Spotlight – Sources and seals

Generating new source and seal scenarios

After running a base case Dynamic Migration scenario, you may find that you want to generate alternative source and seal scenarios. Permedia Petroleum Systems includes powerful tools that allow to you generate petroleum masses and edit seal properties of selected layers and facies in the basin mesh without re-running the basin model. This is an excellent way to create multiple scenarios for risk analysis.

Petroleum generation

To create an alternative petroleum generation scenario:

1. Open a mesh sequence in Basin Mesh Overrides.

    (To do this, in the main window under Meshes, right-click the mesh sequence you want to evaluate and choose Open Sequence in Basin Mesh Overrides.)

2. On the Generated Masses tab, click the Add button to add a row to the table.

3. Select the Layer and/or Lithology to override.

4. Select the Kinetics scheme to assign to the selected Layer/Lithology.

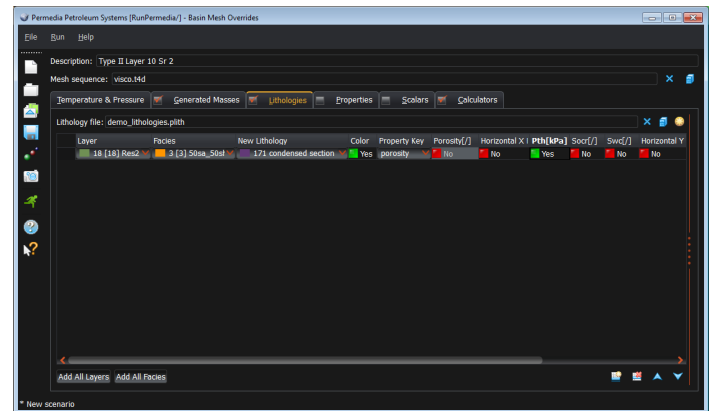5. Set the P1, HI, GOGI, TOC, Ag and Ao.

6. Save and Run.

The new mesh is based on the input basin mesh, and named using the override scenario name.
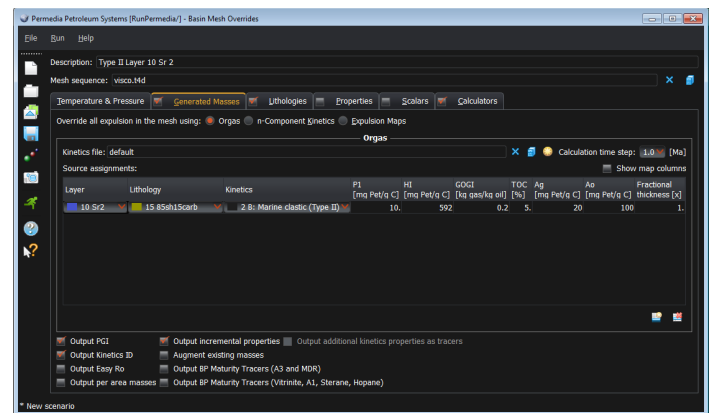
Lithologies

To modify lithology properties (typically Pth for seals):

1. On the Lithologies tab, click Select to choose a Lithology file, select the .plith file and click Open.

2. Click Add to add rows to the table.

3. Select the Layer and/or Facies to override.

4. Select the New Lithology to assign to the selected Layer/Facies.

5. Set Property Key to porosity.

6. Set the mesh properties to override by double-clicking the respective cell. Yes indicates the property will be overridden using the values from the New Lithology.

7. From the Run menu, choose Run.

The override meshes can be viewed and manipulated like any other. Simply load the new mesh into your existing Dynamic Migration scenario and re-run the simulation.

Overriding lithologies

Overriding generated masses

Other things to try

Create multiple Dynamic Migration scenarios with different source and/or seal properties and use Batch Manager to generate multiple realizations for risking.