
WATER FOR FOOD CLUSTER HIRE - PUBLICATION LIST

Prepared September 30, 2017

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- Fensterseifer, C.A., N.A. Streck, G.A. Baigorría, A.P. Timilsina, A.J. Zanon, J.C. Cera, T.S. Rocha. In press. On the number of experiments required to calibrate a cultivar in a crop model: the case of CROPGRO-Soybean. *Field Crop Research*.
- Shin, D-W., G.A. Baigorría, C.C. Romero, S. Cocks, J-H. Oh, and K. Bael-Min. In press. Assessing crop yield simulations driven by the NARCCAP regional climate models in the southeast United States. *Journal of Geophysical Research Atmosphere*. doi:10.1002/2016JD025576.
- van Bussel, L.G.J., F. Ewert, G. Zhao, H. Hoffmann, A. Enders, D. Wallach, S. Asseng, G.A. Baigorría, B. Basso, C. Biernath, D. Cammarano, J. Chrystanthacopoulos, J. Constantin, J. Elliott, M. Glotter, F. Heinlein, K.C. Kersebaum, C. Klein, C. Nendel, E. Priesack, H. Raynal, C.C. Romero, R.P. Rotter, X. Specka, and F. Tao. 2016. Spatial sampling of weather data for regional crop yield simulations. *Agricultural and Forest Meteorology*, 220(2016):101-115. doi:10.1016/j.agrformet.2016.01.014
- Nam, W-H., E-M. Hong, and G.A. Baigorría. 2016. How climate change has affected the spatio-temporal patterns of precipitation and temperature at various time scales in North Korea. *International Journal of Climatology*. 36:722-734. doi:10.1002/joc.4378.
- Singh, H., N. Subash, B. Gangwar, R. Valdivia, J. Antle, G.A. Baigorría. 2015. Assessing economic impacts of climate change and adaptation in Indo-Gangetic basin. *Procedia Environmental Sciences*, 29:229-230. doi:10.1016/j.proenv.2015.07.286.
- Nam, W-H. and G.A. Baigorría. 2015. Analyzing changes to the spatial structures of precipitation and temperature under different ENSO phases in the Southeast and Midwest United States. *Meteorological Applications*, 22(4):797-805. doi:10.1002/met.1526.
- Baigorría, G.A. 2014. Stochastic models to generate geospatial-, and temporal-, and cross-correlated daily maximum and minimum temperatures. *Advances in Meteorology*. Article ID 365362, 14 pages. doi: 10.1155/2014/365362.
- Kofikuma, D., C. Matyas, J.W. Jones, G.A. Baigorría, and G. Hoogenboom. 2014. Understanding high resolution space-time variability of rainfall in southwest Georgia, USA. *International Journal of Climatology*, 34: 3188-3203. doi: 10.1002/joc.3904.
- Ruane, A.C., S. McDermid, C. Rosenzweig, G.A. Baigorría, J.W. Jones, C.C. Romero and L.D. Cecil. 2014. Carbon-Temperature-Water change analysis for peanut production under climate change: A prototype for the AgMIP Coordinated Climate-Crop Modeling Project (C3MP). *Global Change Biology*, 20(2): 394-407. doi: 10.1111/gcb.12412.
- Oh, J.H., D.W. Shin, S.D. Cocks and G.A. Baigorría. 2014. ENSO teleconnection pattern changes over the southeastern United States in CMIP5 models. *Advances in Meteorology*. Article ID 648197, 16 pages. doi 10.1155/2014/648197.
- Rosenzweig, C., J.W. Jones, J.L. Hatfield, A.C. Ruane, K.J. Boote, P. Thorburn, J.M. Antle, G.C. Nelson, C. Porter, S. Janssen, S. Asseng, B. Basso, F. Ewert, D. Wallach, G.A. Baigorría, and J.M. Winter. 2013. The Agricultural Model Intercomparison and Improvement Project (AgMIP): Protocols and pilot studies. *Agricultural and Forest Meteorology*, 2013, 170: 166-182. doi: 10.1016/j.agrformet.2012.09.011.
- Baigorría, G.A. 2012. Book review: Applied Agrometeorology. *Italian Journal of Agrometeorology*. 2: 47-48.
- Romero, C.C., G. Hoogenboom, G.A. Baigorría, J. Koo, A.J. Gijsman, and S. Wood. 2012. Reanalysis of a global soil database for crop and environmental modeling. *Environmental Modelling & Software*, 35: 163-170. doi:10.1016/j.envsoft.2012.02.018.



