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HWRS 482

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HW10 Figures

1.Compare the impact of pumping on the single layer model vs the multi-layer model. What physical explanation do you have for the differences?

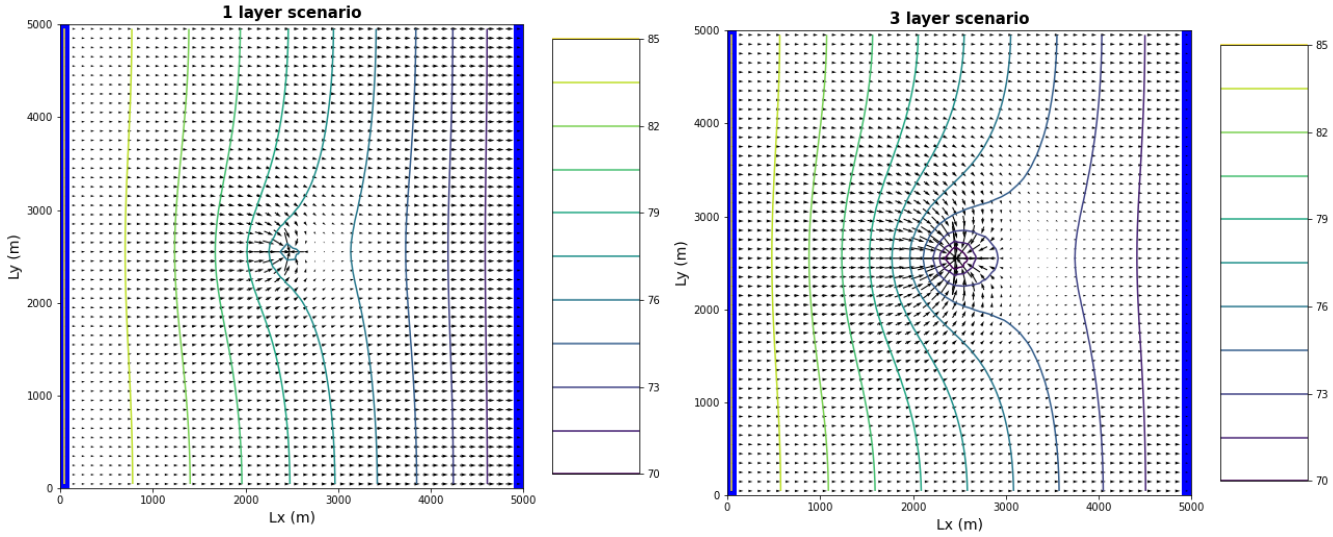

Figure 1. The figure above shows side by side plots of a one layer system with a well (2500,2500) and a three layer system with a well at (2500,2500) in the bottom layer only. The plots show the flow vectors and head contours for the two scenarios.

2. Repeat the three-layer simulations putting the well in each layer (i.e. once in the bottom once in the middle and once in the top) provide plots and discussions comparing and contrasting your simulations. Provide at least one plot where you have all your runs in the same figure.

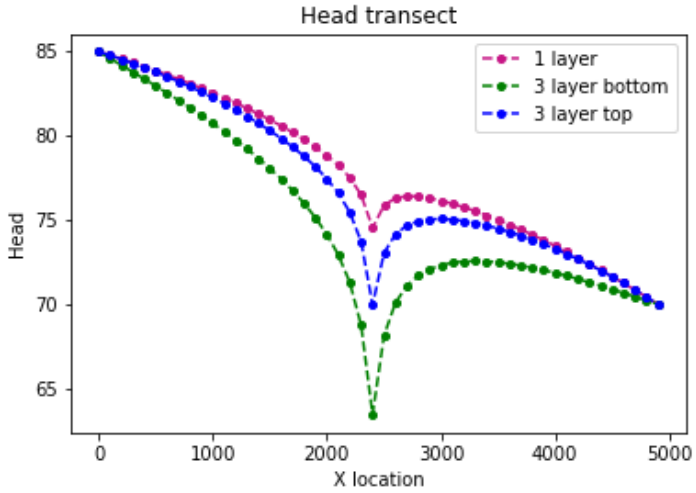

Figure 2. This plot shows the head at a transect going through the center of our domain (for our one layer and three-layer scenarios).

