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Sounding Better!

Custom Grids in Geodesy

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At the HYPACK conference, a customer asked me if they could save their User Defined Grid settings and send it off to someone. The goal would be to reduce the number of times different people have to do the same thing. This can be accomplished through a feature that was originally designed to implement non-predefined grids such as Military Grid Reference Systems. It would be especially helpful to share these grids as their set up can be relatively complex. For more information on the actual set up, you can reference the 2018 *Sounding Better!* on [Construction Grids](#).

Once geodetic parameters are configured, open the Tools menu (Figure 1) and select Save Custom Grid. GEODETIC PARAMETERS prompts you to name the grid and save a file with a .cgeo extension in the Datum folder.

Figure 1: Save Custom Grid

Geodetic Parameters

Tools Display Help

- Export Vdatum to XYZ
- Time-Variable Transformations
- Save Custom Grid**
- GPS Math Diagram

MS-2301 MISSISSIPPI EAST

Distance Unit: US Survey Foot

Depth Unit: same as horizontal

☐ Elevation Mode (Z-axis positive going up)

Ellipsoid: WGS-84

Semi-Major Axis: 6378137

Flattening: 298.257223563

Transverse Mercator

Central Meridian: 088 50 0 W

Reference Latitude: 29 30 0 N

Scale Factor: 0.99995

False Easting: 984250

False Northing: 0

☐ Local Grid Adjustment Local Grid

Datum transformation parameters

Delta X: 0.000 Delta rX: 0.00000

Delta Y: 0.000 Delta rY: 0.00000

Delta Z: 0.000 Delta rZ: 0.00000

Delta Scale: 0.00000

Datum shift file: ... X

RTK Tide Method

- ☐ Not using RTK tide
- ☐ (K-N) from KTD file
- ☐ N from geoid model, K from KTD file
- ☐ N from geoid model, K from VDatum
- ☒ N from geoid model, K from user value
- ☐ (K-N) from user value

Geoid Model: g2012a-CONUS ... X

Orthometric Height Correction: 0.000 ftUS

Height of geoid above chart datum: 0.00

OK Cancel

This is where the next step is not so obvious, as this feature was originally designed to support Construction Grids without thought as to sharing.

You can find send that .cgeo file from you Datum folder to your colleagues. They can then deposit the .cgeo file into their datum folder. Now they can see the custom settings at the very bottom of the list of grids. For instance, Figure 2 shows my Custom Grid “SoundingBetter”.

Figure 2: Where to Find Custom Settings

The screenshot shows the 'Geodetic Parameters' dialog box with the following settings:

- Predefined Grids:** A list box containing 'State Plane NAD-83', 'Tunisia', 'UK National Grid', 'UTM-NAD83', 'US - Idaho Power Corporation', 'US - Wisconsin WISCRS', 'Vietnam VN-2000', 'User Defined', and 'SoundingBetter' (selected).
- Depth Unit:** A dropdown menu set to 'same as horizontal'.
- Elevation Mode:** A checkbox labeled 'Elevation Mode (Z-axis positive going up)' which is unchecked.
- Ellipsoid:** A dropdown menu set to 'WGS-84'.
- Semi-Major Axis:** A text box containing '6378137'.
- Flattening:** A text box containing '298.257223563'.
- Datum transformation parameters:**
 - Delta X:** 0.000
 - Delta Y:** 0.000
 - Delta Z:** 0.000
 - Delta rX:** 0.00000
 - Delta rY:** 0.00000
 - Delta rZ:** 0.00000
 - Delta Scale:** 0.00000
 - Datum shift file:** An empty text box with a browse button and a cancel button.
- Transverse Mercator:** A dropdown menu.
- Central Meridian:** A text box containing '088 50 0 W'.
- Reference Latitude:** A text box containing '29 30 0 N'.
- Scale Factor:** A text box containing '0.99995'.
- False Easting:** A text box containing '984250'.
- False Northing:** A text box containing '0'.
- Local Grid Adjustment:** A checkbox which is unchecked, with a 'Local Grid' button next to it.
- RTK Tide Method:** A group box containing four radio buttons:
 - ☐ Not using RTK tide
 - ☐ (K-N) from KTD file
 - ☐ N from geoid model, K from KTD file
 - ☐ N from geoid model, K from VDatum
- Geoid Model:** A text box containing 'g2012a-CONUS' with a browse button and a cancel button.
- Orthometric Height Correction:** A text box containing '0.000' followed by 'ftUS'.

