



Water Resources Research

Supporting Information for

**Machine Learning Algorithms for Modeling Groundwater Level Changes in
Agricultural Regions of the U.S.**

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Figures S1 to S3

Introduction

The following figures provide additional results for model coefficients (Figure S1) and input data processing (Figures S2 and S3).

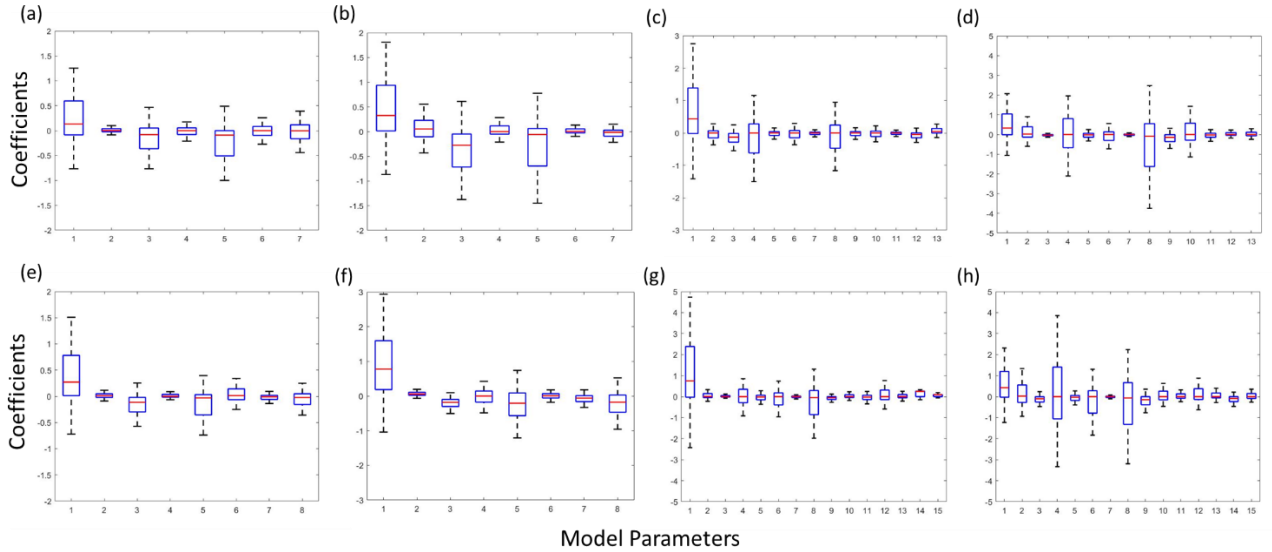


Figure S1. Regression coefficients of input parameters for (a) MLR, (b) HMLR, (c) MNL, (d) HMNL models of HPA and (e) MLR, (f) HMLR, (g) MNL, (h) HMNL models of MRVA. ‘H’ stands for models with transformed inputs. In all models, ‘1’ is the intercept and rest are coefficients (β) of respective model input parameters. In (a), (b), (e), and (f): ‘2’ stands for coefficients of precipitation, ‘3’ for temperature, ‘4’ for streamflow, ‘5’ for irrigation, ‘6’ for ENSO, ‘7’ for PDO, and ‘8’ for NAO. In (c), (d), (g), and (h): ‘2’ and ‘3’ are coefficients of precipitation, ‘4’ and ‘5’ are coefficients of temperature, ‘6’ and ‘7’ are coefficients of streamflow, ‘8’ and ‘9’ are coefficients of irrigation, ‘10’ and ‘11’ are coefficients of ENSO, ‘12’ and ‘13’ are coefficients of PDO, and ‘14’ and ‘15’ are coefficients of NAO. The blue boxes show the median and the 25th and 75th percentiles. The whiskers in black correspond to approximately $\pm 2.7\sigma$.

