Visualizing Groundwater Data in QGIS

Kurt Menke

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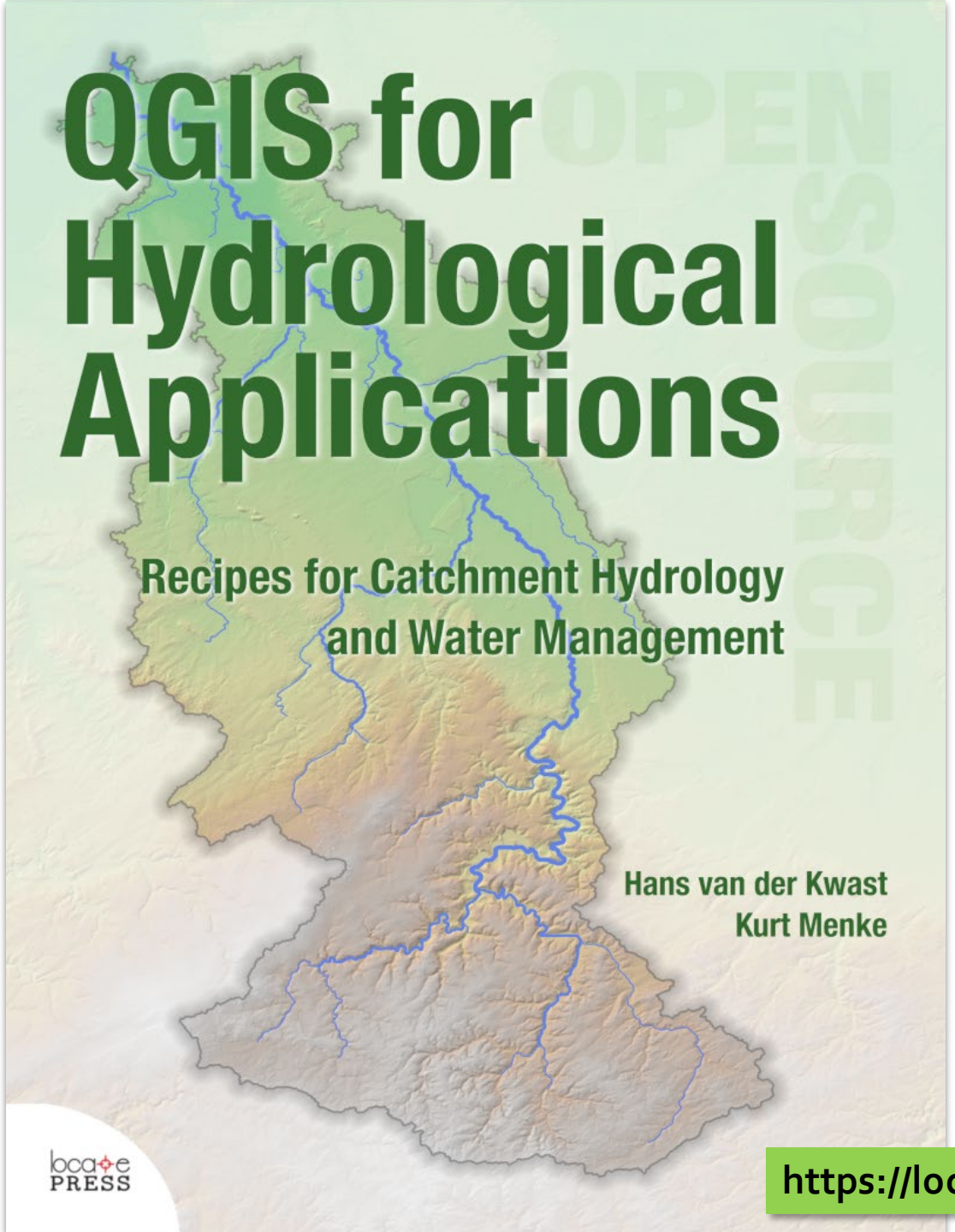
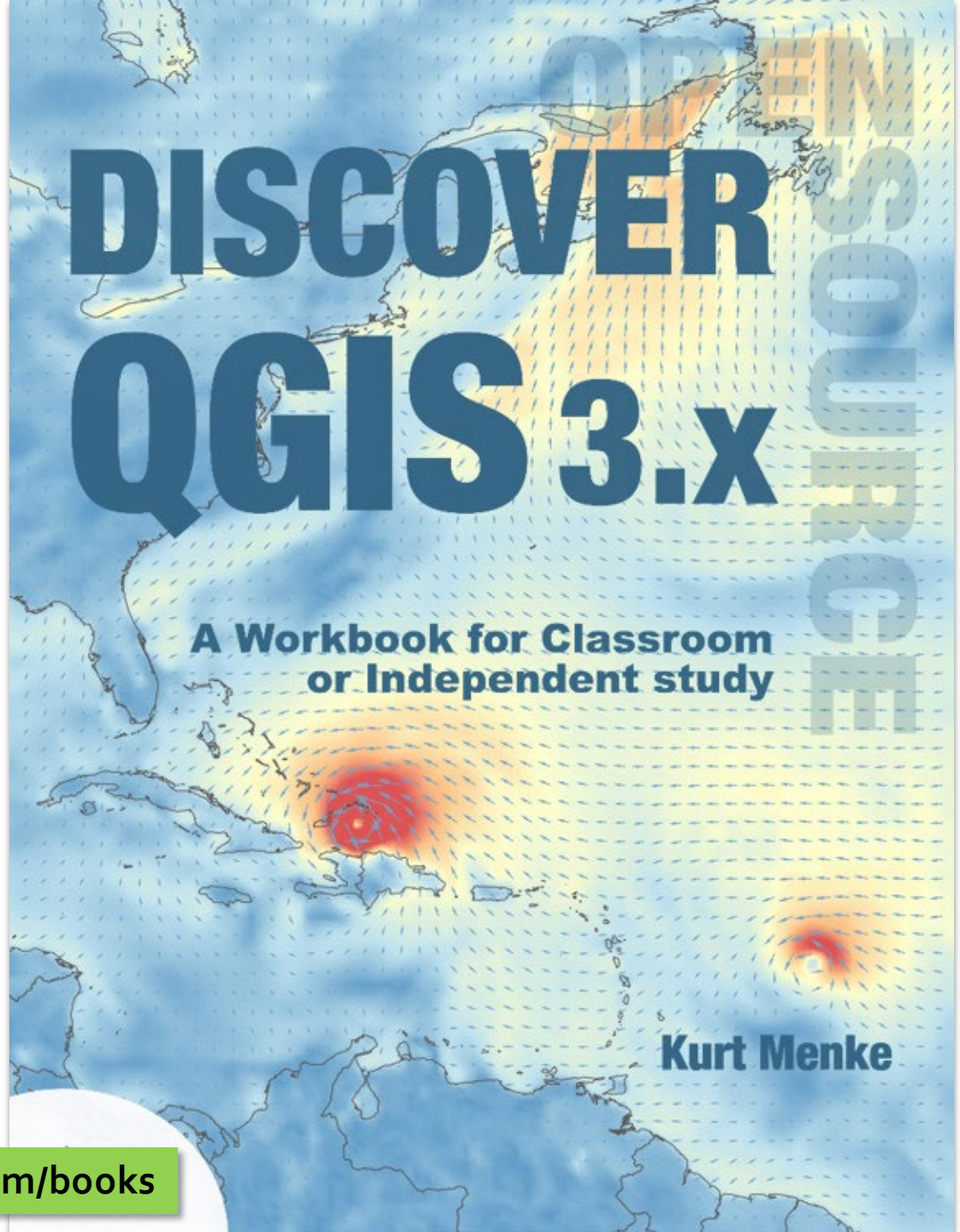
SEPTIMA **Septima.dk**

Copenhagen, Denmark

- Do a mix of spatial analysis/cartography/teaching
- QGIS certified instructor
- **OsGeo Charter Member**
- Member of the Danish QGIS User Group



