

There are only 3 colours, 10 digits and 7 notes; it is what we do with them that's important.

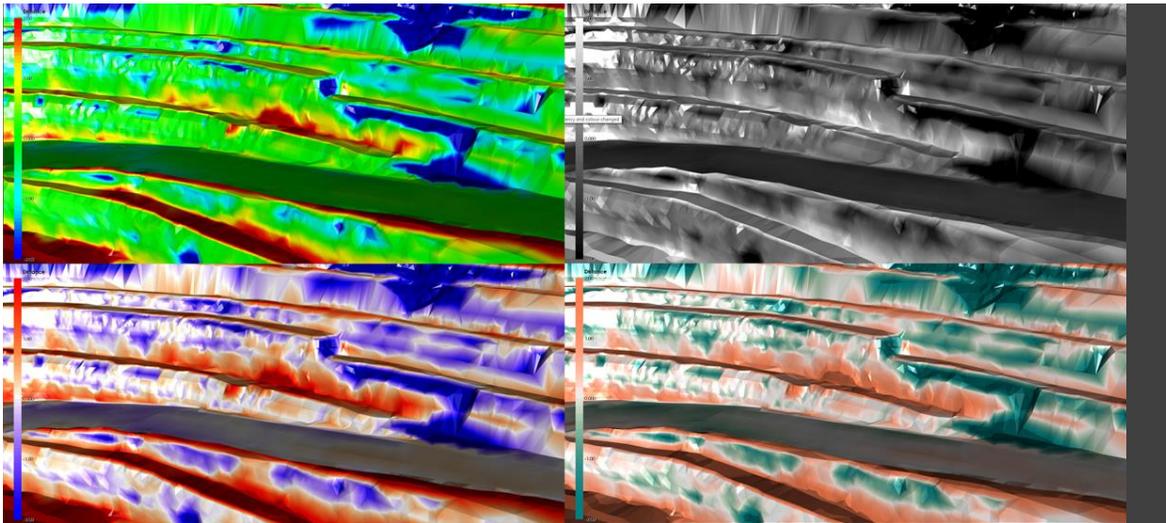
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NEWSLETTER

2017 Quarter 1



In previous versions of GEM4D, the colour scale was fixed to rainbow colours, but new options were added to Version 1.7.5.0 (and a custom option is in progress). See above the difference in the distance between two meshes "Top toolbar => First colour palette icon => Colour on distance from mesh" with the four colour options currently available.

What are the latest GEM4D additions?

I had many requests for training during the past quarter, and will start with training videos soon. The GEM4D-interface now matured sufficiently, and I do not foresee major changes to the interface logic soon.

For more detail information on the aspects discussed below, please have a look at my [Blog](#). The Blogs entries can be filtered by topic ("**GEM4D**", "**Other**", "**PicSure**", or "**Trajec3D**") - select the topic directly below "**Select Blog Topic**" on the blog page. The main GEM4D additions during the first quarter were:

1. Additional legend colour options - see top image.
2. Support for Surpac DTM-files - in addition to the STR-files that was supported in earlier versions.
3. Drill holes are now fully supported, including composites and orientation logging with Alpha and Beta angles - see "**Oriented logging**" and "**Composites and filtering**" below.

4. Filtering Marker and Mapping data can now be done within a specified distance from a mesh; handy to extract data above stope backs and structures close to pit shells - see "**Filtering data above backs**" below.
5. Create best-fit planes from multiple mouse picked mapping discs - see "**Mapping from mapping?**" below.
6. The addition of Boolean functions (union, intersection and difference) - see "**Boolean functions and poly directions**" below.
7. Add an in-scene scale-bar and made improvements to the coordinates grid-widget. The scale-bar is only available in parallel view, as the default perspective view warps the scene to make further objects smaller.
8. External software **LaLoCon** bundled in the GEM4D distribution (similar to **PrisVec** and **BodRecon**). **LaLoCon** converts latitude and longitude coordinates to your local mine coordinate system from two known coordinate pairs, and the conversion can be saved for later use. Useful to get GPS-coordinates into the local mine grid with little effort.