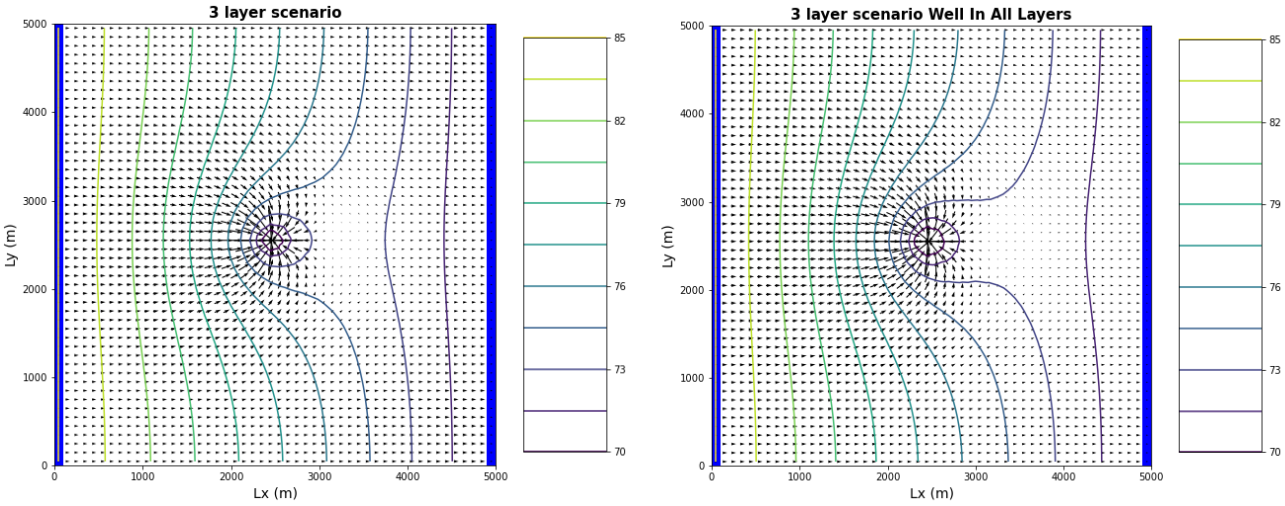

Figure 3. This figure shows side by side flow vectors and head contours for our three layer system. The plot on the left shows when we put the well in the bottom layer only and the plot on the left shows when we put the well in all three layers.

3.Change the properties of your three-layer model so that it matches the 1 layer model (but still has 3 layers) put the pump in the bottom layer and compare and contrast with your one layer solution. How does your answer to this challenge compare with your answer to the first?

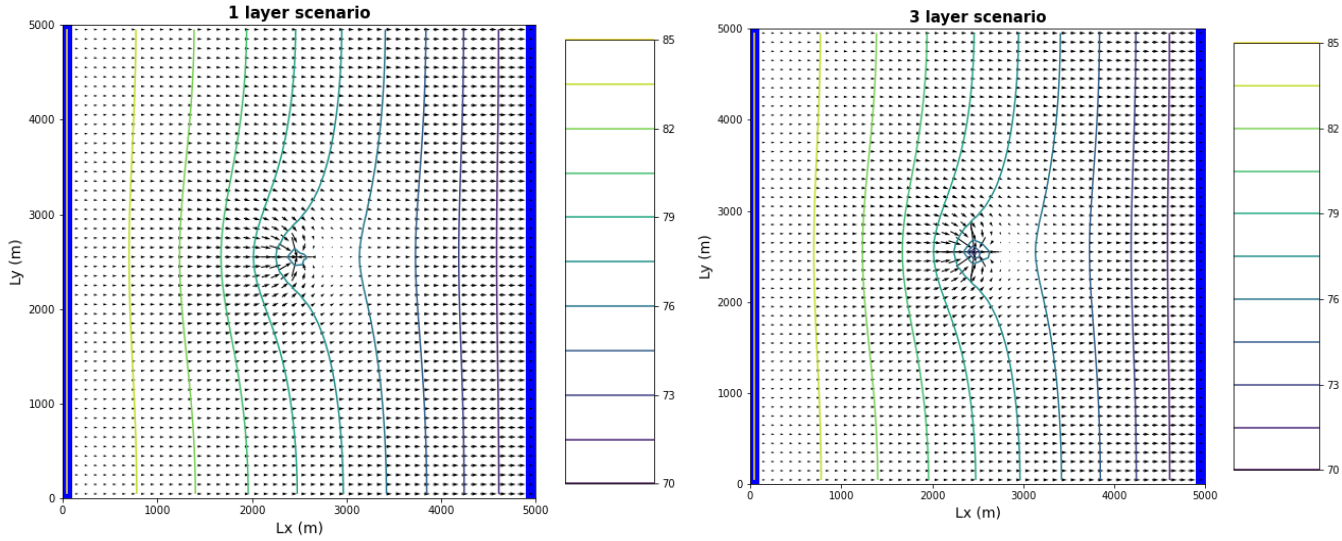

Figure 4. Side by side plots of our one-layer system compared to our 3 layer system. Both scenarios have the same layer properties. The plot on the right has a well at (2500,2500) in the one layer, and the plot on the left has a well completed at (2500,2500) in only the bottom layer (it has three).

4.Modify the topography of your domain so that it is no longer sloping left to right (you can make it a valley or have it sloping the other way, whatever you want). Re-run your 1 and 3 layer solutions and explain any differences you do or don't see.