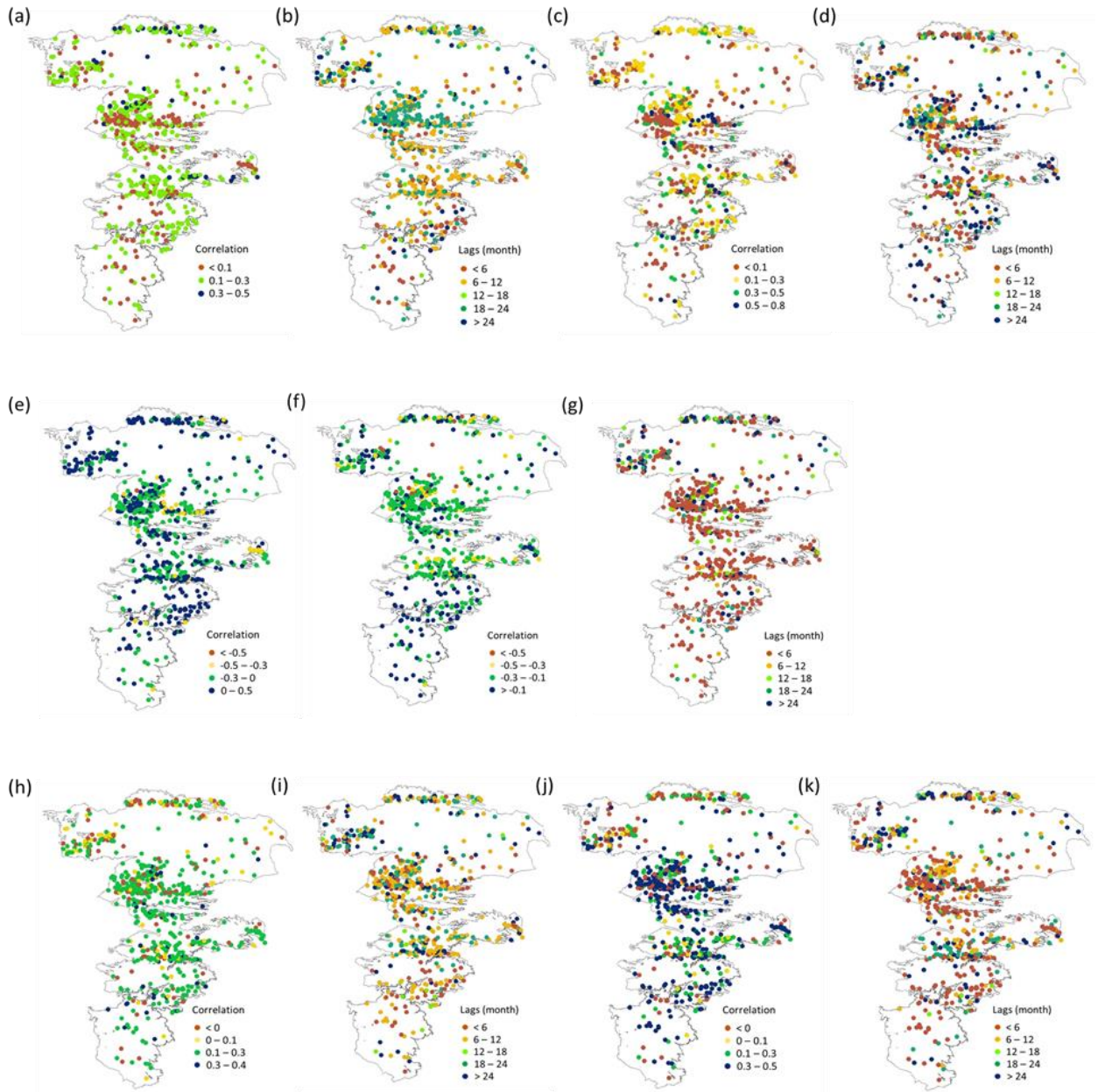


Figure S2. HPA, Correlations (a) and time lags for the best RC (b), respectively, for groundwater and precipitation; groundwater and streamflow (c) and (d); groundwater and irrigation (e); groundwater and temperature (f) and (g); groundwater and ENSO (h) and (i); groundwater and PDO (j) and (k). Correlation between groundwater and irrigation is direct seasonal correlation.

