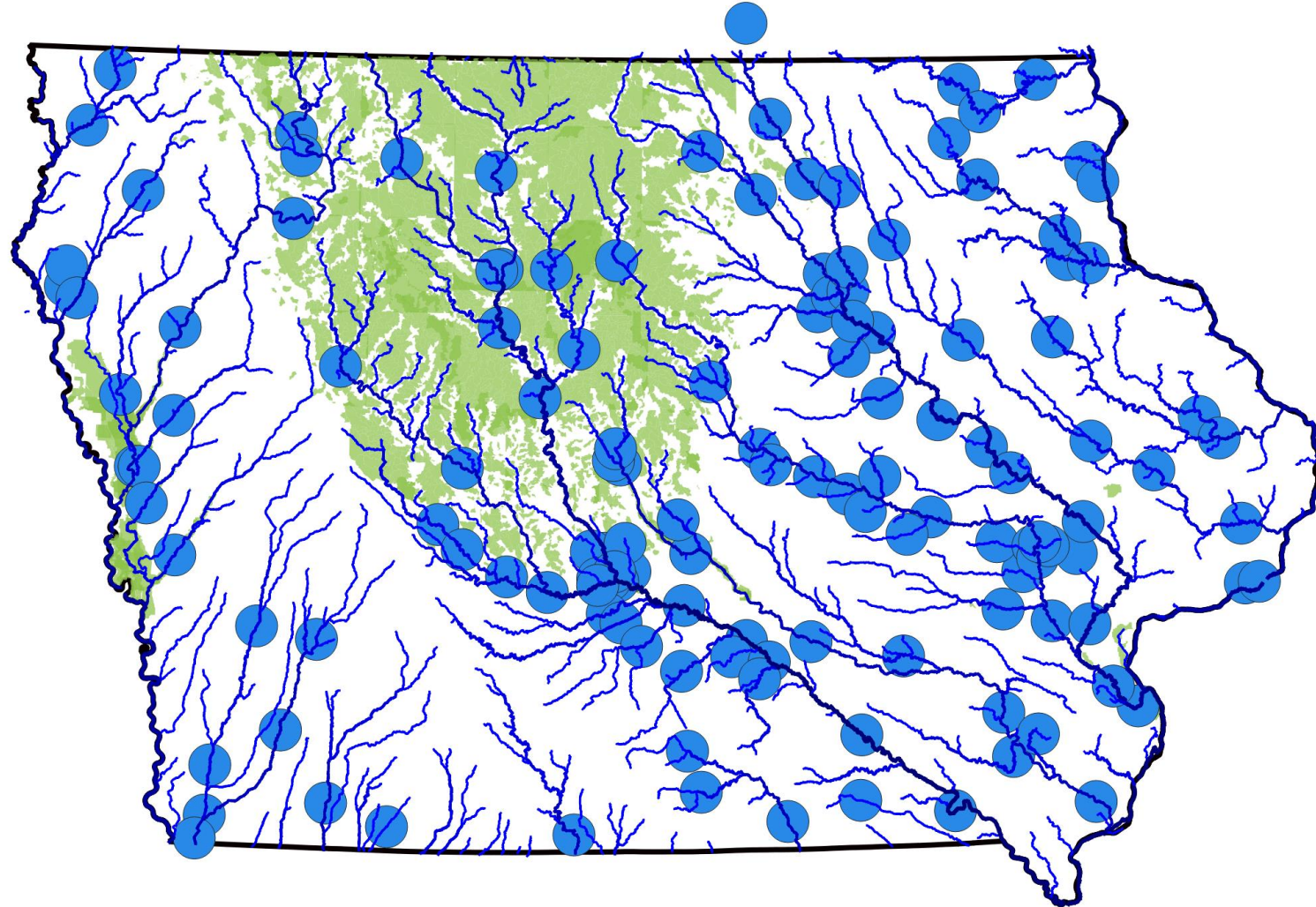


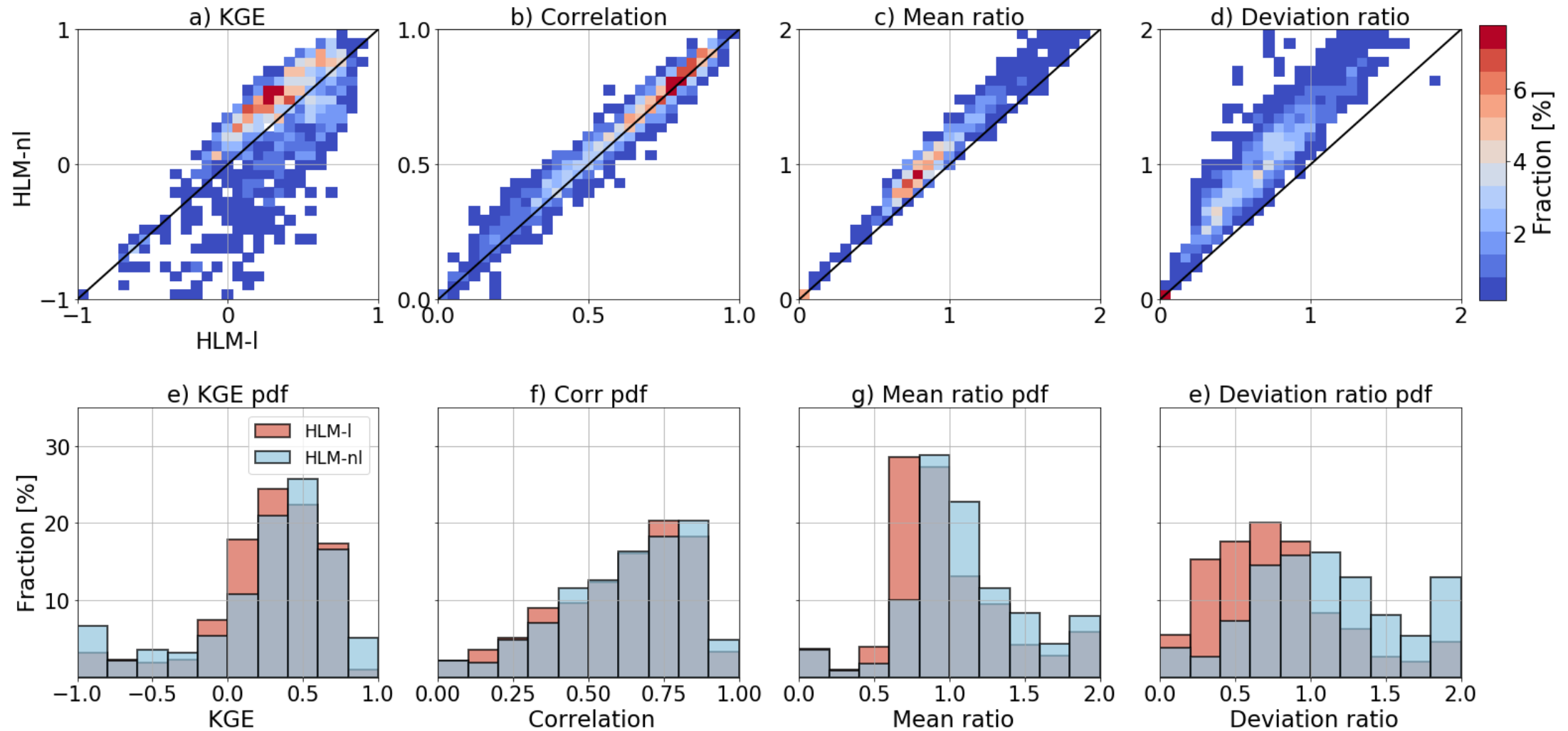
Evaluation of a non-linear function to represent subsurface outflow and tile drainage.