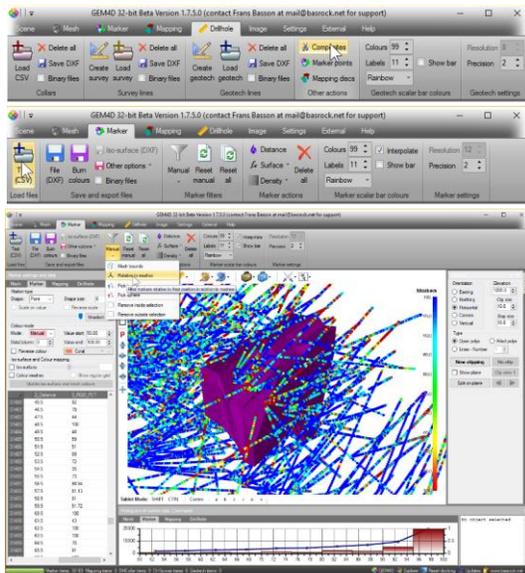
Oriented logging

The drill hole functionality was discussed in last month's newsletter available from [here](#), and oriented logging is a natural extension of the drill hole functionality.

Create a survey file as explain in the previous newsletter, and format the oriented logging data as a comma delimited CSV-file "**BHid, Distance, Alpha, Beta, Size, Value1, ...**" (any number of Value columns). Load the oriented logging CSV-file with "**Ribbon => Drillhole => Other actions => Mapping discs**".

The results from loading the CSV-file is not directly displayed, but the created file is saved in a format that can directly be loaded as Mapping-data with "**Ribbon => Mapping => Load files => Text (CSV)**". Display the data points as discs as shown in the image to the right.

	A	B	C	D	E	F	G	H
1	Dhid	Distance	Alpha	Beta				
2	GTL001	67	70	145				
3	GTL001	68.45	80	100				
4	GTL001	68.72	20	220				
5	GTL001	69.9	65	190				
6	GTL001	70.21	55	270				
7	GTL001	71.81	35	210				
8	GTL001	72.78	55	275				
9	GTL001	74.6	30	230				



Composites and filtering

I received many questions regarding drill hole composites, and will attempt to explain. Composites subdivides the domain logging data into equal distance data points along the domain logging strings, and the data are then directly available as "**Markers**", which can then be iso-surfaced, meshes coloured on values etc.

The equal division is required to ensure the correct weighting is given to each line segment, as a long segment will have more points than a short segment, and the number of points thus reflect the length (and weighting) of the logging segment.

To composite the domain logging data, create a "**Geotech**"-file as explained in the previous newsletter. Press the "**Ribbon => Drillhole => Other actions => Composites**" button. The result is not directly displayed, but saved as a file that can directly be opened as a "**Marker**"-file with "**Ribbon => Marker => Load files => Text (CSV)**".

In the example to the left, the composite data inside a slope shape mesh is filtered out in a single step with the selections shown. Data can also be filtered by mouse selections in the scene; use **Shift** for multiple selections, and **Ctrl** to temporarily disable a function to reposition the scene for a new selection.

Filtering data above backs

Problem statement:

Filter out the data above the backs of stopes.

Step 1:

Change the camera to parallel view to ensure pixel perfect selection. The default perspective view has a vanishing point to make further objects smaller.

Step 2 (optional):

Orientate the scene to enable removal of points, select "**Ribbon => Marker => Marker filters => Manual => Remove inside selection**", and drag a box in the scene to reduce the number of visible data points.