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- Abendroth, L. J., Woli, K. P., Myers, A. J.W., Elmore, R. (2017). Yield-based Corn Planting Date Recommendation Windows for Iowa. *Crop, Forage, & Turfgrass Management*, 3(1). <https://dl.sciencesocieties.org/publications/cftm/articles/3/1/cftm2017.02.0015>
- Morell, F. J., Yang, H., Cassman, K., Wart, J. V., Elmore, R., Licht, M., Coulter, J. A., Ciampitti, I. A., Pittelkow, C. M., Brouder, S. M., Thomison, P., Lauer, J., Graham, C., Massey, R., Grassini, P. (2016). Can crop simulation models be used to predict local to regional maize yields and total production in the U.S. Corn Belt? *Field Crops Research*, 192, 1-12.
- Licht, M. A., Lenssen, A. W., Elmore, R. (2016). Corn (*Zea mays* L.) seeding rate optimization in Iowa, USA. *Precision Agriculture*.
- Medic, J., Abendroth, L. J., Elmore, R., Jane, J.-I. (2016). EFFECT OF PLANTING DATE ON MAIZE STARCH STRUCTURE, 1 PROPERTIES, 2 AND ETHANOL PRODUCTION. *Starch*, 68(5-6), 476-487.
- Woli, K. P., Boyer, M. J., Elmore, R., Sawyer, J. E., Abendroth, L. J., Barker, D. W. (2016). Corn Era Hybrid Response to Nitrogen Fertilization. *Agronomy J*, 108, 1-14.
- Nelson, B., Elmore, R., Lenssen, A. W. (2015). Comparing Yield Monitors with Weigh Wagons for On-farm Corn Hybrid Evaluation. *Crop, Forage, & Turfgrass Management*, 1, 1-7.
- Blanco, H., Shaver, T., Lindquist, J. L., Shapiro, C., Elmore, R., Francis, C., Hergert, G. W. (2015). Cover Crops and Ecosystem Services: Insights from Studies in Temperate Soils. *Agronomy J*, 107, 2449-2474.
- Al-Kaisi, M. M., Elmore, R., Miller, G. A., Kwaw-Mensah, D. (2015). Extension Agriculture and Natural Resources in the U.S. Midwest: A review and analysis of challenges and future opportunities. *Natural Sciences Education*, 44, 26-33. <https://www.agronomy.org/publications/nse/articles/44/1/26>
- Woli, K. P., Burras, C. L., Abendroth, L. J., Elmore, R. (2014). Optimizing Corn Seeding Rates Using a Field's Corn Suitability Rating. *Agron. J*, 106(4), 1523-1532.

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PUBLICATIONS (advised postdocs, grad or #undergrads)