Nicolas Velasquez, Ricardo Mantilla, Felipe Quintero, Morgan Fonley,
Witek Krajewsky,

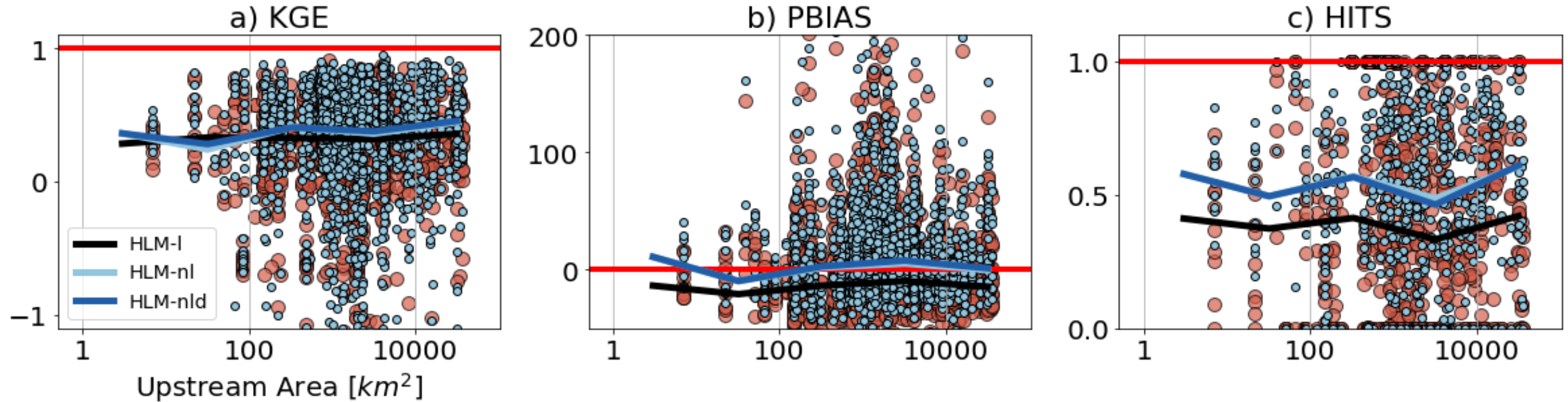
With the new model, we consider three new scenarios between 2002 and 2018: active layer (undrained), tiled (drained), and distributed drained (green).