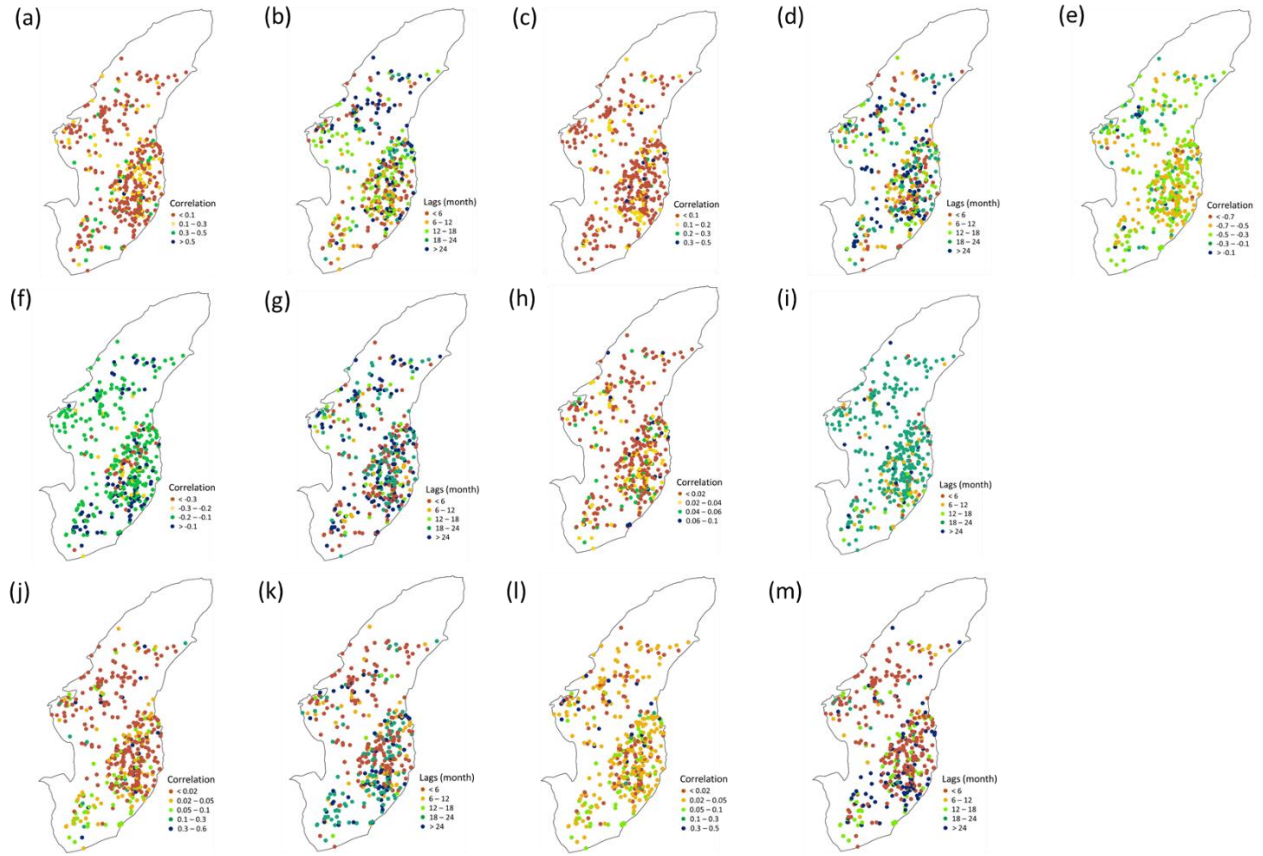


Figure S3. MRVA, Correlations (a) and time lags for the best RC (b), respectively, for groundwater and precipitation; groundwater and streamflow (c) and (d); groundwater and irrigation (e); groundwater and temperature (f) and (g); groundwater and ENSO (h) and (i); groundwater and PDO (j) and (k); groundwater and NAO (l) and (m). Correlation between groundwater and irrigation is direct seasonal correlation.