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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Physics-inspired integrated space-time Artificial Neural Networks for regional groundwater flow modeling" *by* Ali Ghaseminejad and Venkatesh Uddameri

Anonymous Referee #1

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The manuscript presents the development of an integrated space-time Artificial Neural Network (ANN) model guided by the governing groundwater flow equation. The developed model is used to model regional groundwater flow in a portion of the Ogallala Aquifer in the Southern High Plains of Texas as an illustrative case study. The model was able to capture the general trends and provided groundwater level estimates that were better than using historical means. The methodology and the observations presented in the article is interesting and worth publishing The reference list is appropriate to the area of the investigation and up to date. A few interesting conclusions are stated in the paper. However, there are some minor concerns, but they are not very important. In my opinion the article may be published after a minor revision.

Specific comments:

Page 8: Figure 2: There is no discussion regarding Figure 2 (b). The citation of Figure 2(b) is presented in the captions of with Figure 5 and 7. I think adding a description of 2 (b) in the data compilation section will be helpful. Page 9: Line 231: I think there is some error with the citation of Table 1 here. Table 1 in the manuscript presents Performance error metrics. Page 10: Line 237: "mode"- I think it will be model. Page 13: Line 318: The preposition before "38 well" is missing. Page 14: Figure 5. And Figure 7: Y-Axis levels are not visible.

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