

# ISO Geodetic Registry

<i>Item class</i>	GeodeticCRS												
<i>Name</i>	<b>ETRF93 - XYZ</b>												
<i>Item status</i>	VALID												
<i>Identifier</i>	244												
<i>Alias</i>	European Terrestrial Reference Frame 1993												
<i>Information source</i>	<table> <tr> <td><i>Title</i></td><td>EUREF Technical Note 1: Relationship and Transformation between the International and the European Terrestrial Reference Systems</td></tr> <tr> <td><i>Author</i></td><td>Z. Altamimi</td></tr> <tr> <td><i>Publisher</i></td><td>Institut National de l'Information Géographique et Forestière (IGN), France</td></tr> <tr> <td><i>Publication date</i></td><td>2018-06-28</td></tr> <tr> <td><i>Series/Journal name</i></td><td>IERS Technical Note</td></tr> <tr> <td><i>Issue identification</i></td><td>1.0</td></tr> </table>	<i>Title</i>	EUREF Technical Note 1: Relationship and Transformation between the International and the European Terrestrial Reference Systems	<i>Author</i>	Z. Altamimi	<i>Publisher</i>	Institut National de l'Information Géographique et Forestière (IGN), France	<i>Publication date</i>	2018-06-28	<i>Series/Journal name</i>	IERS Technical Note	<i>Issue identification</i>	1.0
<i>Title</i>	EUREF Technical Note 1: Relationship and Transformation between the International and the European Terrestrial Reference Systems												
<i>Author</i>	Z. Altamimi												
<i>Publisher</i>	Institut National de l'Information Géographique et Forestière (IGN), France												
<i>Publication date</i>	2018-06-28												
<i>Series/Journal name</i>	IERS Technical Note												
<i>Issue identification</i>	1.0												
<i>Information source</i>	<table> <tr> <td><i>Title</i></td><td>ETRS89 realization: Current status, ETRF2005 and Future Development</td></tr> <tr> <td><i>Author</i></td><td>Z. Altamimi</td></tr> <tr> <td><i>Publication date</i></td><td>2008-06-17</td></tr> <tr> <td><i>Edition date</i></td><td></td></tr> </table>	<i>Title</i>	ETRS89 realization: Current status, ETRF2005 and Future Development	<i>Author</i>	Z. Altamimi	<i>Publication date</i>	2008-06-17	<i>Edition date</i>					
<i>Title</i>	ETRS89 realization: Current status, ETRF2005 and Future Development												
<i>Author</i>	Z. Altamimi												
<i>Publication date</i>	2008-06-17												
<i>Edition date</i>													
<i>Information source</i>	<table> <tr> <td><i>Title</i></td><td>Memo : Specifications for reference frame fixing in the analysis of a EUREF GPS campaign (version 8)</td></tr> <tr> <td><i>Author</i></td><td>C. Boucher, Z. Altamimi</td></tr> <tr> <td><i>Publisher</i></td><td>Institute National de l'Information Geographique et Forestiere (IGN), Laboratoire de Recherche en Geodesie (LAREG)</td></tr> <tr> <td><i>Publication date</i></td><td>2011-05-18</td></tr> <tr> <td><i>Edition date</i></td><td></td></tr> </table>	<i>Title</i>	Memo : Specifications for reference frame fixing in the analysis of a EUREF GPS campaign (version 8)	<i>Author</i>	C. Boucher, Z. Altamimi	<i>Publisher</i>	Institute National de l'Information Geographique et Forestiere (IGN), Laboratoire de Recherche en Geodesie (LAREG)	<i>Publication date</i>	2011-05-18	<i>Edition date</i>			
<i>Title</i>	Memo : Specifications for reference frame fixing in the analysis of a EUREF GPS campaign (version 8)												
<i>Author</i>	C. Boucher, Z. Altamimi												
<i>Publisher</i>	Institute National de l'Information Geographique et Forestiere (IGN), Laboratoire de Recherche en Geodesie (LAREG)												
<i>Publication date</i>	2011-05-18												
<i>Edition date</i>													
<i>Data source</i>	ISO Geodetic Registry												
<i>Scope</i>	Spatial referencing												
<i>Datum</i>	European Terrestrial Reference Frame 1993												
<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>Europe - onshore and offshore: Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Germany, Gibraltar, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Monaco, Montenegro, Netherlands, Norway including Svalbard and Jan Mayen, Poland, Portugal, Romania, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom (UK)</b>
--------------------	--