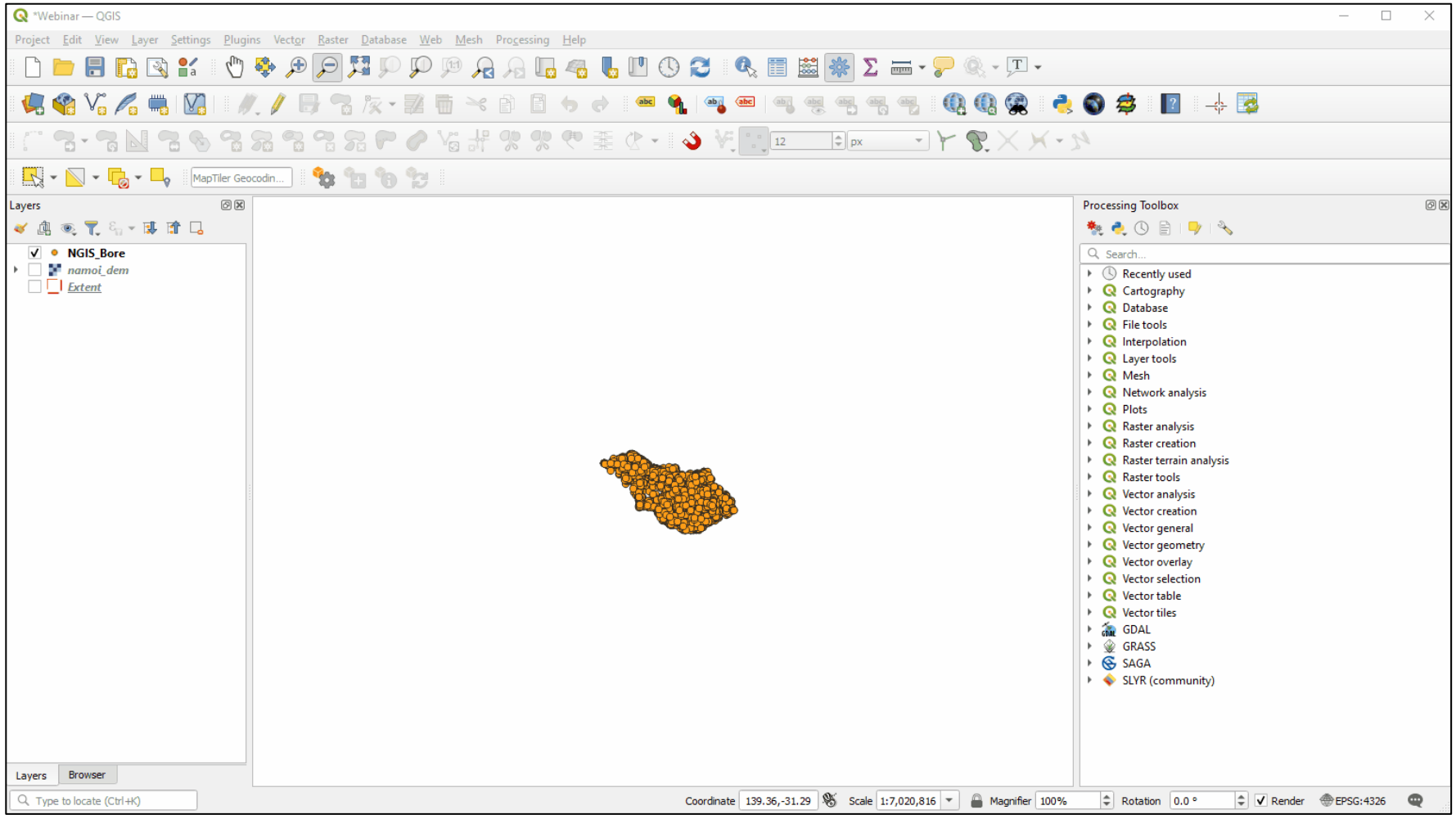


https://locatepress.com/books

QuickMapServices Plugin

Over 150 basemaps

Ensure data is falling in the correct place



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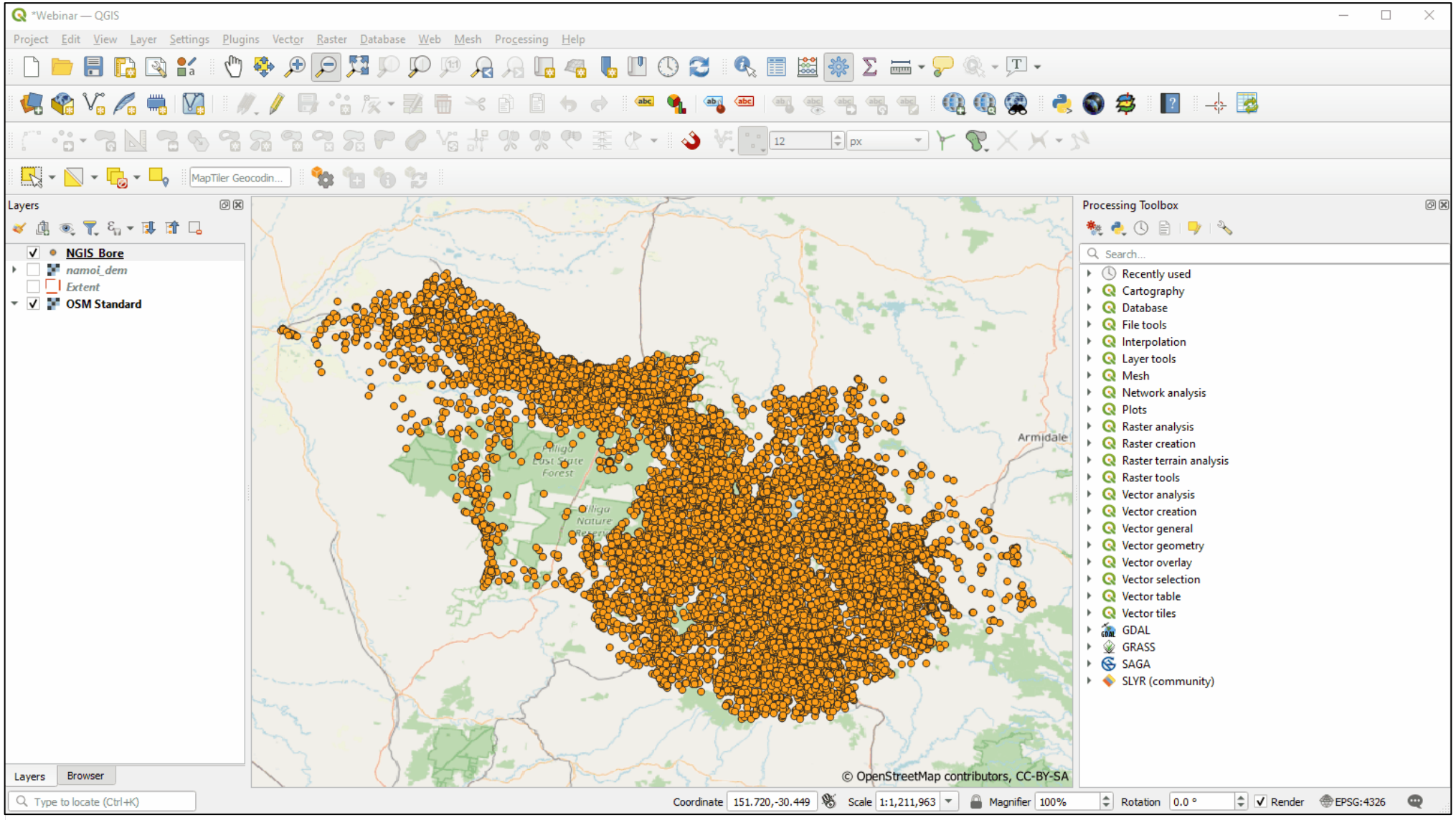
QGIS Layer Styling Panel (F7)

Show bore holes by type



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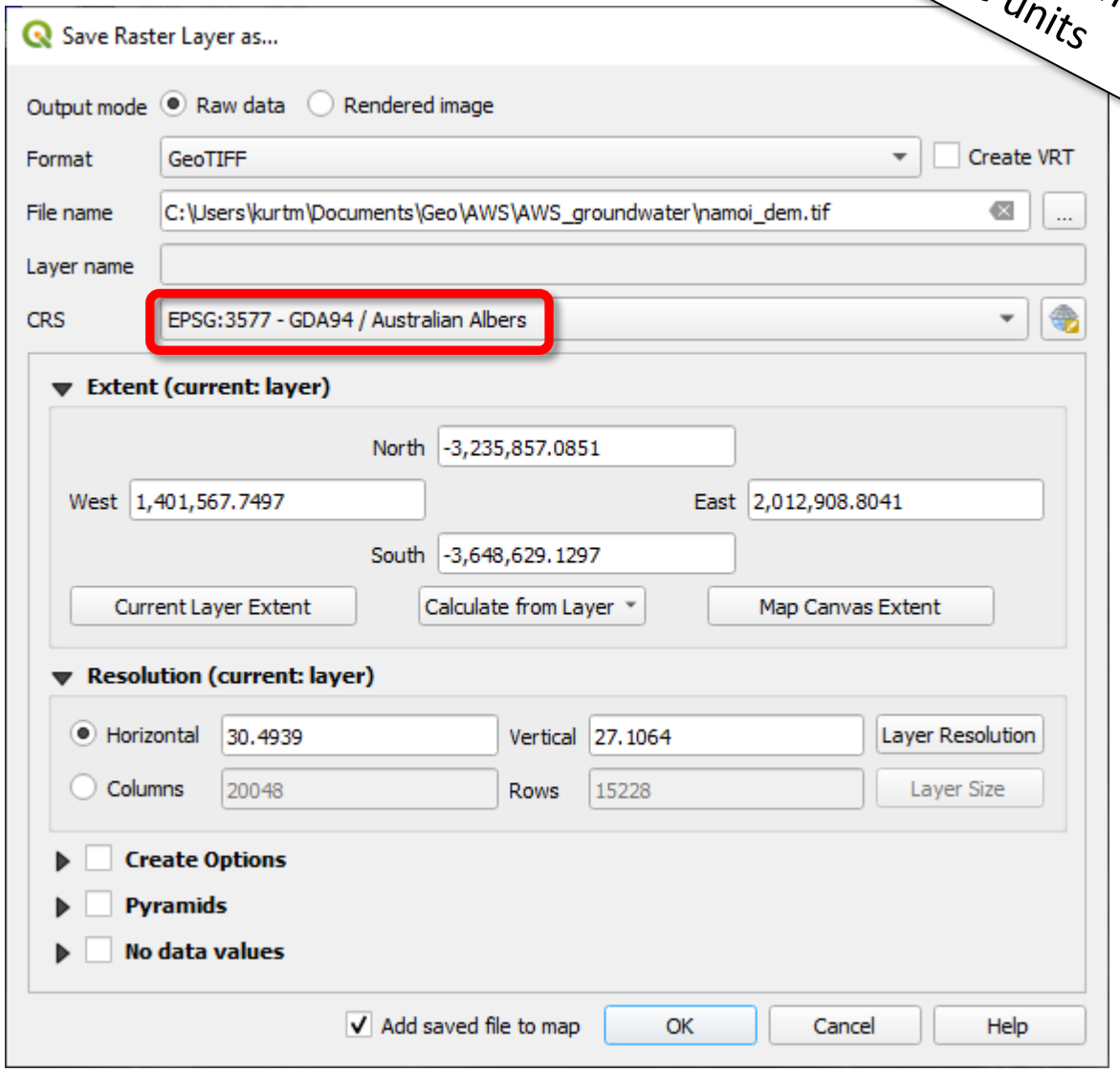
Visualizing the DEM

