ISO Geodetic Registry

Item class	Transformation	
Name	**ITRF2020 to NAD 83 (2011) Epoch 2010 [NGS v1]**	
Item status	VALID	
Identifier	985	
Information source	*Title*	HTDP User Guide (Version 3.5.0)
	Author	M. Dennis, J. Saleh, R. Snay, C. Pearson
	Publisher	National Geodetc Survey (NGS), National Oceanic and Atmospheric Administration (NOAA)
	Publication date	2022-12-01
	Edition	
	Edition date	
	Series/Journal name	
	Issue identification	
	Page	
	Other citation details	https://geodesy.noaa.gov/TOOLS/Htdp/HTDP-user-guide.pdf (accessed 2023-01-28)
Data source	ISO Geodetic Registry	
Remarks	Transformation defines NAD 83 (2011) with respect to ITRF2020 and is treated as errorless.	
Operation version	NGS v1	
Scope	Spatial referencing	
Operation accuracy	0.0 m	
Source CRS	ITRF2020 - XYZ	
Target CRS	NAD 83 (2011) Epoch 2010 - XYZ	
Operation method	Time-Dependent Coordinate Frame Transformation (geocentric Cartesian domain)	

Extent

Description	**United States and Territories - onshore and offshore: Puerto Rico. United States (USA) - Alaska, CONUS (Alabama, Arizona, Arkansas, California, Colorado, Connecticut, Delaware, Florida, Georgia, Idaho, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Mississippi, Missouri, Montana, Nebraska, Nevada, New Hampshire, New Jersey, New Mexico, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia, Wisconsin, Wyoming). Virgin Islands (US).**	
Geographic Bounding Box	*West-bound longitude*	167.65
	North-bound latitude	74.71
	East-bound longitude	-63.88

South-bound latitude	14.92

Operation parameter values

X-axis translation	1.0039 metre
Y-axis translation	-1.90961 metre
Z-axis translation	-0.54117 metre
X-axis rotation	26.78138 milliarc-second
Y-axis rotation	-0.42027 milliarc-second
Z-axis rotation	10.93206 milliarc-second
Scale difference	-0.05109 parts per billion
Rate of change of X-axis translation	7.9E-4 metre per year
Rate of change of Y-axis translation	-7.0E-4 metre per year
Rate of change of Z-axis translation	-0.00124 metre per year
Rate of change of X-axis rotation	0.06667 milliarc-second per year
Rate of change of Y-axis rotation	-0.75744 milliarc-second per year
Rate of change of Z-axis rotation	-0.05133 milliarc-second per year
Rate of change of scale difference	-0.07201 parts per billion per year
Time reference	2010.0 year

ISO Geodetic Registry

Item class	OperationMethod
Name	**Time-Dependent Coordinate Frame Transformation (geocentric Cartesian domain)**
Item status	VALID
Identifier	94
Alias	Time-Dependent 7-Parameter Transformation
Alias	14-Parameter Transformation
Alias	Time-Dependent Coordinate Frame Transformation
Data source	ISO Geodetic Registry
Remarks	Note the analogy with the Time-dependent Position Vector Transformation but beware of the differences! The Position Vector Transformation convention is used by IAG.
Formula	Geomatics Guidance Note No 7, part 2: Coordinate Conversions and Transformations including Formulas

Operation parameters

X-axis translation
Y-axis translation
Z-axis translation
X-axis rotation
Y-axis rotation
Z-axis rotation
Scale difference
Rate of change of X-axis translation
Rate of change of Y-axis translation
Rate of change of Z-axis translation
Rate of change of X-axis rotation
Rate of change of Y-axis rotation
Rate of change of Z-axis rotation
Rate of change of scale difference
Time reference