

# ISO Geodetic Registry

<i>Item class</i>	Transformation	
<i>Name</i>	<b>ITRF91 to ETRF2014 [EUREF v1]</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	758	
<i>Information source</i>	<i>Title</i>	Guidelines for EUREF Densifications
	<i>Author</i>	C. Bruyninx, Z. Altamimi, A. Caporali, A. Kenyeres, J. Legrand, M. Lidberg
	<i>Publisher</i>	IAG sub-commission for the European Reference Frame – EUREF
	<i>Revision date</i>	2018-03-09
	<i>Other citation details</i>	<a href="http://www.epncb.oma.be/_documentation/guidelines/Guidelines_for_EUREF_Densifications.pdf">http://www.epncb.oma.be/_documentation/guidelines/Guidelines_for_EUREF_Densifications.pdf</a> (accessed 2020-20-14)
<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>Revision date</i>	2018-06-28
	<i>Series/Journal name</i>	EUREF Technical Notes
	<i>Other citation details</i>	<a href="http://etrs89.ensg.ign.fr/pub/EUREF-TN-1.pdf">http://etrs89.ensg.ign.fr/pub/EUREF-TN-1.pdf</a> (accessed 2020-10-14)
<i>Data source</i>	ISO Geodetic Registry	
<i>Remarks</i>	Accuracy of transformation is given at the reference epoch for the transformation parameters (2010.0); actual accuracy then depends on the epoch at which the transformation parameters are applied (refer to Citation for accuracies of velocities of the para	
<i>Operation version</i>	EUREF v1	
<i>Scope</i>	Spatial referencing	
<i>Operation accuracy</i>	0.0 m	
<i>Source CRS</i>	ITRF91 - XYZ	
<i>Target CRS</i>	ETRF2014 - XYZ	
<i>Operation method</i>	Time-Dependent Position Vector Transformation (geocentric Cartesian domain)	

## 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,</b>
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**Sweden, Switzerland, United Kingdom (UK)  
including Channel Islands and Isle of Man,  
Vatican City State.**

<i>Geographic Bounding Box</i>	<i>West-bound longitude</i>	-16.1
	<i>North-bound latitude</i>	84.17
	<i>East-bound longitude</i>	39.65
	<i>South-bound latitude</i>	32.88

**Operation parameter values**

<i>Time reference</i>	2010.0 year
<i>Rate of change of scale difference</i>	-0.12 parts per billion per year
<i>Rate of change of Z-axis rotation</i>	-0.79 milliarc-second per year
<i>Rate of change of Y-axis rotation</i>	0.531 milliarc-second per year
<i>Rate of change of X-axis rotation</i>	0.085 milliarc-second per year
<i>Rate of change of Z-axis translation</i>	3.3 millimetre per year
<i>Rate of change of Y-axis translation</i>	0.5 millimetre per year
<i>Rate of change of X-axis translation</i>	-0.1 millimetre per year
<i>Scale difference</i>	-4.49 parts per billion
<i>Z-axis rotation</i>	-16.43 milliarc-second
<i>Y-axis rotation</i>	11.151 milliarc-second
<i>X-axis rotation</i>	1.785 milliarc-second
<i>Z-axis translation</i>	76.8 millimetre
<i>Y-axis translation</i>	-15.5 millimetre
<i>X-axis translation</i>	-27.4 millimetre

# ISO Geodetic Registry

<i>Item class</i>	OperationMethod
<i>Name</i>	<b>Time-Dependent Position Vector Transformation (geocentric Cartesian domain)</b>
<i>Item status</i>	VALID
<i>Identifier</i>	82
<i>Alias</i>	Time-Dependent 7-Parameter Transformation
<i>Alias</i>	14-Parameter Transformation
<i>Alias</i>	Time-Dependent Position Vector Transformation
<i>Data source</i>	ISO Geodetic Registry
<i>Remarks</i>	Note the analogy with the rotation for the Time-dependent Coordinate Frame Transformation but beware of the differences! The Position Vector Transformation convention is used by IAG.
<i>Formula</i>	Geomatics Guidance Note No 7, part 2: Coordinate Conversions and Transformations including Formulas

## Operation parameters

<i>X-axis translation</i>
<i>Y-axis translation</i>
<i>Z-axis translation</i>
<i>X-axis rotation</i>
<i>Y-axis rotation</i>
<i>Z-axis rotation</i>
<i>Scale difference</i>
<i>Rate of change of X-axis translation</i>
<i>Rate of change of Y-axis translation</i>
<i>Rate of change of Z-axis translation</i>
<i>Rate of change of X-axis rotation</i>
<i>Rate of change of Y-axis rotation</i>
<i>Rate of change of Z-axis rotation</i>
<i>Rate of change of scale difference</i>
<i>Time reference</i>