Metadata Records
Irrigation Innovation Consortium-Supported Project Datasets

Please use a separate sheet for each dataset. Answers are automatically saved.
Questions? Contact Diane DeJong: diane.de_jong@colostate.edu.

Thank you!

Question	Answer
Project name	Connecting Field Performance to Watershed Health
Project background	Finding novel ways of measuring real-time water delivery to crops can provide useful information to farmers and watershed managers balancing economic, sustainability, and governance decisions. This study uses electrical data gathered in 15-minute time intervals on 10 center pivot agricultural production wells in western Nebraska to estimate water delivery to the crops over the growing season. Water delivery estimated using an electrical run-time algorithm and well flow test results is compared against water delivery measured with calibrated flow meters placed on four of the production wells. Aquifer water levels are measured immediately adjacent to four of the 10 wells to estimate how changes in water level at the wells may impact results. In addition, aquifer water levels are measured at two monitoring sites remote from production wells to follow larger scale aquifer changes over the growing season. We then discuss the accuracy of estimating water delivery from the electrical run-time algorithm based upon preliminary first year data and present our results within the context of hydrogeologic modeling in the aquifer region. This novel data approach takes advantage of reliable and cost-effective data gathering across the rural power smart grid and may provide extra information to understand hydrogeologic systems in heavily irrigated areas—supporting well informed and economic use of water resources.
Dataset name	NEWBA_DATA_SCIENCE
Primary author Include first & last name, institution affiliation, and email address.	Mark Cox, Grower Information Services Coop, mark.cox@gisc.coop
Primary contact The primary contact may be the same or different from the primary author. Include first & last name, institution affiliation, and email address.	Amy Harsch, Nebraska Water Balance Alliance, amy_harsch@gisc.coop
Dataset description Please provide a brief, clear summary description of the dataset contents. Indicate as applicable: purpose and scope; time period; areas of investigation; and any other special characteristics.	NEWBA_DATA_SCIENCE is a database that contains time series of electrical run times collected at 15 minute intervals for about 5 wells located on Paulman Farms near Sutherland, NE and 5 wells located in the Upper Republican Natural Resources District in southwestern NE. It also contains corresponding flow rate and water delivery data provided by telemetering flow meters on each of the 10 wells. In addition, it contains time series data of aquifer water level in nearby monitoring and observation wells. These last data sets are incomplete and have not yet been analyzed due to data transmission issues of various kinds that are inherent to iot devices.

Spatial coverage Please be specific as possible about the geographic coverage of your data, and record the information according to defined standards, such as FGDC or the Getty Thesaurus of Geographic Names. You can enter lat/long data, county names, state names, etc.	Nebraska, -101.2646270569603 41.0292240592773, -101.25502892469189 41.029287578615474, -101.0931222554553 41.051034173375285, -101.10273815125696 41.0655160416152, -101.27374668200453 41.01462844611041, -101.70946927383929 40.73225893317391, -101.56562409568345 40.8329770961463, -101.96971624650956 40.83322238253088, -101.26251912068909 40.868977463372815 Legal addresses of 10 wells studied are as follows: Paulman Farms: PH5, S2 34 13 33; PH2, SE 28 13 33; T4, NE 14 12 35; P11, NW 12 12 35; P12, NE 12 12 35. URNRD: TP, SW 23 10 39; SB, SW 17 10 37; BH, SW 14 10 35; CN, NW 1 10 35; SH, SW 24 9 39. Format is LOCATION: WELL NAME1, legal address1; WELL NAME2, legal address2; etc.
Temporal coverage Describe the temporal coverage of your dataset: Start: Time of day, Date, Month, Year Finish: Time of day, Date, Month Year	Collection of electrical run time data began on wells on Paulman Farms in June 2021 and continues to present. Flow meter data collection on wells in Upper Republican NRD began on July 19, 2023. Collection of electrical run times began Aug 9, 2023. Data are only collected during the irrigation season.
Re-use limitations Describe known problems or caveats that would limit reuse of the data (e.g., uncertainty, sampling problems, blanks, quality control samples) and/or that future potential users of your dataset should know about. Or indicate "None."	Data in the NEWBA_DATA_SCIENCE database are raw time series that are not ready for public distribution. Data from grower's farms in URNRD are private and are not yet cleared public distribution, although we anticipate they can be.
Citations Please include full citations and DOIs for articles published based on or related to this dataset. Or indicate "None."	none
Keywords Please add a few appropriate National Agricultural Library keywords: https://agclass.nal.usda.gov/vocabularies/nalt	remote sensing; aquifer; algorithm; groundwater level; watershed; Nebraska; center pivot irrigation; wells
Tags Please add a few of your own user-defined tags that would be useful to others who might use your dataset in the future.	water delivery; big data; aquifer decline; water data; Nebraska aquifer; aquifer levels;
Acronyms & abbreviations Please define any acronyms, site abbreviations, or other project specific designations used in your dataset. Or indicate "none."	GET - Groundwater Evaluation Toolbox; NEWBA - Nebraska Water Balance Alliance; URNRD - Upper Republican Natural Resource District; TPNRD - Twin Platte Natural Resource District; GPM - Gallons per Minute;
Other dataset storage location Has this dataset already been uploaded elsewhere? Yes or No Reasons may include a requirement as part of publishing a paper or storing data on GitHub or other locations to make accessible to others. If yes, please provide the link or other information to explain where the dataset is located and where or how it can be accessed.	Yes; some data may have been uploaded to support Bradley Dowell's Master's thesis. No other data have been uploaded to my knowledge.