

# ISO Geodetic Registry

<i>Item class</i>	Transformation	
<i>Name</i>	<b>ITRF2020 to NAD 83 (PA11) Epoch 2010 [NGS v1]</b>	
<i>Item status</i>	VALID	
<i>Identifier</i>	989	
<i>Information source</i>	<i>Title</i>	HTDP User Guide (Version 3.5.0)
	<i>Author</i>	M. Dennis, J. Saleh, R. Snay, C. Pearson
	<i>Publisher</i>	National Geodetic Survey (NGS), National Oceanic and Atmospheric Administration (NOAA)
	<i>Publication date</i>	2022-12-01
	<i>Other citation details</i>	<a href="https://geodesy.noaa.gov/TOOLS/Htdp/HTDP-user-guide.pdf">https://geodesy.noaa.gov/TOOLS/Htdp/HTDP-user-guide.pdf</a> (accessed 2023-01-28)
<i>Data source</i>	ISO Geodetic Registry	
<i>Remarks</i>	Transformation defines NAD 83 (PA11) with respect to ITRF2020 and is treated as errorless.	
<i>Operation version</i>	NGS v1	
<i>Scope</i>	Spatial referencing	
<i>Operation accuracy</i>	0.0 m	
<i>Source CRS</i>	ITRF2020 - XYZ	
<i>Target CRS</i>	NAD 83 (PA11) Epoch 2010 - XYZ	
<i>Operation method</i>	Time-Dependent Coordinate Frame Transformation (geocentric Cartesian domain)	

## Extent

<i>Description</i>	<b>American Samoa - onshore and offshore. Marshall Islands - onshore and offshore. United States (USA) - onshore and offshore - Hawaii. United States Minor Outlying Islands - onshore and offshore.</b>	
<i>Geographic Bounding Box</i>	<i>West-bound longitude</i>	157.47
	<i>North-bound latitude</i>	31.8
	<i>East-bound longitude</i>	-151.27
	<i>South-bound latitude</i>	-17.56

## Operation parameter values

<i>Time reference</i>	2010.0 year
<i>Rate of change of scale difference</i>	0.11 parts per billion per year
<i>Rate of change of Z-axis rotation</i>	-2.186 milliarc-second per year
<i>Rate of change of Y-axis rotation</i>	1.007 milliarc-second per year
<i>Rate of change of X-axis rotation</i>	-0.384 milliarc-second per year
<i>Rate of change of Z-axis translation</i>	-0.0017 metre per year
<i>Rate of change of Y-axis translation</i>	0.0 metre per year
<i>Rate of change of X-axis translation</i>	1.0E-4 metre per year
<i>Scale difference</i>	1.7 parts per billion
<i>Z-axis rotation</i>	-25.706 milliarc-second
<i>Y-axis rotation</i>	26.56 milliarc-second
<i>X-axis rotation</i>	22.749 milliarc-second

<i>Z-axis translation</i>	-0.5859 metre
<i>Y-axis translation</i>	-2.0133 metre
<i>X-axis translation</i>	0.9095 metre

# ISO Geodetic Registry

<i>Item class</i>	OperationMethod
<i>Name</i>	<b>Time-Dependent Coordinate Frame Transformation (geocentric Cartesian domain)</b>
<i>Item status</i>	VALID
<i>Identifier</i>	94
<i>Alias</i>	Time-Dependent 7-Parameter Transformation
<i>Alias</i>	14-Parameter Transformation
<i>Alias</i>	Time-Dependent Coordinate Frame Transformation
<i>Data source</i>	ISO Geodetic Registry
<i>Remarks</i>	Note the analogy with the Time-dependent Position Vector 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>