Put X, Y & Z values into the same units

*To generate an accurate hillshade image the DEM should be in a Cartesian coordinate system

Reproject by:

Right-click → Export → Save As…



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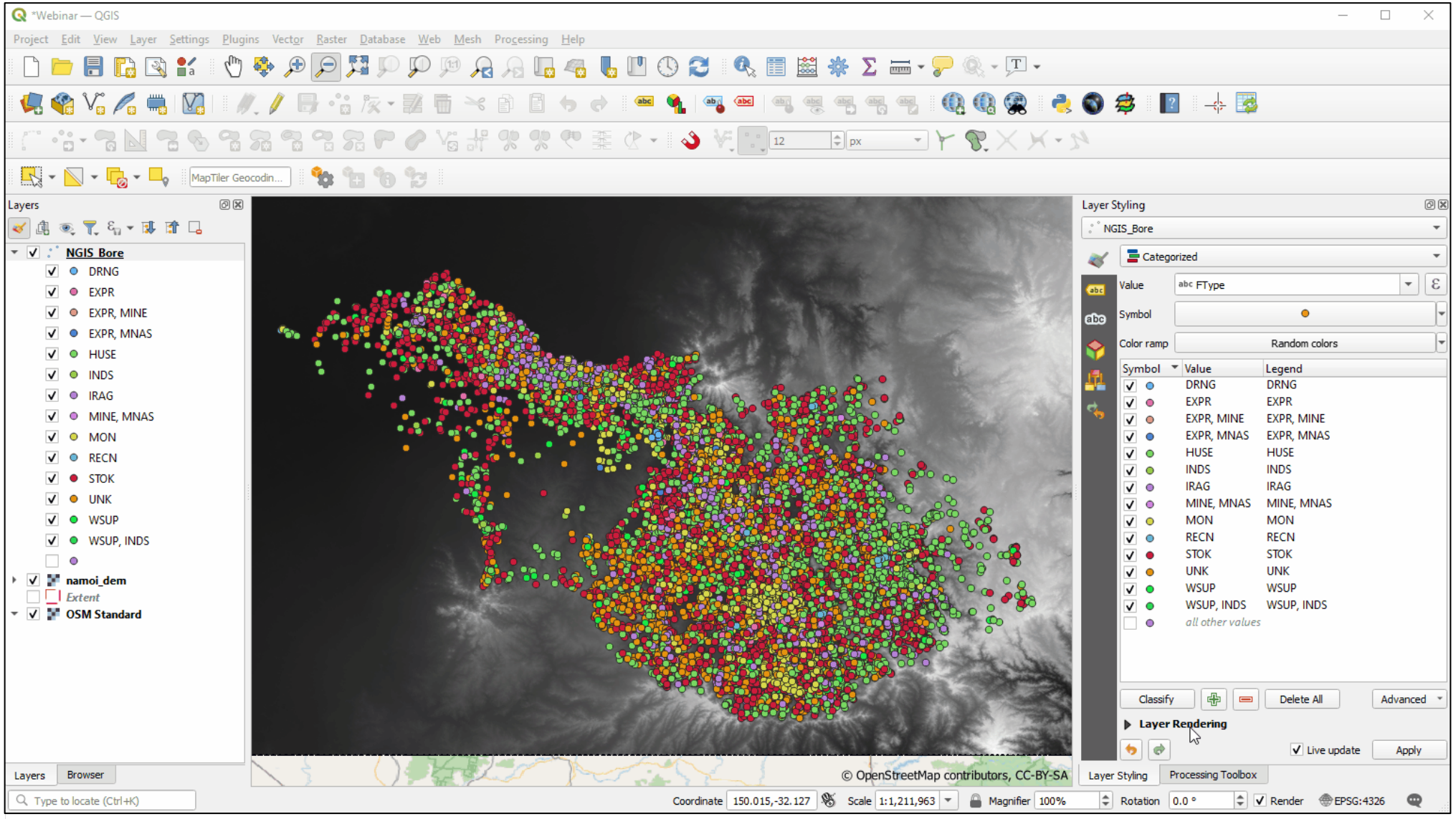
Coloring the DEM with a `cpt-city` Color Ramp



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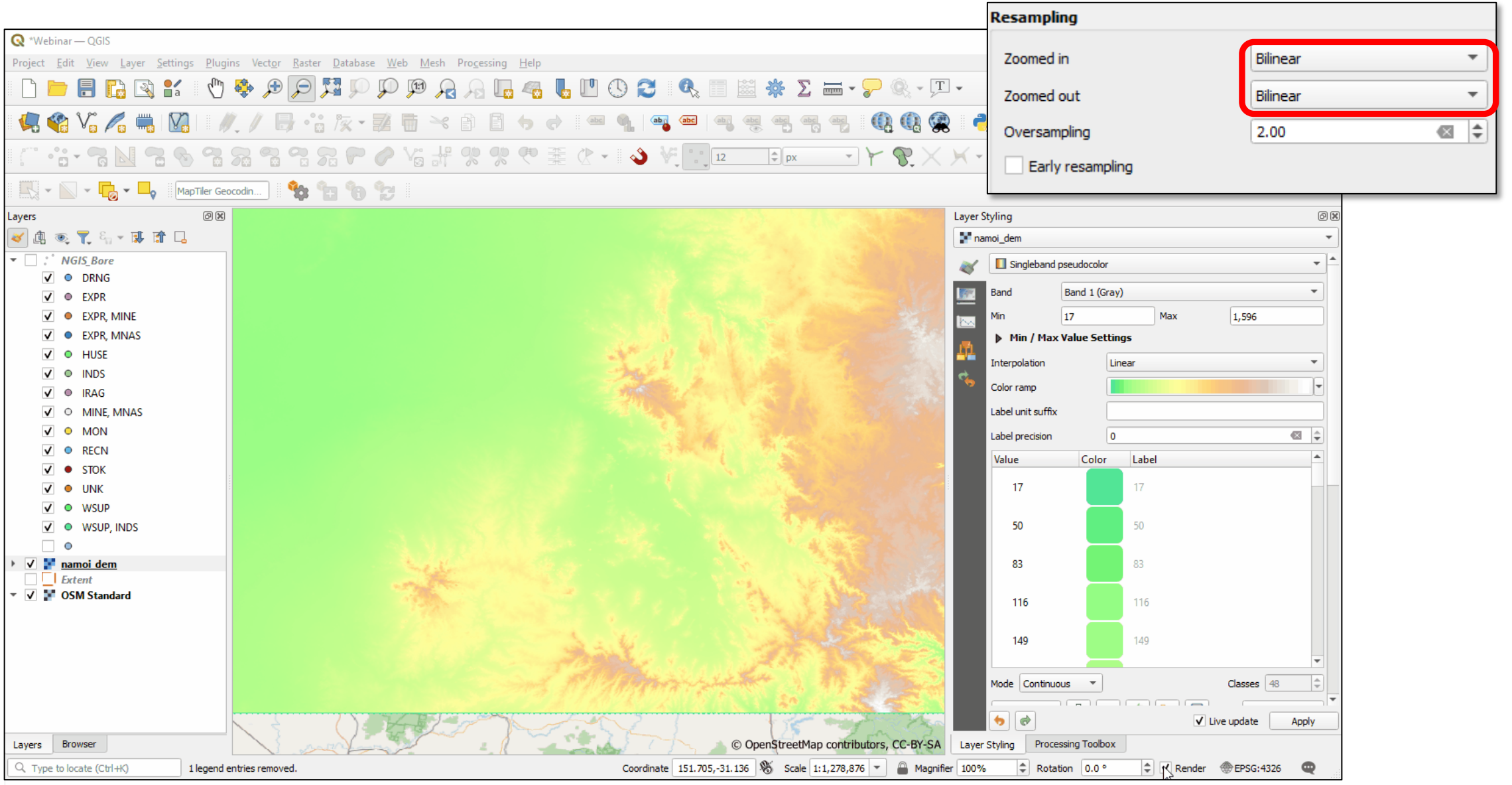
Creating a Color Hillshade with a Blending Mode