Step 3:

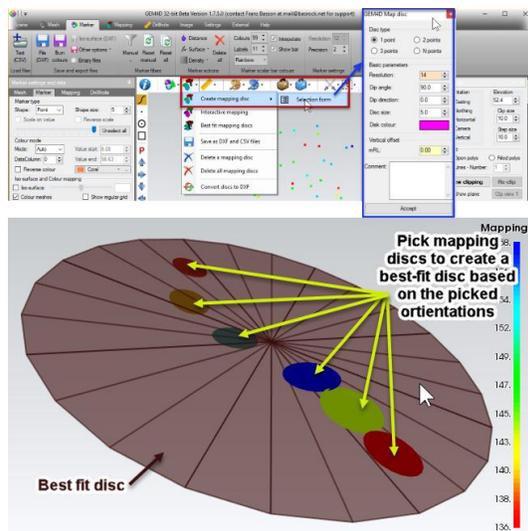
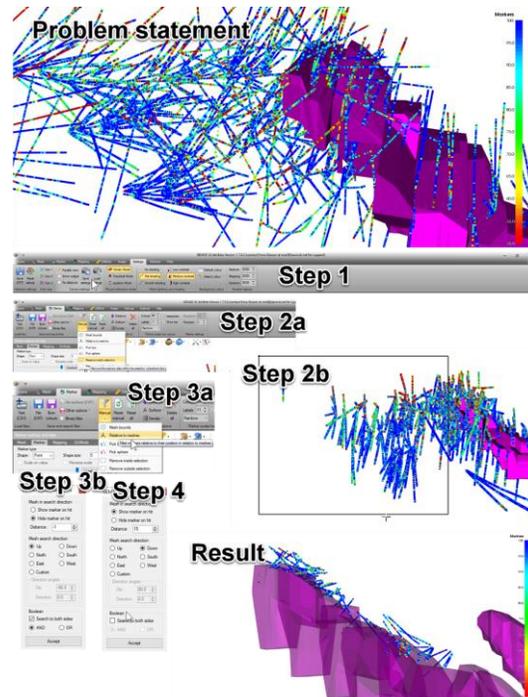
Remove the data inside meshes with "**Ribbon => Marker => Marker filters => Manual => Relative to meshes**" and the selection as shown in **Step 3b**.

Step 4:

Extract all the data within 15m above the backs with "**Relative to meshes**" and the selection as show in **Step 4**.

Result:

The stope shapes were made transparent to show all data inside the meshes were removed.



Mapping from mapping?

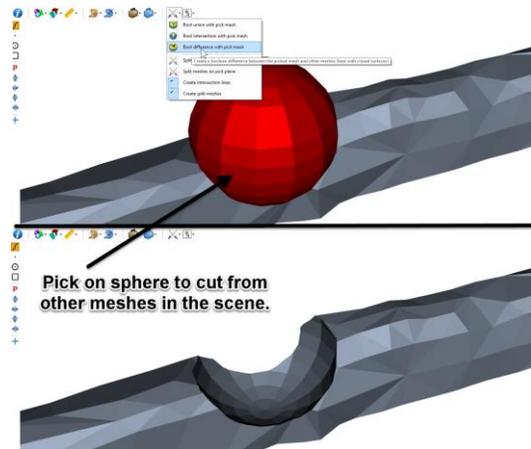
The creation of mapping discs was always easy with "**Top toolbar => Discs icon => Create mapping disc**", and the discs could be created from one or many pick points. The less the number of points, the more information about the map disc is required. For example, three points fully define a plane, so picking three points will create a disc based on the pick locations.

An new option called "**Best fit mapping discs**" is now available, which works differently from the previous map-disc creation options. For this option, mapping data should first be loaded with "**Ribbon => Mapping => Load files => Text (CSV)**". The mouse picking is done on the mapping data, which pick up their orientations and calculates a best-fit disc.

Boolean functions and poly directions

The outcomes from Boolean functions are dependant on the polygon orientation of a mesh. A polygon has only one visible side, but graphics software packages typically make both sides visible to limit visual confusion. The visible side of a polygon is important when Boolean functions are used.

Switch off the invisible side in GEM4D by checking "**Ribbon => Mesh => Mesh settings => Backface culling**". The visible side of the polygon can be flipped with "**Ribbon => Mesh => Mesh settings => Flip poly normals**".



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