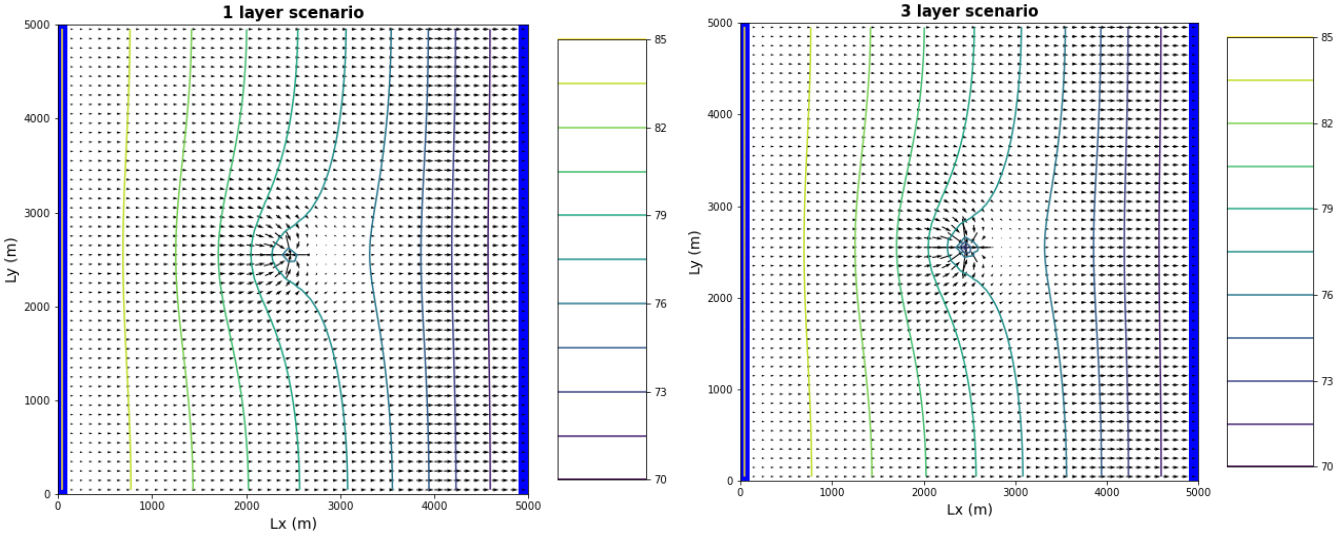

Figure 5. The two plots above show the flow vectors for a one layer and three layer system. The two scenarios have the same layer properties. The three-layer scenario has a well in the bottom layer only.

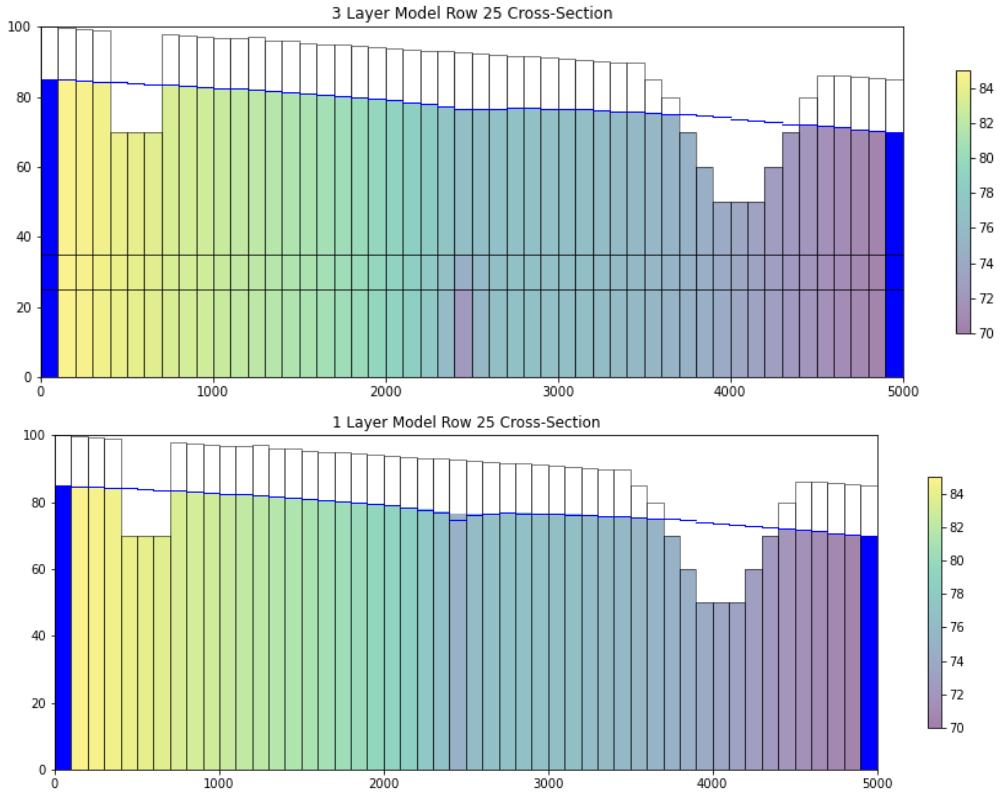

Figure 6. These plots show the cross-sectional view of our domains for the one-layer system and the three-layer system. The two scenarios have the same layer properties. The three-layer scenario has a well in the bottom layer only.