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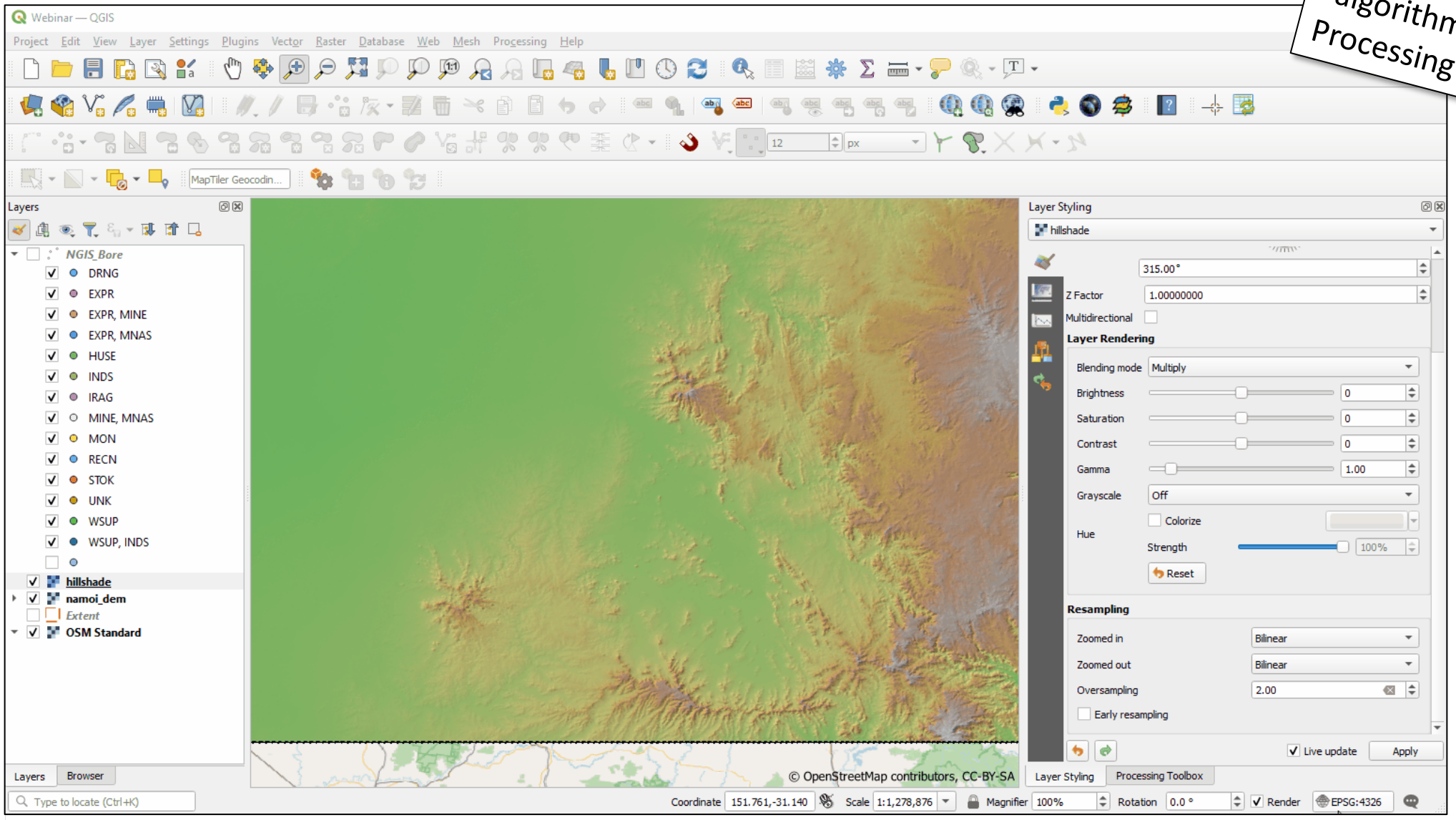
Rendering Elevation Contours

NOTE: There are also Contour algorithms in the Processing Toolbox



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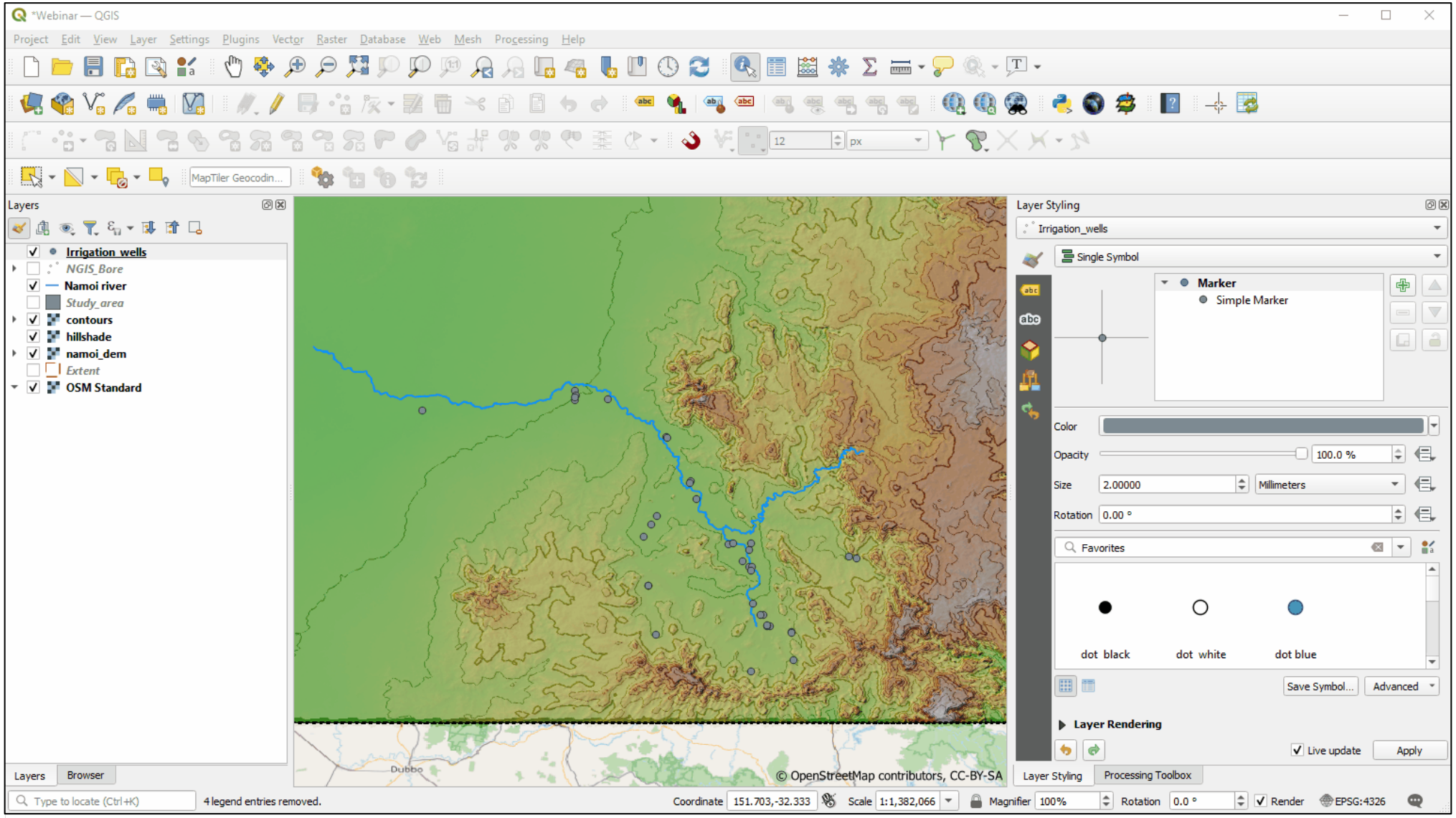
Symbolizing Irrigation Wells with an SVG Icon



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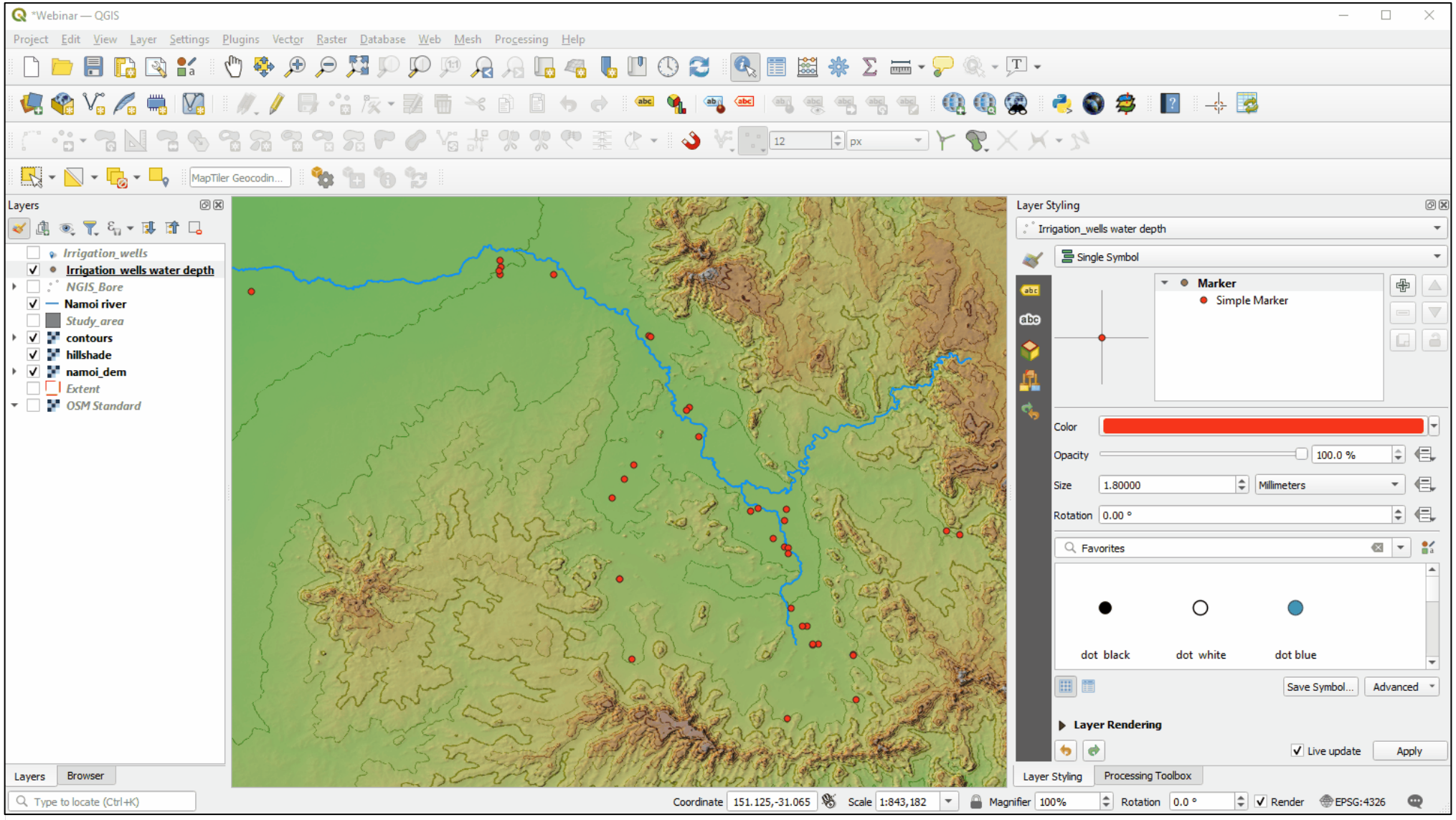
Symbolizing Irrigation Wells by Depth to Water