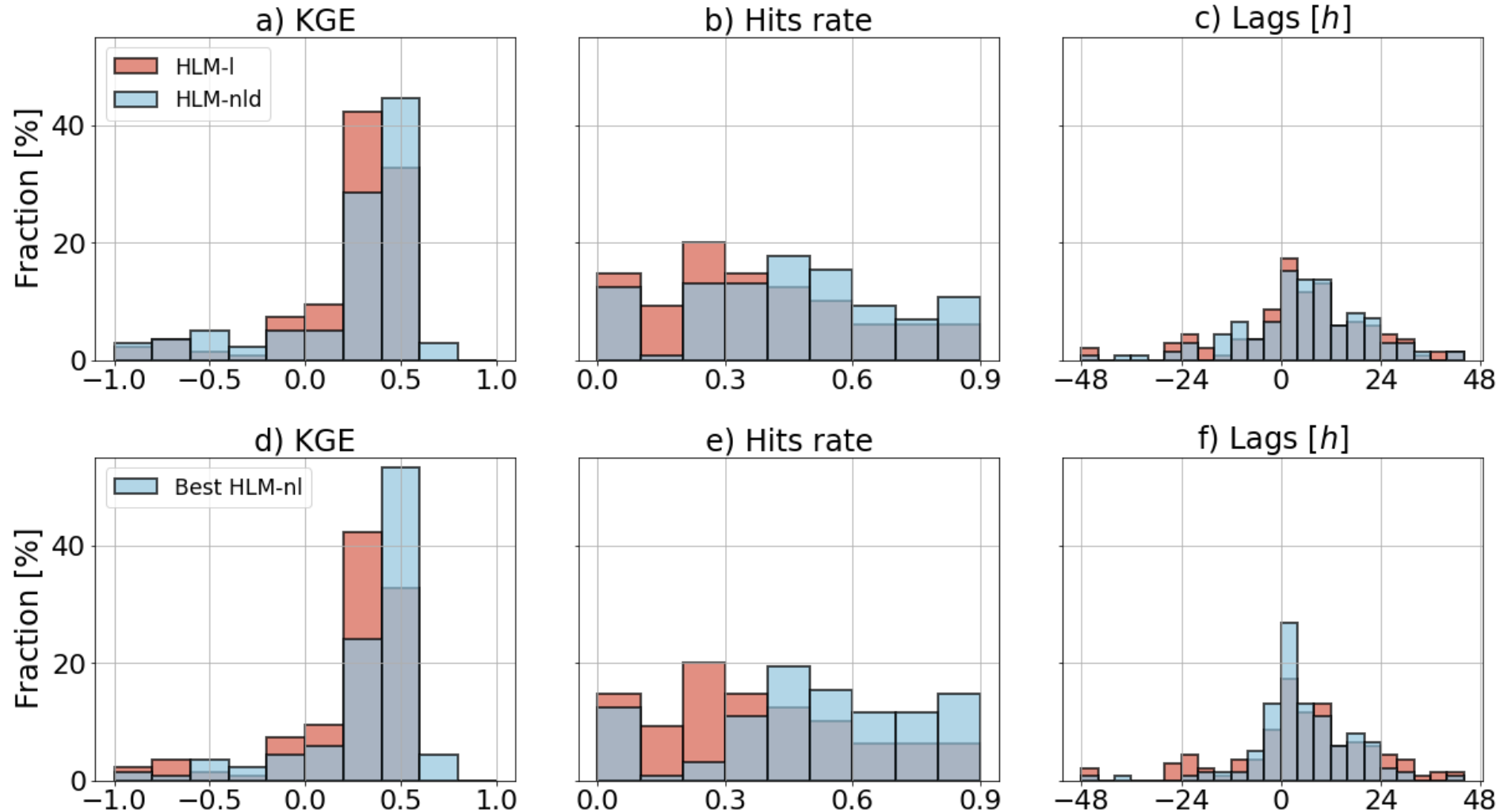
The HLM-nl setup increases the yearly KGE performance. We attribute this increase performance at the Mean and Deviation biases.



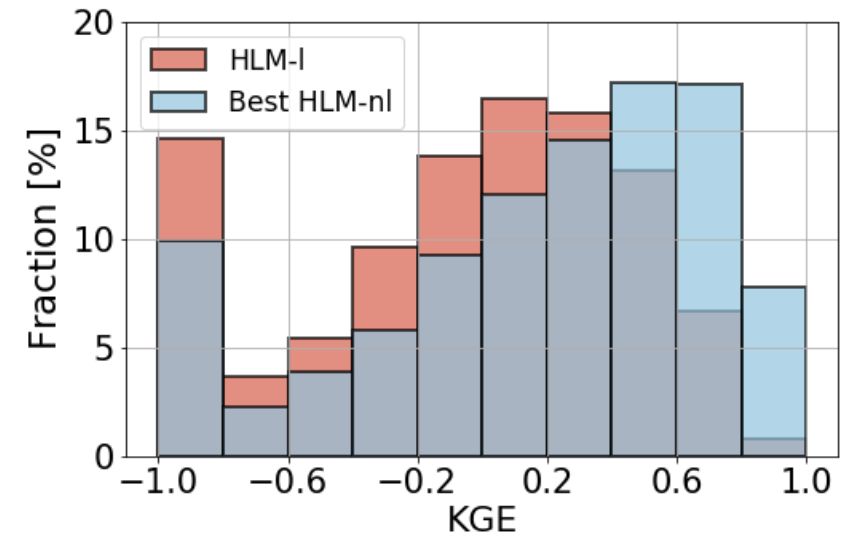
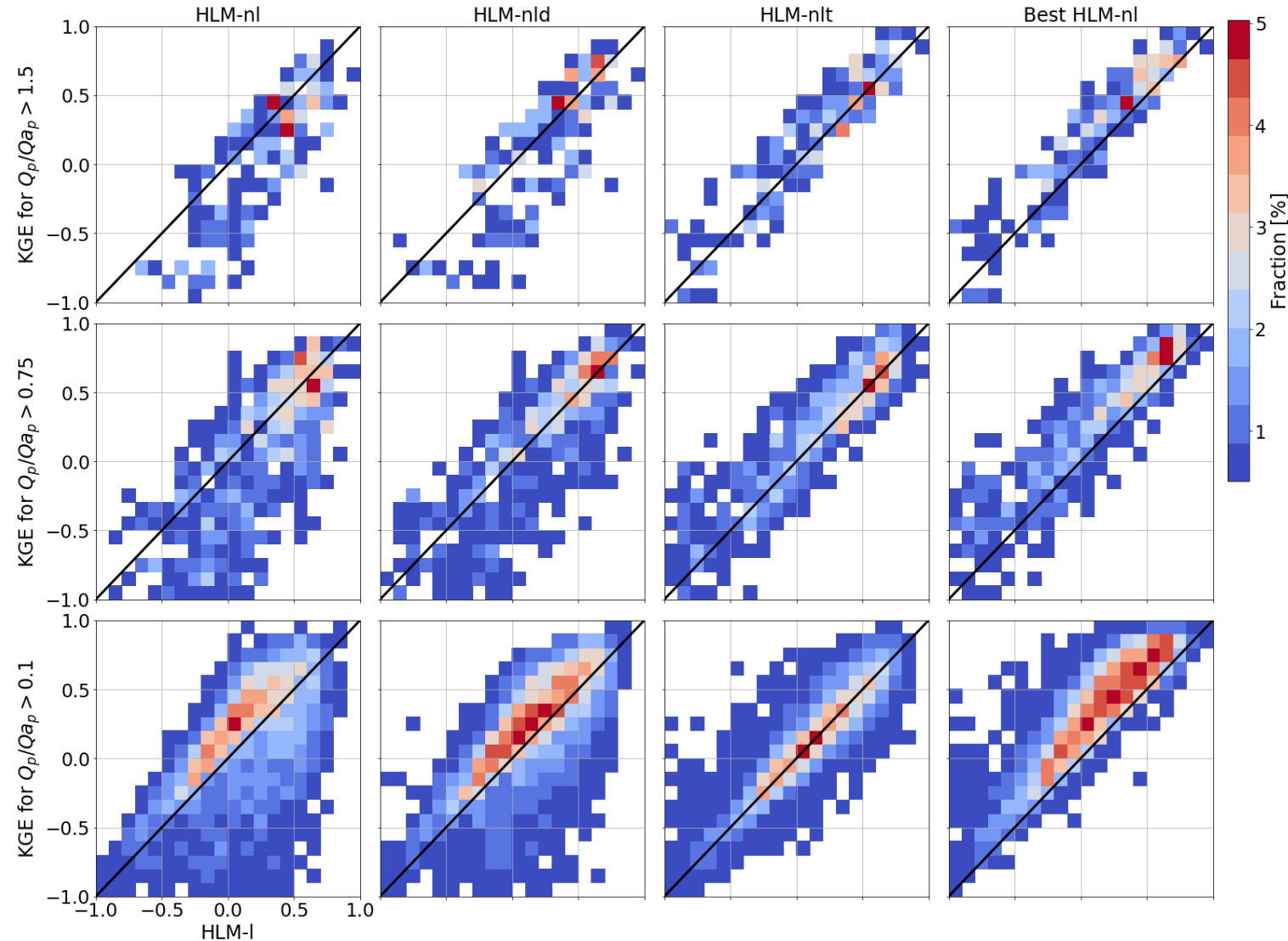
The improved performance happens at all the scales. However, the KGE improvement is limited to watersheds with areas above 100 km².



