_1.0.0_WGS84</p>
<i>Information source</i>	<p><i>Title</i> World Geodetic System 1984</p> <p><i>Author</i> L.B. Decker, Defense Mapping Agency Aerospace Center</p> <p><i>Publisher</i> Defense Mapping Agency Aerospace Center</p> <p><i>Publication date</i> 1986-04</p> <p><i>Edition date</i></p>
<i>Information source</i>	<p><i>Title</i> Refinements to The World Geodetic System 1984</p> <p><i>Author</i> S. Malys, J.A. Slater, R.W. Smith, L.E. Kunz, S.C. Kenyon</p> <p><i>Publisher</i> Institute of Navigation</p> <p><i>Publication date</i> 1997-09</p> <p><i>Edition date</i></p> <p><i>Series/Journal name</i> Proceedings of the 10th International Technical Meeting of the Satellite Division of The Institute of Navigation (ION-GPS-1997), Kansas City, MO, September 1997</p> <p><i>Page</i> 841-850</p>
<i>Data source</i>	ISO Geodetic Registry
<i>Remarks</i>	The World Geodetic System 1984 (WGS 84) contains four defining physical parameters for the Earth: the semi-major axis (a), the reciprocal of flattening (1/f) of an oblate spheroid of revolution, the geocentric gravitational constant ( $GM = 3.986004418 \times 10^{14} \text{ m}^3/\text{s}^2$ ) includes the mass of the atmosphere, and the Earth's angular rotational velocity about its spin axis ( $\omega = 7.2921150 \times 10^{-5} \text{ rad/s}$ ).
<i>Semi-major axis</i>	6378137.0 m
<i>Inverse flattening</i>	298.2572236 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> <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	