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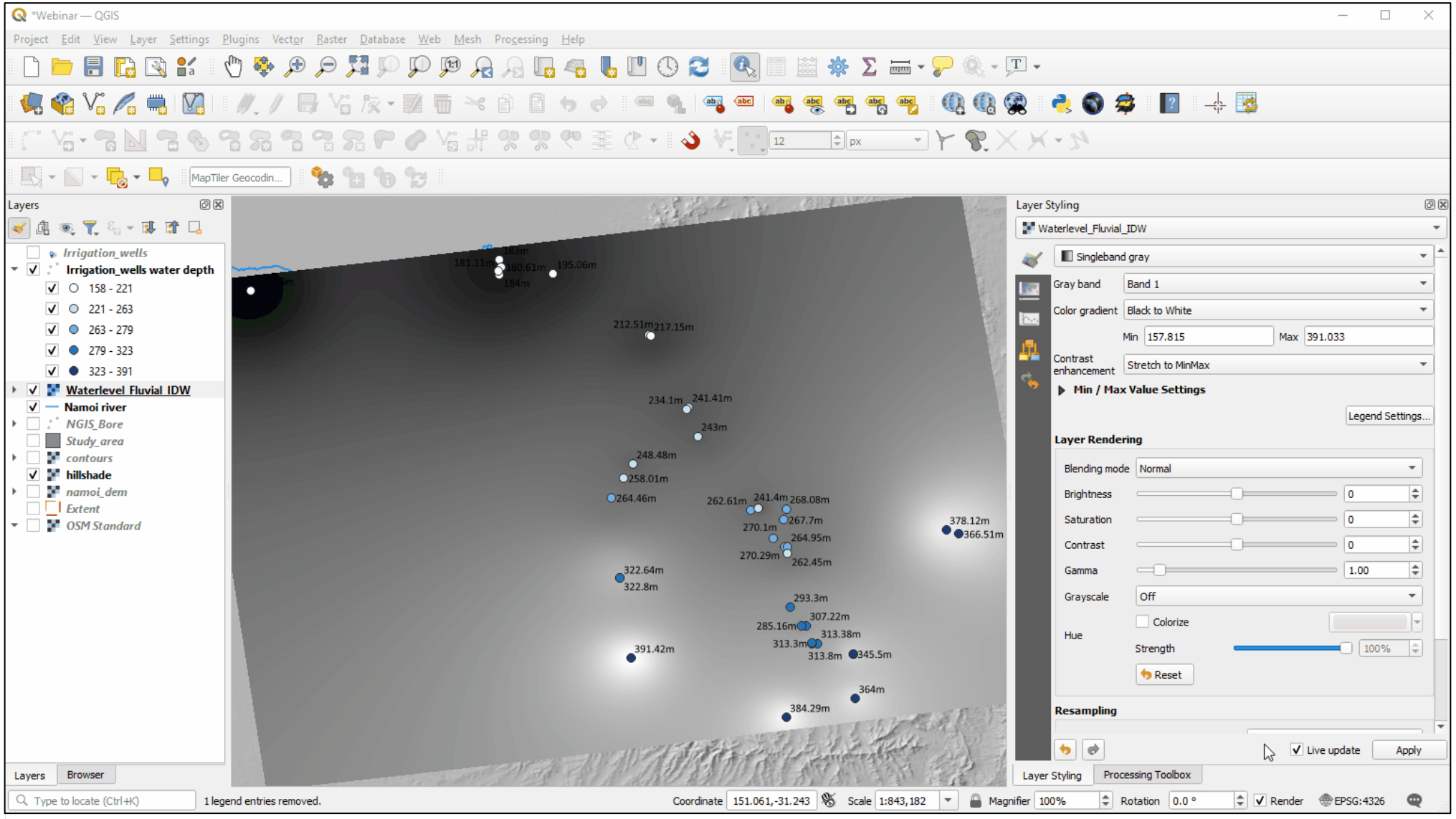
Styling the Interpolated Surface



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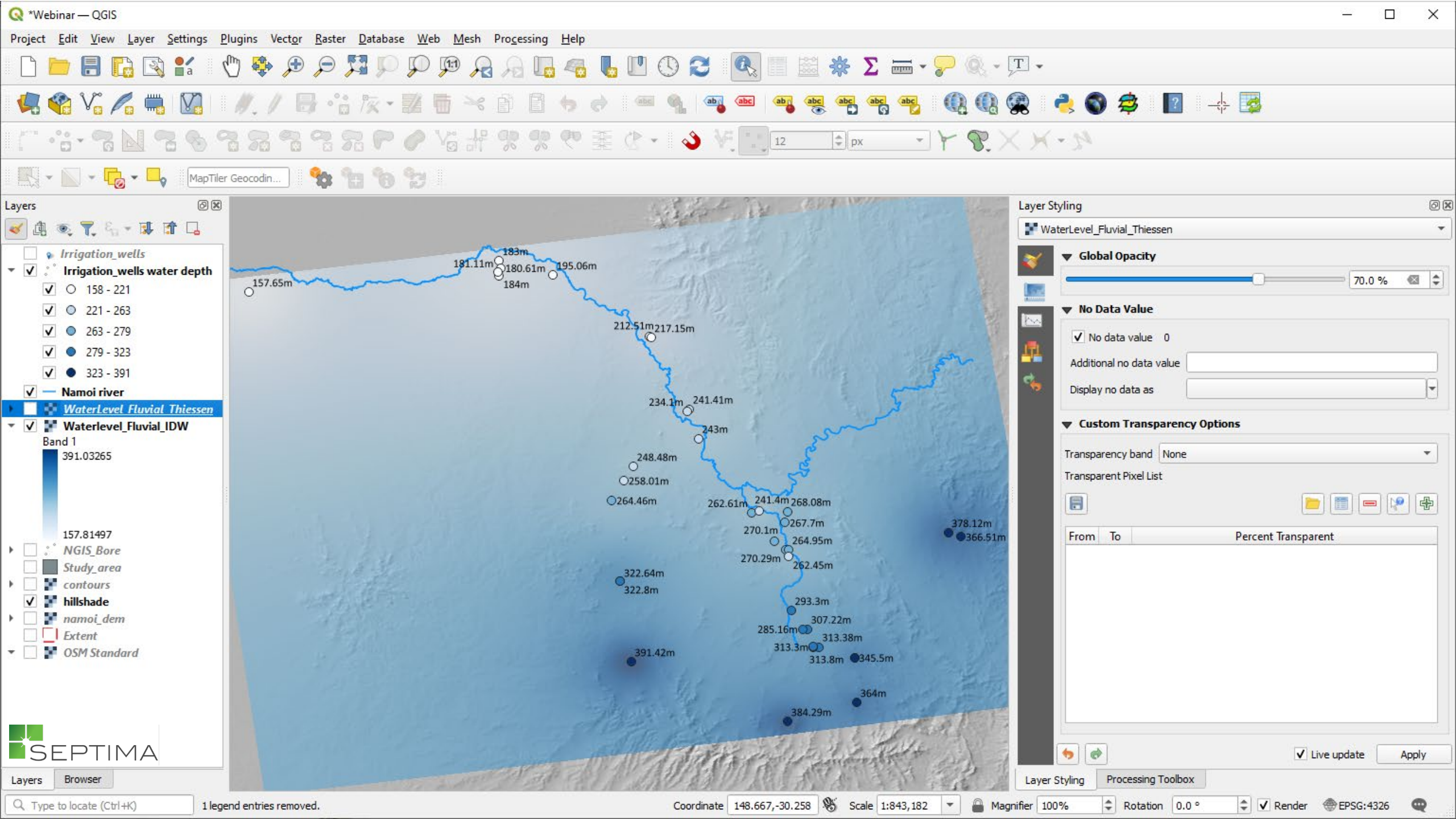
*Webinar — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
MapTiler Geocodin...
Layers
Irrigation_wells
Irrigation_wells water depth
158 - 221
221 - 263
263 - 279
279 - 323
323 - 391
Namoi river
WaterLevel_Fluvial_Thiessen
Waterlevel_Fluvial_IDW
Band 1
391.03265
157.81497
NGIS_Bore
Study_area
contours
hillshade
namoi_dem
Extent
OSM Standard
SEPTIMA
157.65m
181.11m
183m
180.61m
184m
195.06m
212.51m
217.15m
234.1m
241.41m
243m
248.48m
258.01m
264.46m
262.61m
241.4m
268.08m
267.7m
270.1m
264.95m
270.29m
262.45m
322.64m
322.8m
293.3m
307.22m
285.16m
313.38m
313.3m
313.8m
345.5m
391.42m
364m
384.29m
378.12m
366.51m
Layer Styling
WaterLevel_Fluvial_Thiessen
Global Opacity
70.0 %
No Data Value
No data value 0
Additional no data value
Display no data as
Custom Transparency Options
Transparency band None
Transparent Pixel List
From To Percent Transparent
Live update
Apply
Layers Browser
Layer Styling Processing Toolbox
Type to locate (Ctrl+K)
1 legend entries removed.
Coordinate 148.667,-30.258
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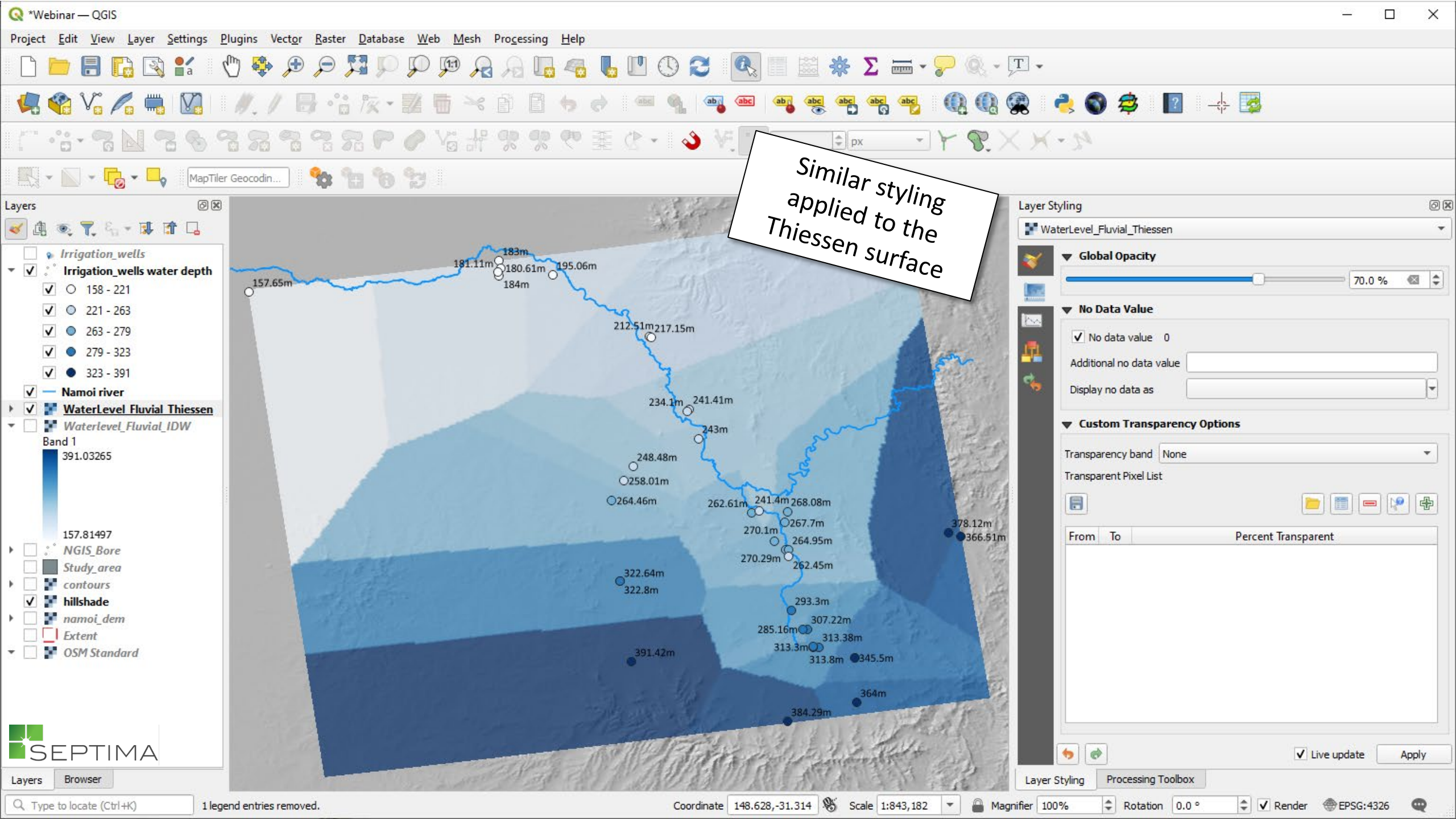
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326