- Wang, T., Q. Liu, T. E. Franz, R. Li, and Y. Lang, C.A. Fiebrich (2017 In Press), Spatial patterns of soil moisture from two regional monitoring networks in the United States, *Journal of Hydrology*.
- Adams, H., M. Zeppel, W. Anderegg, H. Hartmann, S. Landhausser, T. D., T. E. Huxman, P. Hudson, T. E. Franz, C. D. Allen, L. Anderegg, G. Barron-Gafford, D. Beerling, D. D. Breshears, T. Brodrribb, H. Bugmann, R. Cobb, A. Collins, L. Dickman, H. Duan, B. Ewers, L. Galiano, D. Galvez, N. Garcia-Forner, M. Gaylord, M. Germino, A. Gessler, U. Hacke, R. Hakamada, A. Hector, M. Jenkins, J. Kane, T. Kolb, D. Law, J. Lewis, J. Limousin, D. Love, A. K. Macalady, J. Martinez-Vilalta, M. Mencuccini, P. Mitchell, J. Muss, M. O'Brien, O. G. A., R. Pangle, E. Pinkard, F. Piper, J. Plaut, W. T. Pockman, J. Quirk, K. Reinhardt, F. Ripullone, M. Ryan, A. Sala, S. Sevanto, J. Sperry, R. Vargas, M. Vennetier, D. Way, C. Xu, E. A. Yezpey, and N. McDowell (2017 in press), A multi-species synthesis of physiological mechanisms in drought-induced tree mortality, *Nature Ecology & Evolution*.
- Andreasen, M., K. H. Jensen, D. Desilets, T. E. Franz, M. Zreda, H. Bogaen, and M. C. Looms (2017 in press), Status and perspectives of the cosmic-ray neutron method for soil moisture estimation and other environmental science applications, *Vadose Zone Journal*.
- McCabe, M. F., M. Rodell, D. E. Alsdorf, D. G. Miralles, R. Uijlenhoet, W. Wagner, A. Lucieer, R. Houborg, N. Verhoest, T. E. Franz, J. Shi, H. Gao, and E. F. Wood (2017 in press), The Future of Earth Observation in Hydrology, *HESS*.
- Peters-Lidard, C., M. Clark, L. Samaniego, N. E. C. Verhoest, T. van Emmerik, R. Uijlenhoet, K. Achieng, T. E. Franz, R. Woods (2017 in press), Scaling, Similarity, and the Fourth Paradigm for Hydrology, *HESS*.
- Franz, T. E., T. Loecke, A. Burgin, Y. Zhou, T. Le, and D. Moscicki (2017), Spatio-temporal predictions of soil properties and states in variably saturated landscapes, *Journal of Geophysical Research - Biogeosciences*, 122.