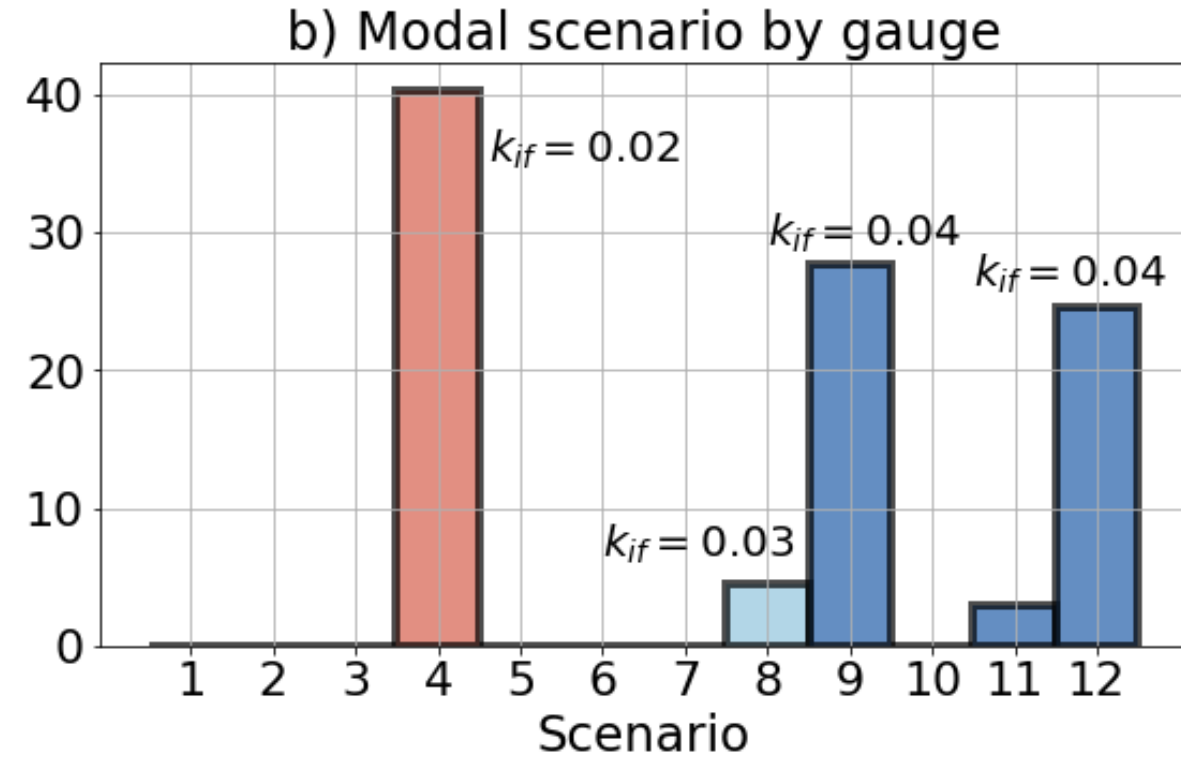
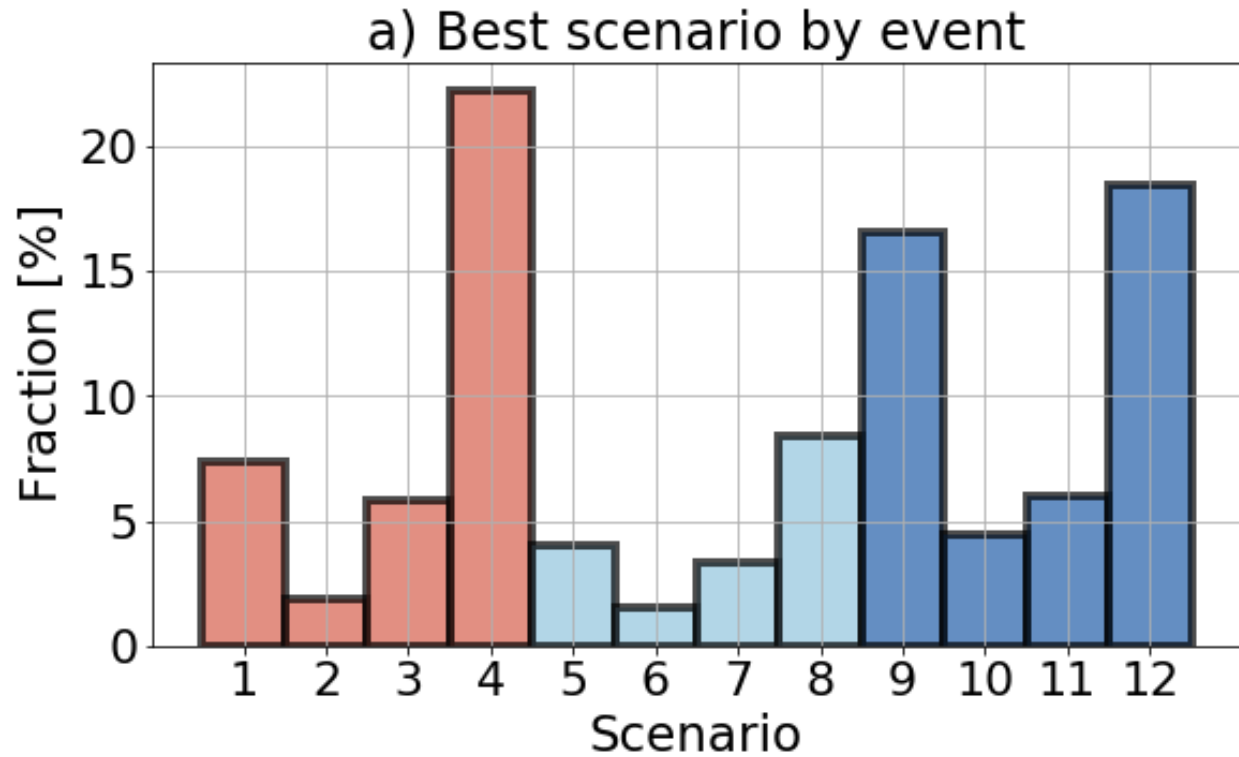
With the new model, we consider three new scenarios between 2002 and 2018: active layer (undrained), tiled (drained), and distributed drained (green).