*Webinar — QGIS
Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help
Similar styling applied to the Thiessen surface
Layers
Irrigation_wells
Irrigation_wells water depth
158 - 221
221 - 263
263 - 279
279 - 323
323 - 391
Namoi river
WaterLevel Fluvial Thiessen
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To
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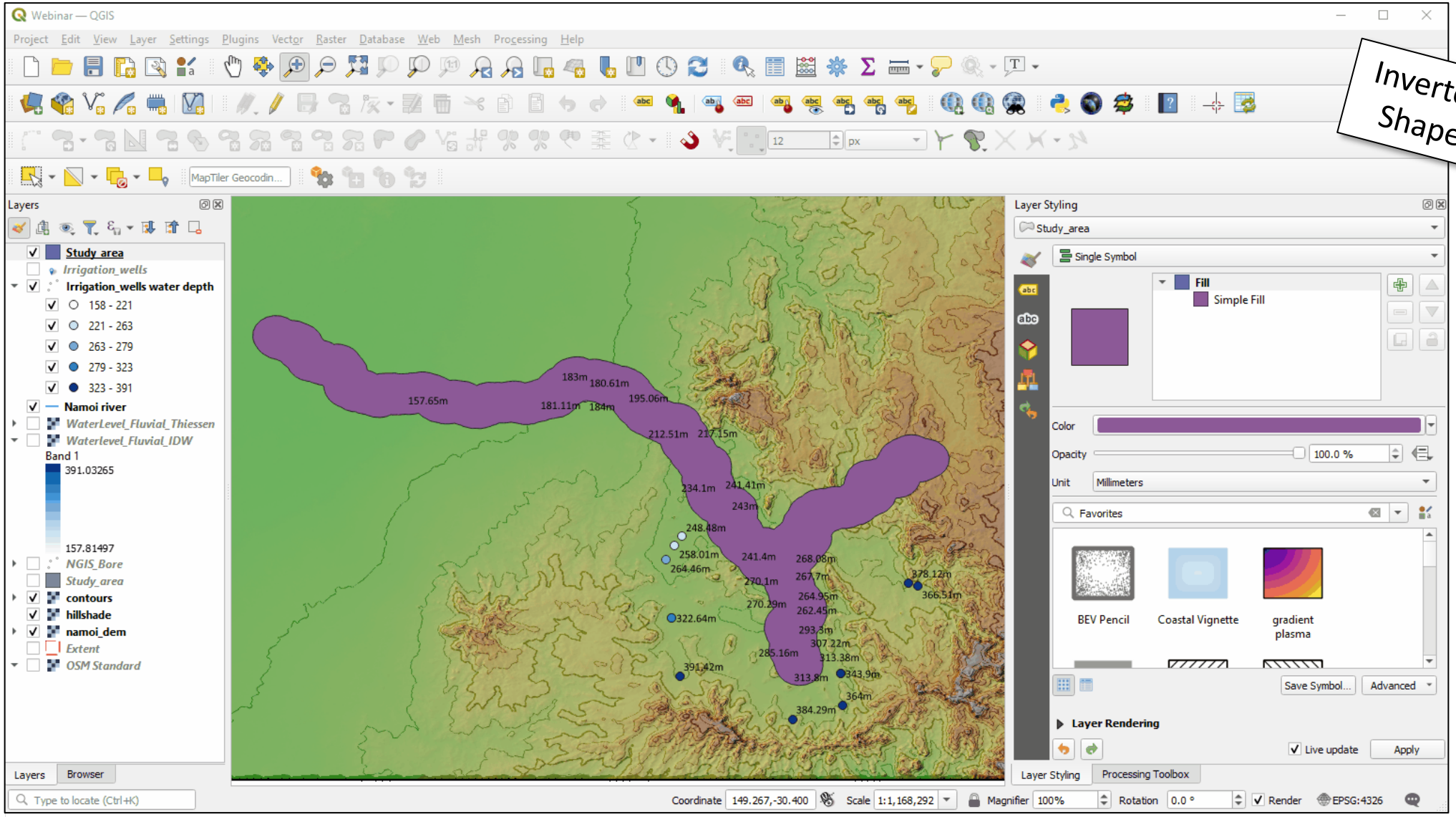
Apply
Layer Styling
Processing Toolbox
Type to locate (Ctrl+K)
1 legend entries removed.
Coordinate 148.628,-31.314
Scale 1:843,182
Magnifier 100%
Rotation 0.0 °
Render
EPSG:4326

