ISO Geodetic Registry

Item class	Transformation	
Name	**KSA-GRF17 to KSA-VRF14 [GASGI v1]**	
Item status	VALID	
Identifier	782	
Alias	KSA-GEOID17	
Information source	*Title*	Technical Summary for Saudi Arabia National Spatial Reference System (SANSRS).
	Author	General Directorate of Geodesy
	Publisher	General Directorate of Geodesy, General Authority for Survey and Geospatial Information, Kingdom of Saudi Arabia
	Publication date	2019-06
	Revision date	2021-02
	Edition	
	Edition date	
	Series/Journal name	,
	Issue identification	,
	Page	,
	Other citation details	https://www.gasgi.gov.sa/En/Products/Products_v1/Geodesy/Documents/Technical_Summary_for_SANSRS_v1.1.pdf (accessed 2021-06-07)
Data source	ISO Geodetic Registry	
Remarks	Hybrid geoid grid transformation with resolution 0.02 deg lat x 0.025 deg lon. Accuracy is ~2 cm in Eastern region and ~10-20 cm in rest of KSA. The hybrid grid is based on a gravimetric geoid fitted to KSA-VRF14 through a set of 280 GPS/levelling points. To obtain access to the KSA-GEOID17 grid file, contact GASGI at info@gasgi.gov.sa. The grid file also available in IGN2009 format.	
Operation version	GASGI v1	
Scope	Spatial referencing	
Operation accuracy	0.2 m	
Source CRS	KSA-GRF17 - LatLonEHt	
Target CRS	KSA-VRF14 - OHt	
Operation method	Geographic3D to Gravity Related Height (GRAVSOFT)	

Extent

Description	**Saudi Arabia - onshore.**	
Geographic Bounding Box	*West-bound longitude*	34.51
	North-bound latitude	32.16
	East-bound longitude	55.67
	South-bound latitude	16.37

Operation parameter values

Geoid (height correction) model file	KSA-GEOID17.gra

ISO Geodetic Registry

Item class	OperationMethod
Name	**Geographic3D to Gravity Related Height (GRAVSOFT)**
Item status	VALID
Identifier	774
Data source	ISO Geodetic Registry
Remarks	This transformation involves the application of a geoid-ellipsoid separation value interpolated from a geoid or quasigeoid model in the GRAVSOFT grid format. The model provides separation values at the nodes on a regular grid of latitude and longitude intersection points. The geodetic latitude and longitude used to interpolate within the grid are not affected by this transformation. The grid is referenced to the horizontal subset of the geographic CRS (the source CRS) and interpolation must be made in this system.
Formula	The gravity-related height (H) in the target vertical CRS is then obtained from the height above the ellipsoid (h) in the source geographic 3D CRS using: H = h - N where N is the geoid-ellipsoid separation relative to the ellipsoid of the source Geographic 3D CRS. The separation N is calculated through a bi-linear interpolation of the grid using the latitude and longitude of the point.

Operation parameters

Geoid (height correction) model file