**including Channel Islands and Isle of Man,  
Vatican City State.**

*Geographic Bounding Box*

*West-bound longitude*

-16.1

*North-bound latitude*

84.17

*East-bound longitude*

39.65

*South-bound latitude*

32.88

# ISO Geodetic Registry

<i>Item class</i>	GeodeticDatum	
<i>Name</i>	<b>European Terrestrial Reference Frame 1993</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	110	
<i>Alias</i>	ETRF93	
<i>Information source</i>	<i>Title</i>	EUREF Technical Note 1: Relationship and Transformation between the International and the European Terrestrial Reference Systems
	<i>Author</i>	Z. Altamimi
	<i>Publisher</i>	Institut National de l'Information Géographique et Forestière (IGN), France
	<i>Publication date</i>	2018-06-28
	<i>Series/Journal name</i>	IERS Technical Note
<i>Information source</i>	<i>Issue identification</i>	1.0
	<i>Title</i>	Memo : Specifications for reference frame fixing in the analysis of a EUREF GPS campaign (version 8)
	<i>Author</i>	C. Boucher, Z. Altamimi
	<i>Publisher</i>	Institute National de l'Information Geographique et Forestiere (IGN), Laboratoire de Recherche en Geodesie (LAREG)
	<i>Publication date</i>	2011-05-18
<i>Information source</i>	<i>Edition date</i>	
	<i>Title</i>	ETRS89 realization: Current status, ETRF2005 and Future Development
	<i>Author</i>	Z. Altamimi
	<i>Publication date</i>	2008-06-17
	<i>Edition date</i>	
<i>Data source</i>	ISO Geodetic Registry	
<i>Remarks</i>	The ETRF93 reference frame is a realisation of the ETRS89 reference system.	
<i>Anchor definition</i>	Coincides with ITRF93 in orientation and scale at epoch 1989.0 realigned to ITRF89 at epoch 1989.0 using 3 translations and is fixed to the stable part of the Eurasian tectonic plate through 3 rotation rates derived from the ITRF93 velocity field, representing the Eurasian plate's angular velocity about its Euler pole.	
<i>Coordinate Reference Epoch</i>	1989.0	
<i>Scope</i>	Spatial referencing	
<i>Ellipsoid</i>	GRS 1980	
<i>Prime Meridian</i>	Greenwich	

## Extent

<i>Description</i>	<b>Europe - onshore and offshore: Albania, Andorra, Austria, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Faroe Islands, Finland, France, Germany, Gibraltar, Greece, Hungary, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Macedonia, Malta, Monaco, Montenegro,</b>
--------------------	---

**Netherlands, Norway including Svalbard and Jan Mayen, Poland, Portugal, Romania, San Marino, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom (UK) including Channel Islands and Isle of Man, Vatican City State.**

*Geographic Bounding Box*

*West-bound longitude*

-16.1

*North-bound latitude*

84.17

*East-bound longitude*

39.65

*South-bound latitude*

32.88

# 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>	CartesianCS	
<i>Name</i>	<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>	
<i>Item status</i>	VALID	
<i>Identifier</i>	45	
<i>Alias</i>	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.	
<i>Alias</i>	ECEF	
<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 geocentric coordinate reference systems.	

## Axes

<i>Item class</i>	CoordinateSystemAxis	
<i>Name</i>	<b>Geocentric X</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	33	
<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>	X	
<i>Direction</i>	Geocentre > equator/0°E	
<i>Unit</i>	metre	

  

<i>Item class</i>	CoordinateSystemAxis	
<i>Name</i>	<b>Geocentric Y</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	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	