Creating a Mask for the Study Area



Inverted Polygon Shapeburst Fill

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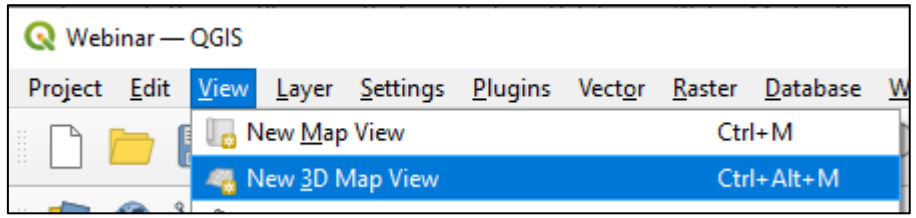
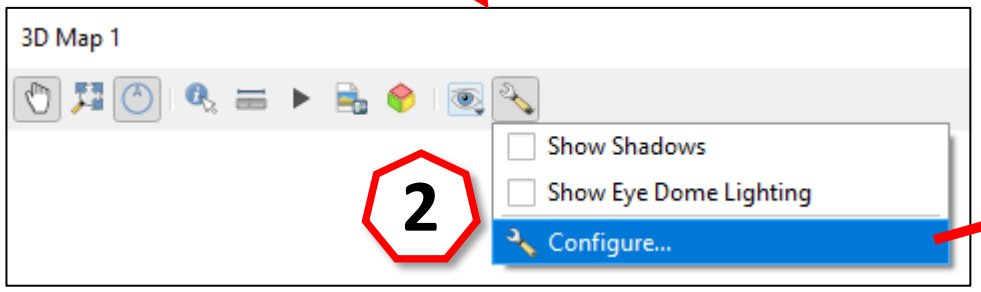
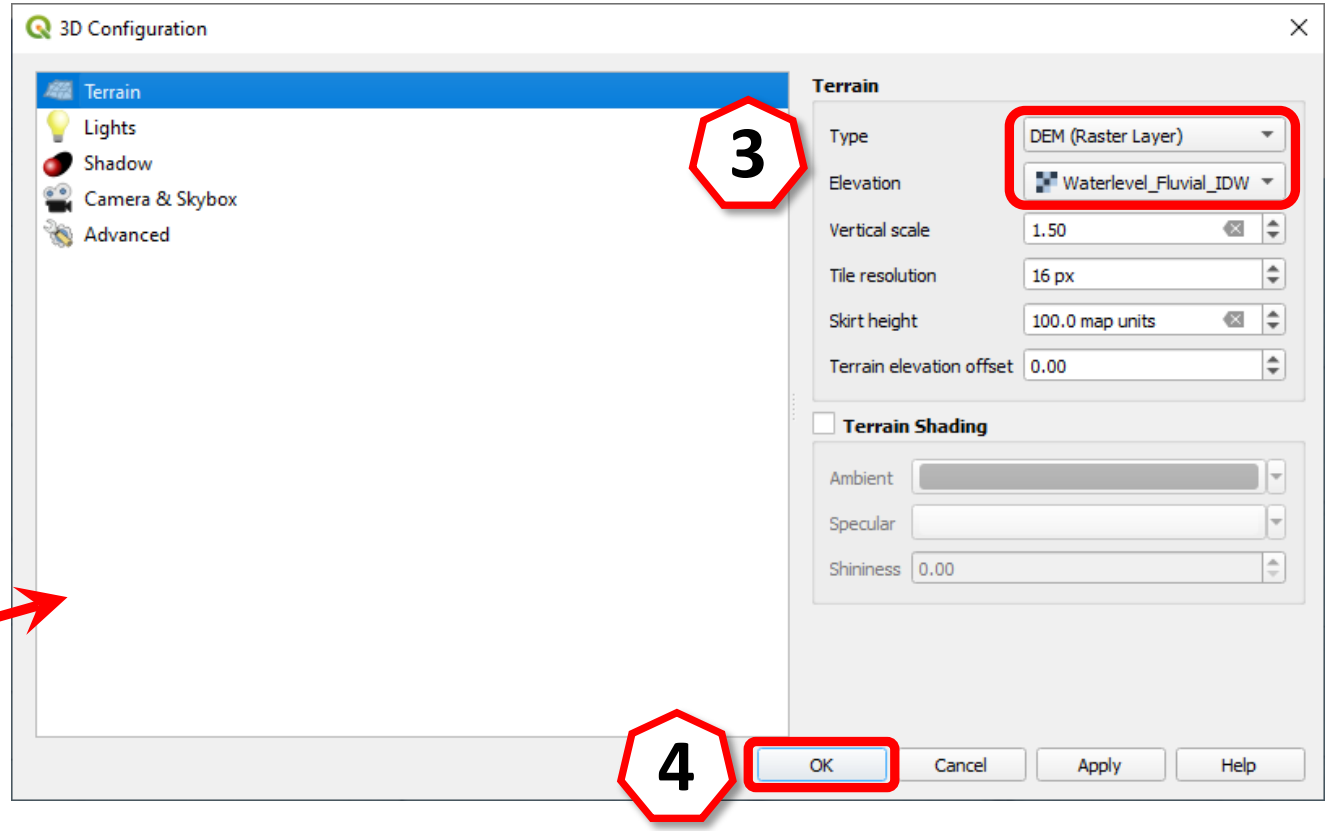
Viewing a Surface in 3D (IDW)

1







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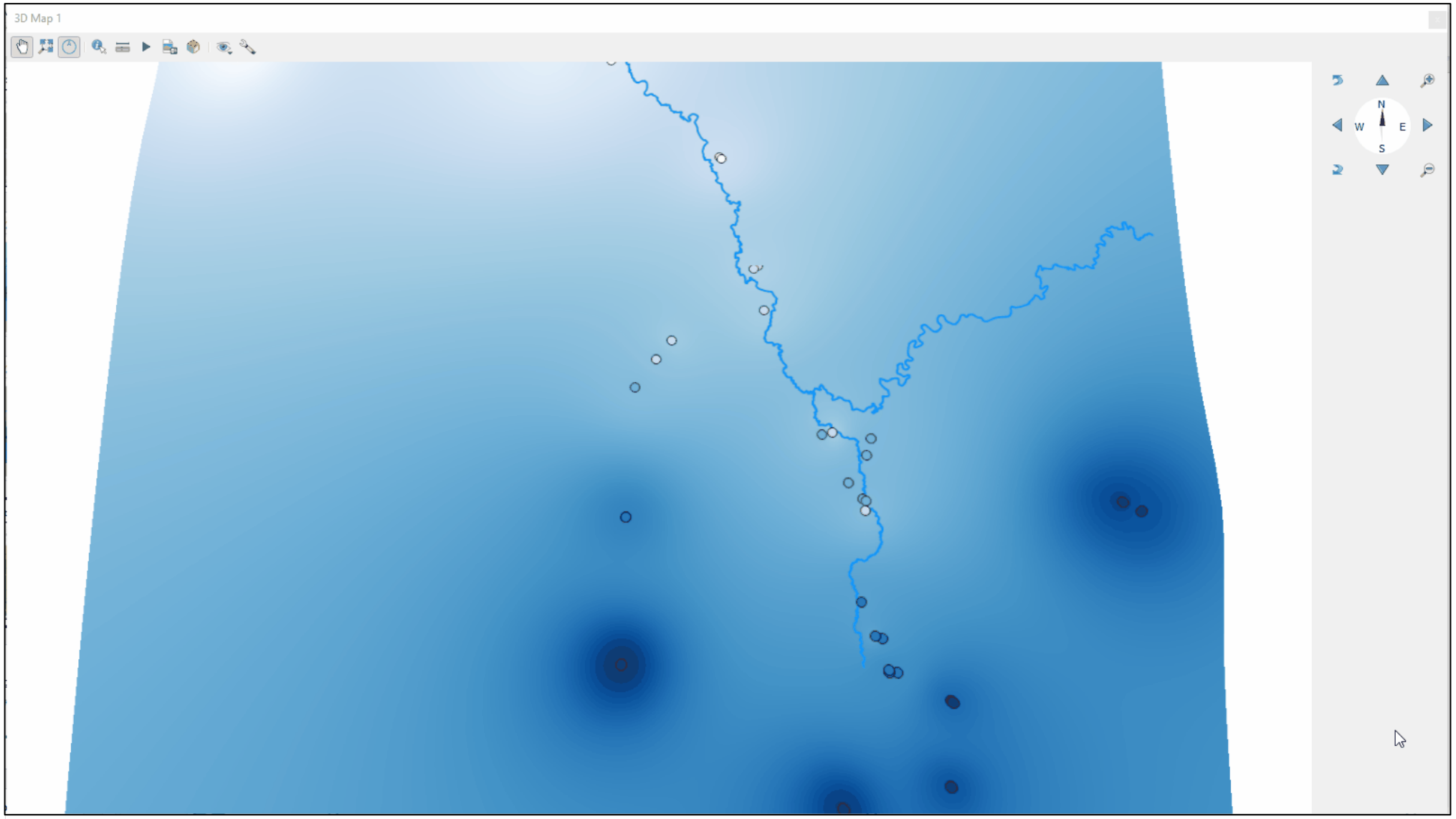
Viewing a Surface in 3D (IDW)



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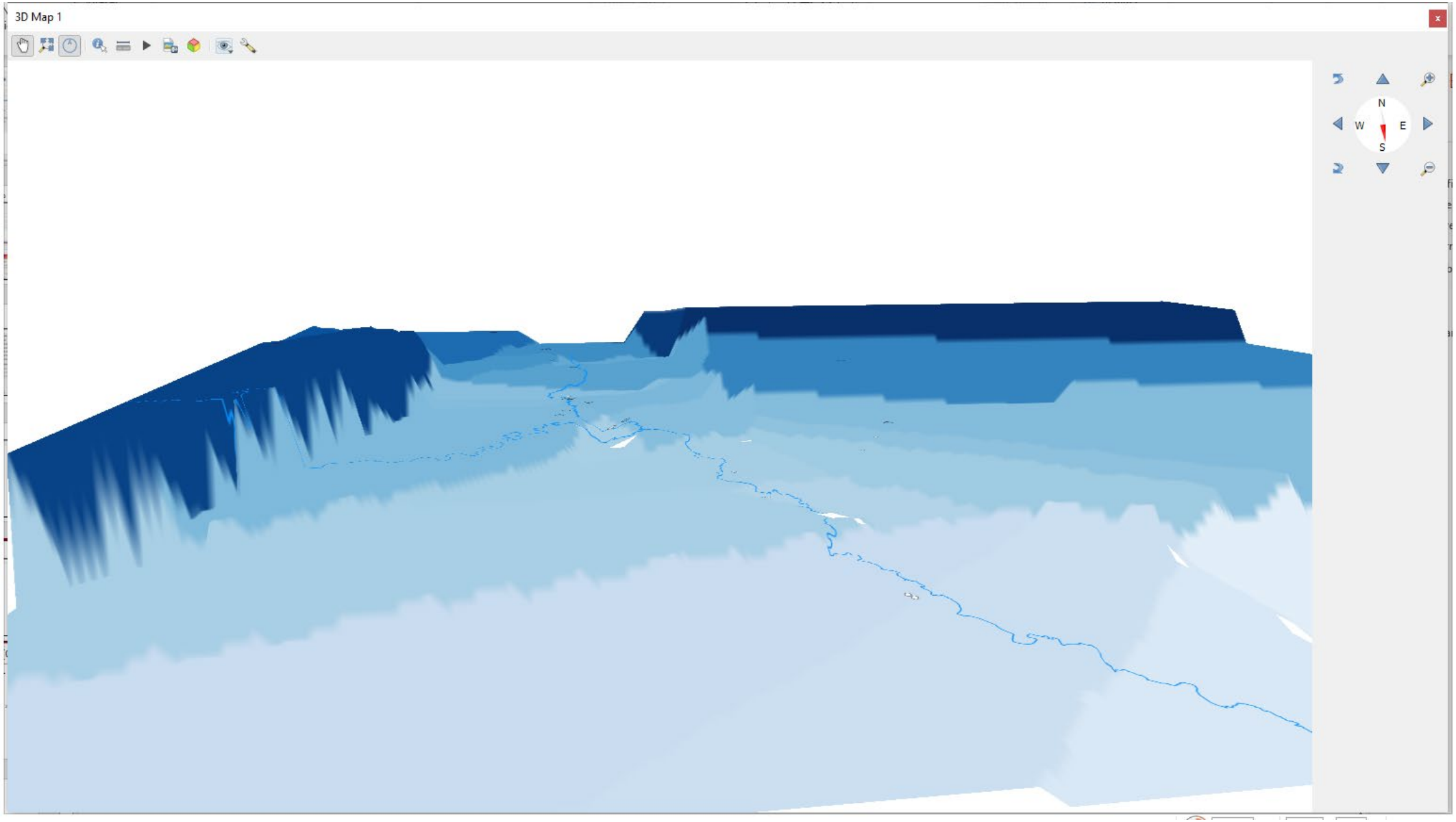
Viewing a Surface in 3D (Thiessen)