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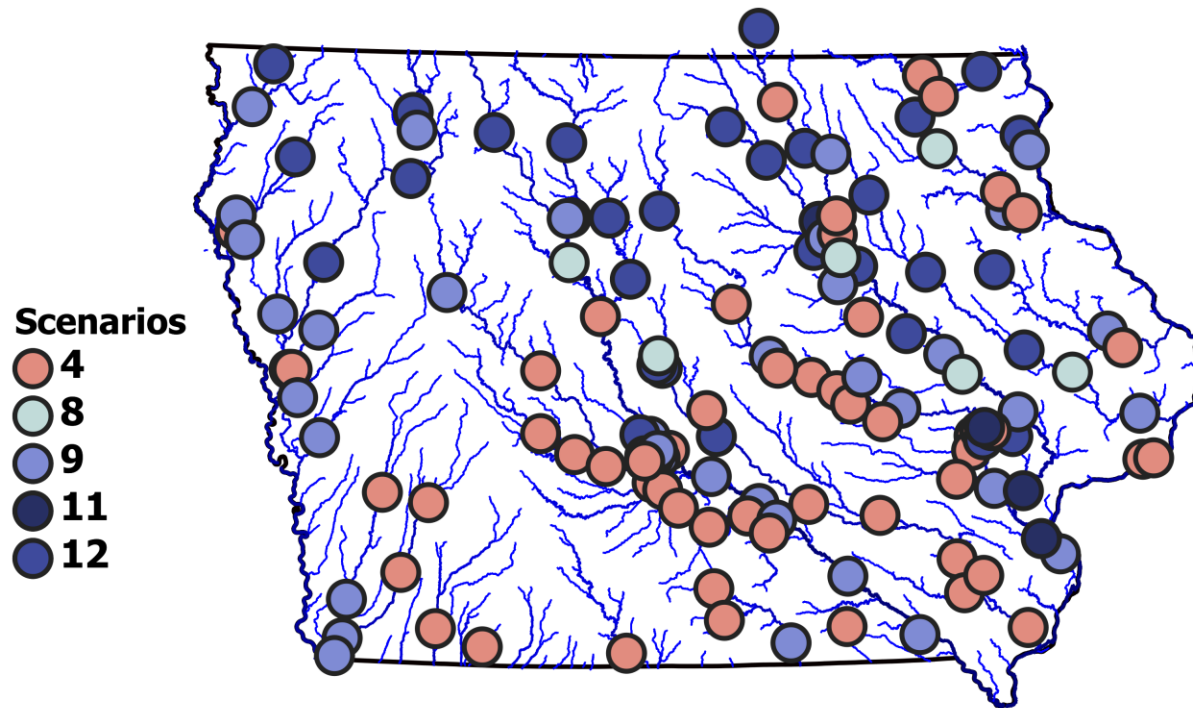


Some of the scenarios are dominant in the region.

