

Lesson 15: Simulation Export

Objective: This example is for generating heterogeneous reservoir porosity and permeability then exporting for reservoir simulation.

1. Generate Porosity Grid

Project Panel:

- Start a new project by clicking on the **File** pull down menu and click **New**
- Click the **Next** button on the lower left.

Import Panel:

- Click the **Next** button on the lower left.

DataQC Panel:

- Click the **Next** button on the lower left.

Variogram Panel:

- Click the **Next** button on the lower left.

GridOption Panel:

- Click the **Next** button on the lower left.

GridSize Panel:

- Click the **Start** button
- Click the **Next** button on the lower left.

2. Simple Conversion of Porosity to Permeability

GridOutput Panel:

- Click **Ggraph** button, then select **3D View**
- Click **Calcul** button, select **Func. Trans.**, then select **A+B*X**
- Enter in the equation **A=0** and **B=7.1**
- Click **OK** button
- Click **Calcul.** button, select **Func. Tran.**, then select **10**X**
- Click **Options** button, then select **GridGraph**

- Click **Set Color** (make sure Max number box is around 500)
- Click **OK** button

3. Simple Export of Permeability

- From the left click **Export** button, select **Gridstat Grid**, then select **As Is**
- Click **Yes** to **Output All Cells**
- Click **View** button, then select **Remove** (to remove the 3D graph)
- Click **Tools** button, select **Rename Grid**, then select **Sample Grid**
- Change **Rename=C:\gswork\untitled.C9** to **C:\gswork\untitled.C7**
- Click **OK** button
- Change the select box on the lower right of grid to **Permeability**
- Click **Ggraph** button, then select **3D View**
- Click **Export** button, then select **To Excel**
- Click **OK** to Data Name = KX
- Click **Yes** to Include DX, DY etc. HEADING
- Click **Yes** to Include Well IX, IY?
- Click **Yes** to Write Permeability as KX, KY, KZ
- Click **OK** to Vertical Permeability Fraction of KX = 0.10
- Click **No** to Output File C:\gswork\untitled.KX
- Click **Export** button, then select **Browse**
- Click **Close** button

4. Upscaling

If the grid is finer than the size desired for reservoir simulation, upscaling is needed. The following steps are for upscaling definition before the actual export:

- From the **Tools** pull down menu select **Grid AvSetup**
- Enter desired grid divisions, leaving it 0 for the directions that does not require upscaling, Z being usually the only direction requiring upscaling. For example, enter 5 for the Z division so that the upscaled grid will have 5 layers
- Click **Edit Z** and then **Equal Div** to initialize the division. Modify the division numbers if so desired. Click **End** to close
- Click **Save** and then **Quit** to close

5. Selected Area

If a smaller area is desired for reservoir simulation, the area may be selected for export rather than exporting the whole grid. Well data must be present for area selection. If the grids were simulated without well data as in this example, see the Simulation example for how to sample well data from grid. The following steps are for area definition before the actual export:

- From the **Graph** pull down menu graph **Basemap**, then select **Browse**
- Click **Export** button, select **Pick Area**, and digitize a polygon area for export. A rectangular box is fit to the polygon.
- Select **Yes** for using picked area during export.