- Lawston, P. M., J. A. Santanello, T. E. Franz, and M. Rodell (2017), Assessment of Irrigation Physics in a Land Surface Modeling Framework Using Non-traditional and Human-Practice Datasets, *HESS*, 21, 2953-2966.
- Wang, T., T. E. Franz, J. You, M. D. Shulski, and C. Ray (2017), Evaluating controls of soil properties and climatic conditions on the use of an exponential filter for converting near surface to root zone soil moisture contents, *Journal of Hydrology*, 548, 683-696.
- Wang, T., T. E. Franz, R. Li, M. D. Shulski, and C. Ray (2017), Evaluating climate and soil effects on regional soil moisture spatial variability using EOFs, *Water Resources Research*, 53, 4022-4035.
- Barker, J. B., T. E. Franz, D. M. Heeren, C. M. Neale, and J. D. Luck (2017), Soil Water Content Monitoring for Irrigation Management: A Geostatistical Analysis, *Agric. Water Manage*, 188, 36-49.
- Gibson, J., T. E. Franz, Wang, T., J. Gates, P. Grassini, H. Yang, and D. E. Eisenhauer (2017), A case study of field-scale maize irrigation patterns in Western Nebraska: Implications to water managers and recommendations for hyper-resolution land surface modelling, *HESS*, 21, 1051-1062.
- Foolad, F., T. E. Franz, Wang, T., J. Gibson, A. Kilic, R. G. Allen, and A. Suyker (2017), Feasibility analysis of using inverse modeling for estimating field-scale evapotranspiration in maize and soybean fields from soil water content monitoring networks, *HESS*, 21, 1263-1277.
- Yue, W. F., Wang, T., T. E. Franz, and X. H. Chen (2016), Spatiotemporal patterns of water table fluctuations and evapotranspiration induced by riparian vegetation in a semiarid area, *Water Resources Research*, 52(3), 1948-1960.
- Woodbury, B., R. Eigenberg, and T. E. Franz (2016), Development of non-collinear arrays for use near wastewater holding ponds, *Journal of Environmental and Engineering Geophysics*, 21, 231-236.
- Wonkka, C., D. Twidwell, T. E. Franz, C. A. Taylor Jr., and W. E. Rogers (2016), Persistence of a Severe Drought Increases Desertification but not Woody Dieback in Semiarid Savanna, *Rangeland Ecology & Management*, 69, 491-498.
- Avery, W., C. Finkenbiner, T. E. Franz, T. Wang, A. L. Nguy-Roberston, A. Suyker, T. Arkebauer, and F. Muñoz-Arriola (2016), Incorporation of globally available datasets into the roving cosmic-ray neutron probe method for estimating field-scale soil water content, *HESS*, 20, 3859-3872.
- King, E. G., and T. E. Franz (2016), Combining ecohydrologic and transition probability-based modeling to simulate vegetation dynamics in a semi-arid rangeland, *Ecol. Model.*, 329, 41-63.
- Franz, T. E., A. Wahbi, M. Vreugdenhil, G. Weltin, L. Heng, M. Oismueller, P. Strauss, G. Dercon, and D. Desilets (2016), Using Cosmic-ray Neutron Probes to Monitor Landscape Scale Soil Water Content in Mixed Land Use Agricultural Systems, *Applied and Environmental Soil Science*.
- Wang, T., T. E. Franz, W. F. Yue, J. Szilagyi, V. A. Zlotnik, J. S. You, X. H. Chen, M. D. Shulski, and A. Young (2016), Feasibility analysis of using inverse modeling for estimating natural groundwater recharge from a large-scale soil moisture monitoring network, *Journal of Hydrology*, 533, 250-265.
- Schreiner-McGraw, A. P., E. R. Vivoni, G. Mascaro, and T. E. Franz (2016), Closing the Water Balance with Cosmic-ray Soil Moisture Measurements and Assessing Their Spatial Variability within Two Semiarid Watersheds, *HESS*, 20, 329-345.
- Woodbury, B., R. Eigenberg, and T. E. Franz (2015), Resistivity Arrays as an Early Warning System for Monitoring Runoff Holding Ponds, *Journal of Environmental and Engineering Geophysics*, 20(4), 319-335.
- Wang, T., D. A. Wedin, T. E. Franz, and J. Hiller (2015), Effect of vegetation on the temporal stability of soil moisture in grass-stabilized semi-arid sand dunes, *Journal of Hydrology*, 521.
- Wang, T., T. E. Franz, V. A. Zlotnik, J. You, and M. D. Shulski (2015), Investigating soil controls on soil moisture spatial variability: Numerical simulations and field observations, *Journal of Hydrology*, 524, 576-586.
- Wang, T., T. E. Franz, and V. A. Zlotnik (2015), Controls of soil hydraulic characteristics on modeling groundwater recharge under different climatic conditions, *Journal of Hydrology*, 521.
- Wang, T., and T. E. Franz (2015), Field Observations of Regional Controls of Soil Hydraulic Properties on Soil Moisture Spatial Variability in Different Climate Zones, *Vadose Zone Journal*, 14.
- Franz, T. E., Wang, T., W. Avery, #C. Finkenbiner, and L. Brocca (2015), Combined analysis of soil moisture measurements from roving and fixed cosmic ray neutron probes for multiscale real-time monitoring, *Geophysical Research Letters*, 42.