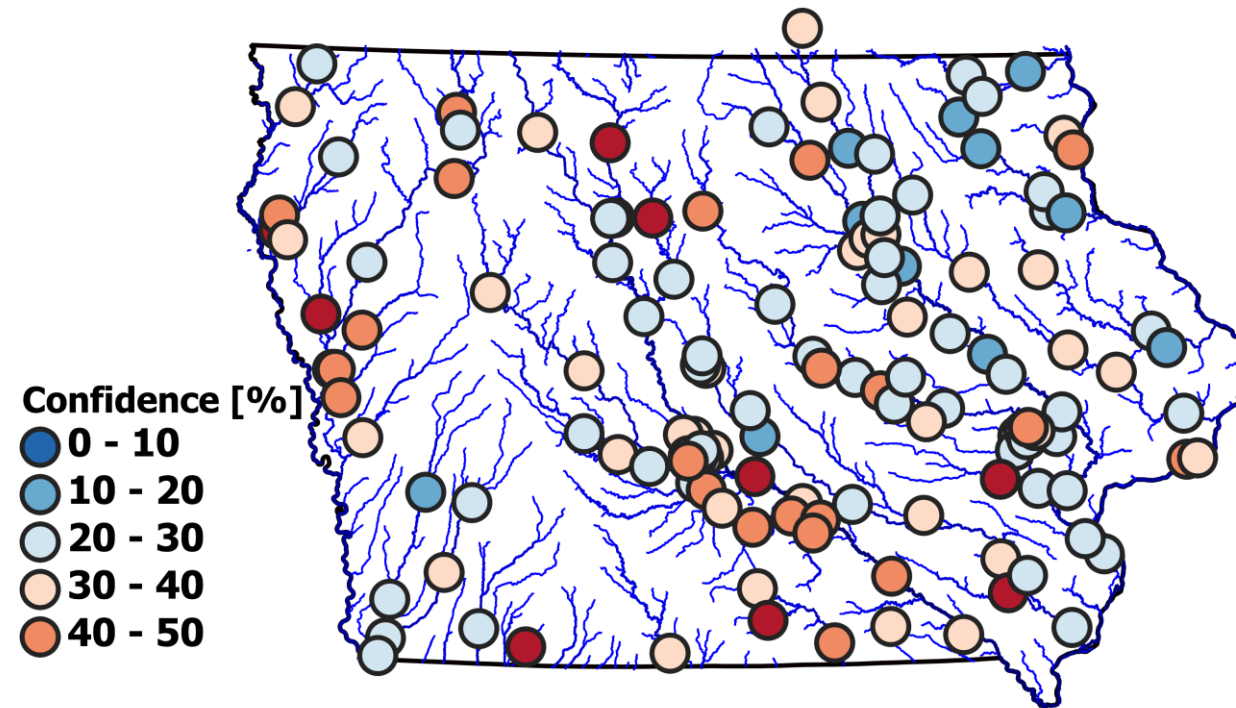


The selected scenarios also have an spatial distribution inside Iowa.

a) Scenarios selected for each gauge

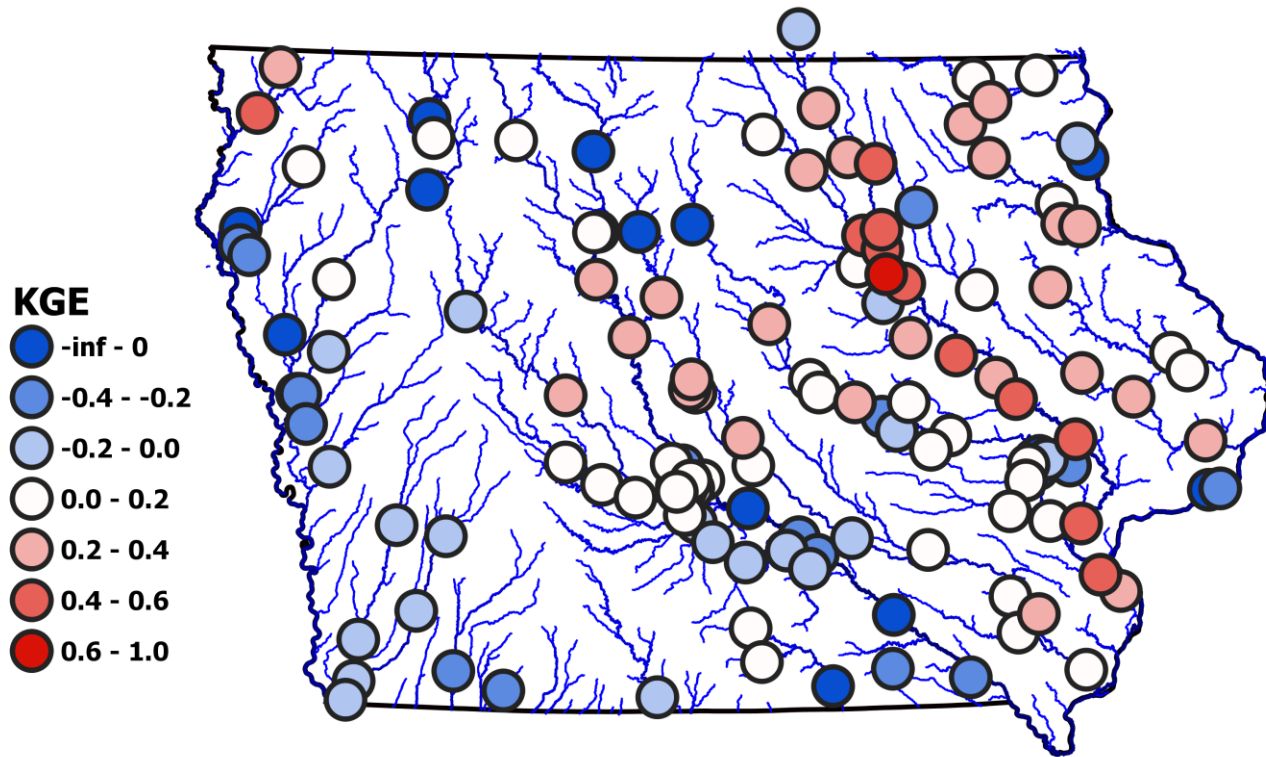


b) Confidence of the selected scenarios.