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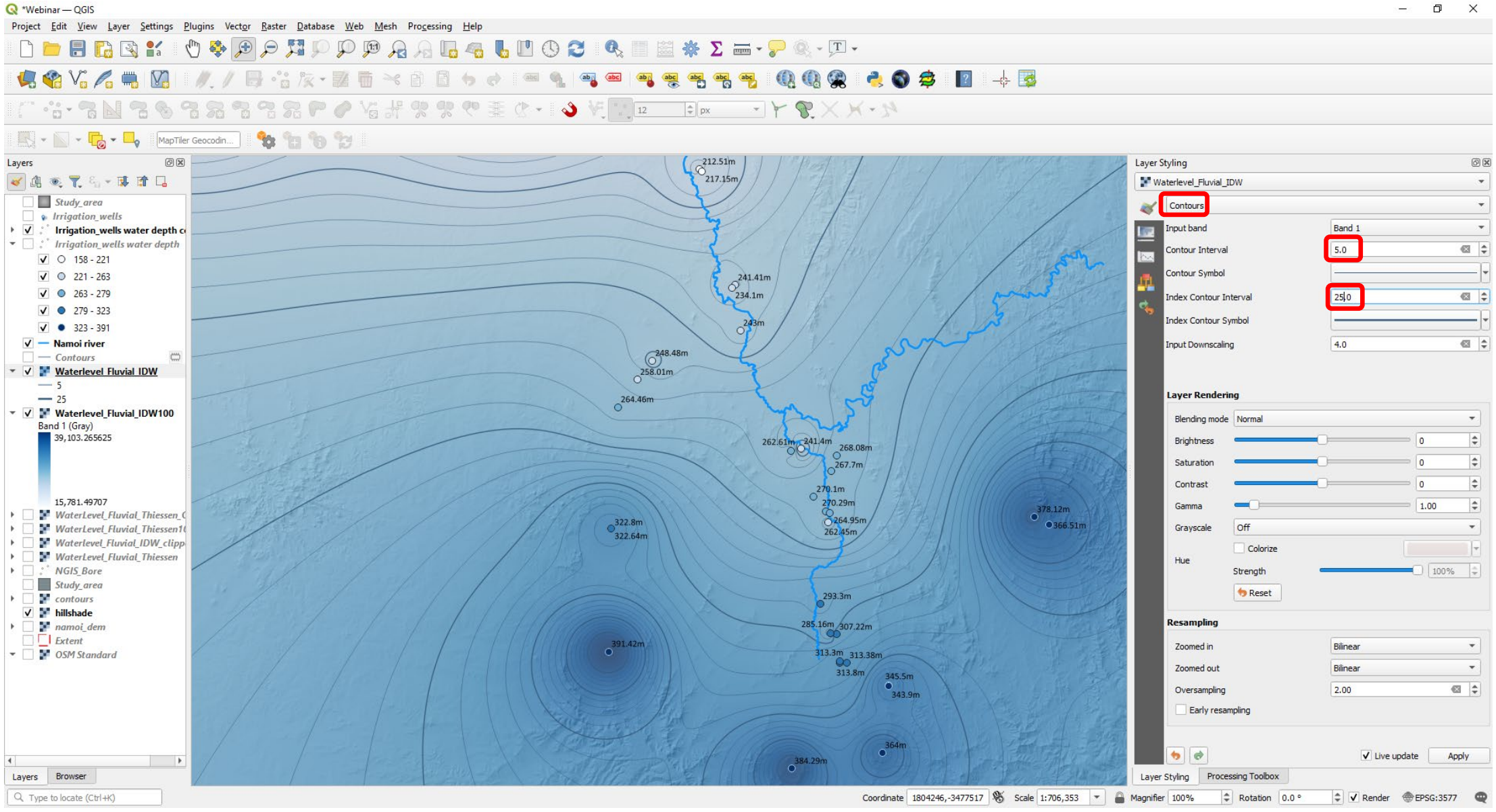
Generating Contours for an Interpolated Surface



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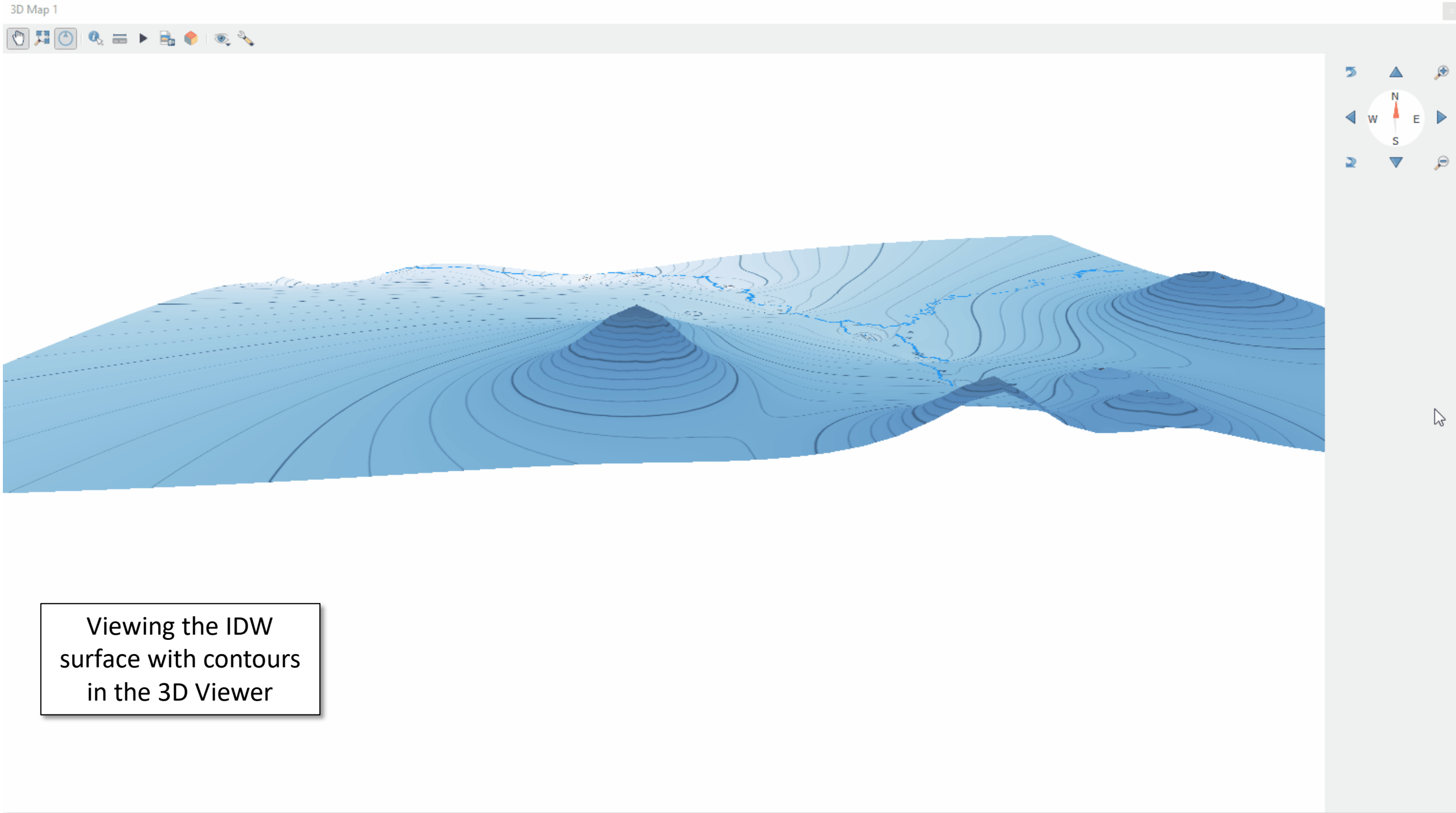

Viewing the IDW surface with contours in the 3D Viewer

Thanks! Questions?

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