- Rosolem, R., T. Hoar, A. Arellano, J. L. Anderson, W. J. Shuttleworth, X. Zeng, and T. E. Franz (2014), Translating aboveground cosmic-ray neutron intensity to high-frequency soil moisture profiles at sub-kilometer scale, *Hydrology and Earth System Sciences*, 18(11), 4363-4379.
- Lv, L., T. E. Franz, D. A. Robinson, and S. B. Jones (2014), Measured and Modeled Soil Moisture Compared with Cosmic-Ray Neutron Probe Estimates in a Mixed Forest, *Vadose Zone Journal*, 13(12).
- Stillman, S., J. Ninneman, X. B. Zeng, T. E. Franz, R. L. Scott, W. J. Shuttleworth, and K. Cummins (2014), Summer Soil Moisture Spatiotemporal Variability in Southeastern Arizona, *J. Hydrometeorol.*, 15(4), 1473-1485.
- Almeida, A. C., R. Dutta, T. E. Franz, A. Terhorst, P. J. Smethurst, C. Baillie, and D. Worledge (2014), Combining Cosmic-Ray Neutron and Capacitance Sensors and Fuzzy Inference to Spatially Quantify Soil Moisture Distribution, *Ieee Sensors Journal*, 14(10), 3465-3472.
- McJannet, D., T. E. Franz, A. Hawdon, D. Boadle, B. Baker, A. Almeida, R. Silberstein, T. Lambert, and D. Desilets (2014), Field testing of the universal calibration function for determination of soil moisture with cosmic-ray neutrons, *Water Resources Research*, 50(6), 5235-5248.
- Franz, T. E., M. Zreda, P. A. Ferre, and R. Rosolem (2013) An assessment of the effect of horizontal soil moisture heterogeneity on the area-average measurement of cosmic-ray neutrons, *Water Resources Research*, 49(10).
- Rosolem, R., W. J. Shuttleworth, M. Zreda, T. E. Franz, X. Zeng, and S. A. Kurc (2013) The Effect of Atmospheric Water Vapor on the Cosmic-ray Soil Moisture Signal, *Journal of Hydrometeorology*. 14, 1659-1671
- Franz, T. E., M. Zreda, R. Rosolem, B. Hornbuckle, S. Irvin, H. Adams, T. Kolb, C. Zweck, and W. J. Shuttleworth (2013) Ecosystem scale measurements of biomass water using cosmic-ray neutrons, *Geophysical Research Letters*, 40, 3929-3933.
- Shuttleworth, W. J., R. Rosolem, M. Zreda, and T. E. Franz (2013) The COsmic-ray Soil Moisture Interaction Code (COSMIC) for use in data assimilation, *Hydrology and Earth System Sciences*, 17, 3205-3217.
- Franz, T. E., M. Zreda, R. Rosolem, and T.P.A. Ferre (2013) A universal calibration function for determination of soil moisture with cosmic-ray neutrons. *Hydrology and Earth System Sciences*, 17: 453-460.
- Zreda, M., W. J. Shuttleworth, X. Xeng, C. Zweck, D. Desilets, T. E. Franz, R. Rosolem, and P. A. Ferre. (2012) COSMOS: The COsmic-ray Soil Moisture Observing System". *Hydrology and Earth System Sciences* 16: 4079-4099.
- Franz T.E., Zreda M., Rosolem R., Ferre T.P.A (2012) Field validation of cosmic-ray soil moisture probe using a distributed sensor network, *Vadose Zone Journal*, 11(4).
- Franz T.E., Zreda M., Ferre T.P.A., Rosolem R., Zweck C., Stillman S., Zeng X., Shuttleworth W.J. (2012) Measurement depth of the cosmic-ray soil moisture probe affected by hydrogen from various sources, *Water Resources Research*, 48. Cover Article.
- Miller, G. R., Cable J.M., McDonald A.K., Bond B., Franz T.E., Wang L.X., Gou S., Tyler A.P., Zou C.B., and Scott R.L. (2012) Understanding ecohydrological connectivity in savannas: a system dynamics modelling approach, *Ecohydrology* 5:2: 200-220.
- Wang, L. X., Zou C., O'Donnell F., Good S., Franz T.E., Miller G.R., Caylor K.K., Cable J.M., and Bond B. (2012) Characterizing ecohydrological and biogeochemical connectivity across multiple scales: a new conceptual framework, *Ecohydrology* 5:2: 221-233.
- Franz, T. E., Caylor, K. K., King E. G., Nordbotten, J. M., Rodriguez-Iturbe, R. I., and Celia, M. A. (2012) An Ecohydrological Approach to Predicting Hillslope Scale Vegetation Patterns in Dryland Ecosystems, *Water Resources Research*, Vol. 48, Published January 18, 2012.
- Franz, T. E., King, E. G., Caylor, K. K., and Robinson, D. A. (2011) Coupling Vegetation Patterns to Soil Resource Heterogeneity in a Central Kenyan Dryland Using Geophysical Imagery, *Water Resources Research*, Vol. 47, Published July 31, 2011.
- King, E. G., Franz, T. E., and Caylor, K. K. (2011) Ecohydrological Interactions in a Degraded Two-phase Mosaic Dryland: Implications for Regime Shifts, Resilience, and Restoration, *Ecohydrology*, 5(6), 733-745.
- Franz, T.E., Nolan, J., Nordbotten, J.M., Caylor, K.K., Slater, L.D. (2011) Quantifying Lateral Subsurface Transient Soil Moisture Dynamics Using Multi-Point Direct-Current Resistivity in Homogeneous Sand, *Vadose Zone Journal*, Vol. 10, pp. 286-298.
- Franz, T.E., Caylor, K.K., Nordbotten, J.M., Rodriguez-Iturbe, I., Celia, M.A. (2010) An Ecohydrological Approach to Predicting Regional Woody Species Distribution Patterns in Dryland Ecosystems, *Advances in Water Resources*, 33, 215-230.