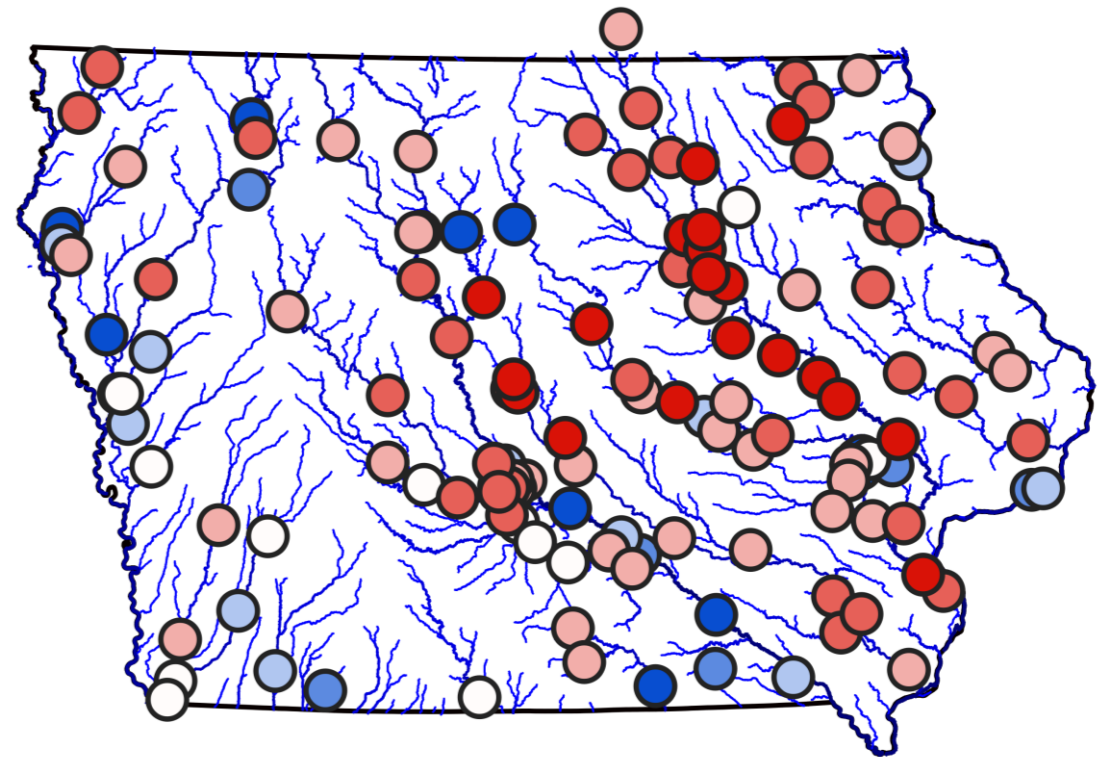


Compared with the HLM-I, the best scenario of the HLM-nl produces a significant improvement at different regions of Iowa.

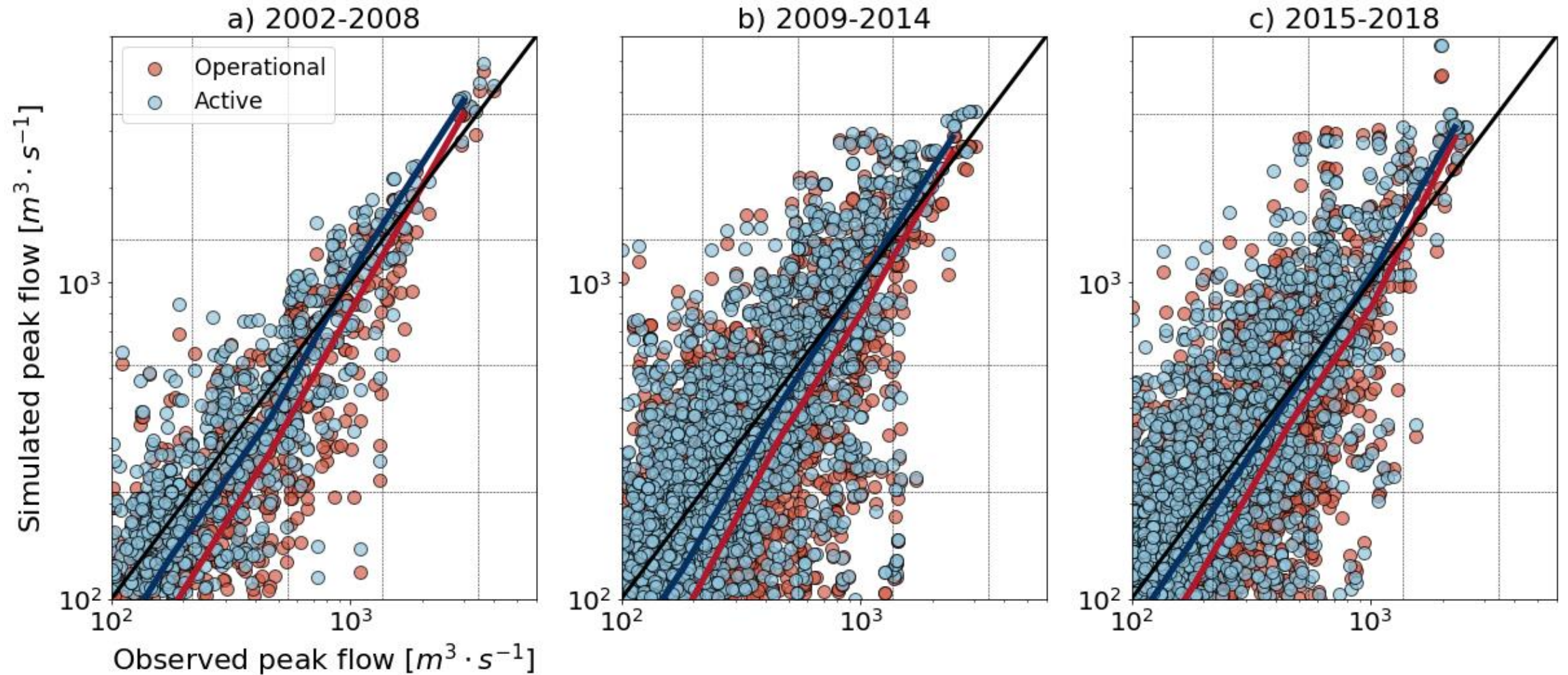
a) KGE for the HLM-I



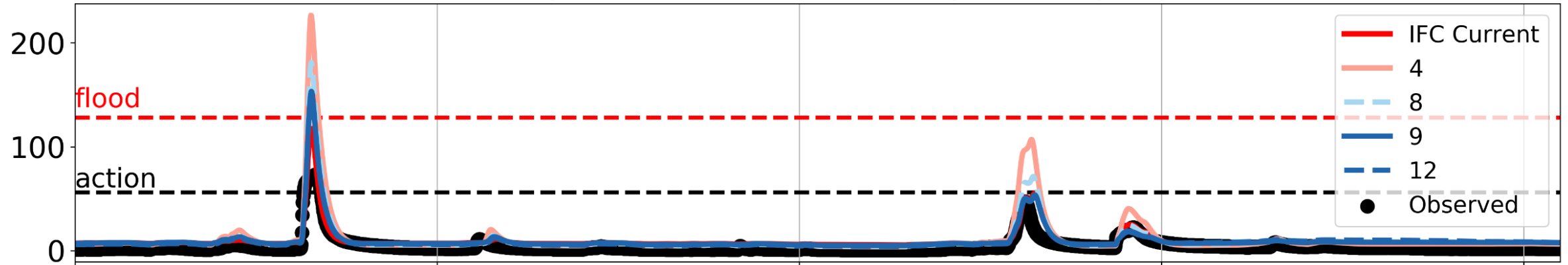
b) KGE for the best HLM-nl



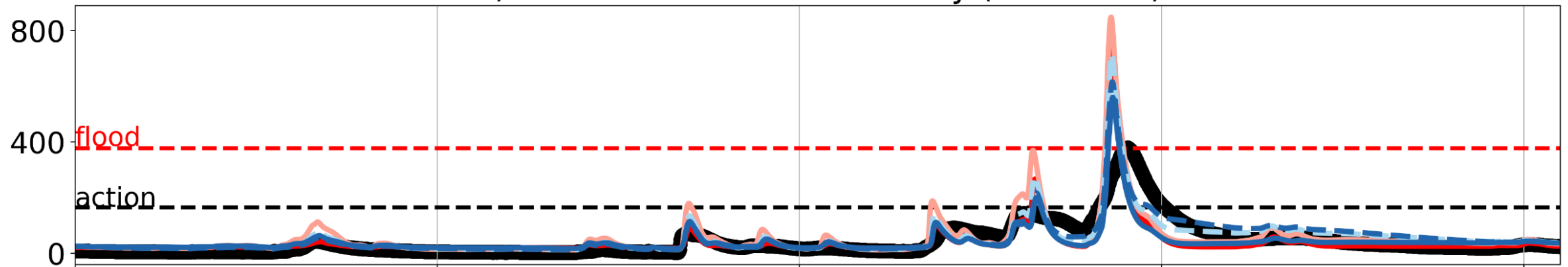
With the new model, we consider three new scenarios between 2002 and 2018: active layer (undrained), tiled (drained), and distributed drained (green).



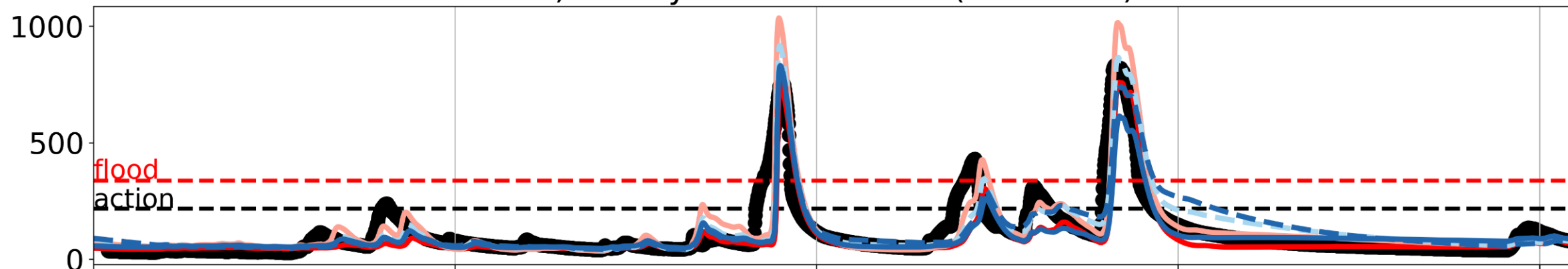
a) North River at Norwalk (906 km²)



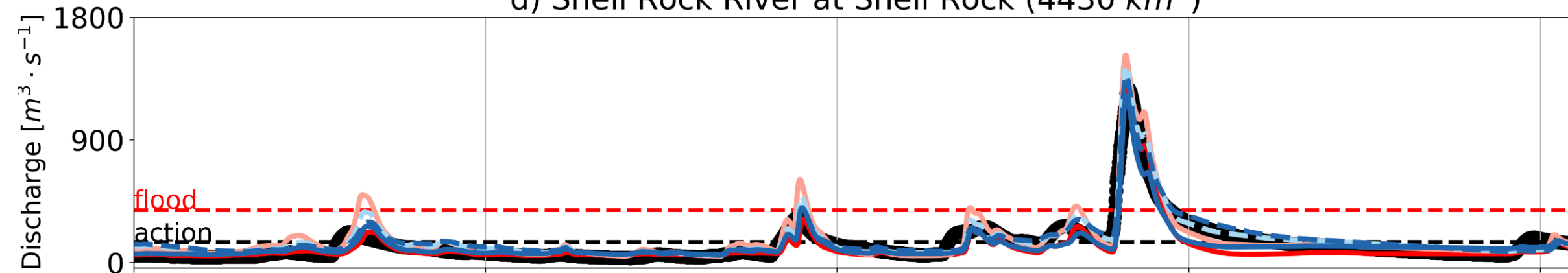
b) Boone River at Webster City (2174 km²)



c) Turkey River at Garber (4031 km^2)



d) Shell Rock River at Shell Rock (4430 km^2)



e) Cedar River at Cedar Bluff (18272 km^2)