PUBLICATIONS IN REVIEW (advised postdocs, grad or #undergrads)

- Wieder, W., S. Shoop, L. Barna, T. E. Franz, and C. Finkenbinder (In review 2017), Comparison of Soil Strength Measurements of Agricultural Soils in Nebraska, *Terramechanics*.
- Finkenbinder, C., T. E. Franz, J. Gibson, D. M. Heeren, and J. D. Luck (In review 2017), Integration of hydrogeophysical datasets for improved water resource management in irrigated systems, *Precis. Agric.*
- Gibson, K. E. B., H. Yang, T. E. Franz, K. Hanford, D. E. Eisenhauer, J. Gates, P. Nasta, B. S. Farmaha, and P. Grassini (2016 in review), Revealing explanatory factors for variation in irrigation amounts across farmer fields, *Agric. Water Manage.*
- Loecke, T., A. Burgin, K. Jarecke, and T. E. Franz (2016, in review), Biotic and Abiotic Controls on Soil Oxygen Dynamics at the Aquatic-Terrestrial Interface, *Journal of Geophysical Research - Biogeosciences*.

BOOK CHAPTERS/TECHNICAL REPORTS

- (In Press), Cosmic Ray Neutron Sensing: Estimation of Agricultural Crop Biomass Water Equivalent. IAEA- TECDOC-XXXX. Joint FAO/IAEA Programme Nuclear Techniques in Food and Agriculture. 37 pg. Vienna, Austria.
- (2017), Cosmic Ray Neutron Sensing: Use, Calibration and Validation for Soil Moisture Estimation. IAEA- TECDOC-1809. Joint FAO/IAEA Programme Nuclear Techniques in Food and Agriculture. 50 pg. Vienna, Austria. Online at <http://www-pub.iaea.org/books/IAEABooks/11097/Cosmic-Ray-Neutron-Sensing-Use-Calibration-and-Validation-for-Soil-Moisture-Estimation>

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PEER-REVIEWED JOURNALS

- Cafaro La Menza N, Monzon JP, Specht J, Grassini P (2017) Is soybean yield limited by nitrogen supply? *Field Crops Res.* (accepted)
- Rattalino Edreira JI, Mourtzinis S, Conley SP, Roth A, Ciampitti IA, Licht MA, Kandel H, Kyveryga PM, Lindsey LE, Mueller DS, Naeve SL, Nafziger E, Specht JE, Stanley J, Staton MJ, Grassini P (2017) Assessing causes of yield gaps in agricultural areas with diversity in climate and soils. *Agricu. For. Meteorol.* (In Press) <http://dx.doi.org/10.1016/j.agrformet.2017.07.010>
- Thomson AM, Ramsey A, Barnes E, Basso B, Eve M, Gennet S, Grassini P, Kliethermis B, Matlock M, McClellan E, Spevak E, Snyder C, Tomer M, van Kessel C, West T, Wick G (2017) Science in the Supply Chain: Collaboration opportunities for advancing sustainable agriculture. *Agricultural & Environmental Letters* (Accepted)
- Tenorio FM, Specht JE, Arkebauer TJ, Eskridge KM, Graef GL, Grassini P (2017) Co-ordination between primordium formation and leaf appearance in soybean (Glycine Max) as influenced by temperature. *Field Crops Res.* (In Press) <http://dx.doi.org/10.1016/j.fcr.2017.03.015>
- Grassini P, Cassman KG, van Ittersum MK (2017) Exploring maize with the Global Yield Gap Atlas. *Better Crops* 101, 7-9
- de Groot H, Adimo O, Claessens L, Van Wart J, van Bussel LGJ, Grassini P, Wolf J, Guilpart N, Boogaard H, van Oort PAJ, Yang HS, van Ittersum MK, Cassman KG (2017) Kenya public weather processed by the Global Yield Gap Atlas project. *ODJAR* 3, 1-3.
- Guilpart N, Grassini P, Sadras VO, Timsina J, Cassman KG (2017). Estimating yield gaps at the cropping system level. *Field Crops Res.* 206, 21-32.
- Gibson J, Trenton EF, Wang T, Gates J, Grassini P, Yang H, Eisenhauer D (2017) A case study of field-scale maize irrigation patterns in western Nebraska: implications for water managers and recommendations for hyper-resolution land surface modeling. *Hydrol. Earth Syst Sci.* 21, 1051-1062.
- Yang H, Grassini P, Cassman KG, Aiken RM, Coyne PI (2017). Improvements to the Hybrid-Maize model for simulating maize yields in harsh rainfed environments. *Field Crops Res.* 204, 180-190.
- Grassini P, Pittelkow CM, Cassman KG, Yang HS, Archontoulis S, Licht M, Lamkey KR, Ciampitti IA, Coulter JA, Brouder SM, Volenec JJ, Guindin-Garcia N (2017) Robust spatial frameworks for leveraging research on sustainable crop intensification. *Global Food Security* (In Press) <http://doi.org/10.1016/j.gfs.2017.01.002>

- Mourtzinis S, Rattalino Edreira JI, Conley SP, Grassini P (2017) From grid to field: assessing quality of gridded weather data for agricultural applications. *European J. of Agronomy* 82, 163-172.
- van Oort PAJ, Saito K, Dieng I, Grassini P, Cassman KG, van Ittersum MK (2017) Can yield gap analysis be used to inform R&D prioritization? *Global Food Security* 12, 109-118.
- Timsina J, Wolf J, Guilpart N, van Bussel LGJ, Grassini P, van Wart J, Hossain A, Rashid H, Islam S, van Ittersum MK (2016) Can Bangladesh produce enough cereals to meet future demand? *Agric Syst* (In Press) <http://dx.doi.org/10.1016/j.agry.2016.11.003>
- van Ittersum MK, van Bussel LGJ, Wolf J, Grassini P, van Wart J, Guilpart N, Claessens L, de Groot H, Wiebe K, Mason-D'Croz D, Yang SH, Boogaard H, van Oort PAJ, van Loon M, Saito K, Adimo O, Adjei-Nsiah S, Alhassane A, Bala A, Chikowo R, Kaizzi KC, Kouressy M, Makoi JHJR, Ouattara K, Tesfaye K, Cassman KG (2016) Can sub-Saharan Africa feed itself? *Proc. Natl. Acad. Sci. (PNAS)* 113, 14964-14969
- Espe MB, Cassman KG, Yang H, Guilpart N, Van Wart J, Grassini P, Anders M, Beighley D, Harrell D, Linscombe S, McKenzie K, Mutters R, Wilson T, Linquist BA (2016) Yield gap analysis of US rice production systems shows opportunities for improvement. *Field Crops Res.* 196, 276-283.
- Farmaha BS, Eskridge KM, Cassman KG, Specht JE, Yang H, Grassini P (2016). Rotation impact on on-farm yield and input-use efficiency in high-yield irrigated maize-soybean systems. *Agron. J.* 108, 1-9.
- Gobett D, Hochman Z, Horan H, Navarro-Garcia J, Grassini P, Cassman KG (2016) Yield gap analysis of rainfed wheat demonstrates local to global relevance. *Journal of Agric. Sci. (Cambridge)* 1-18. doi: 10.1017/S0021859616000381
- Morell FJ, Yang HS, Cassman KG, Van Wart J, Elmore RW, Licht M, Coulter JA, Ciampitti IA, Pittelkow CM, Brouder SM, Thomison P, Lauer J, Graham C, Massey R, Grassini P (2016), Can crop simulation models be used to predict local to regional maize yields and total production in the U.S. Corn Belt? *Field Crops Res.* 192, 1-12.
- Zanon AJ, Steck NA, Grassini P (2016) Climate and management factors influence soybean yield potential in a subtropical environment. *Agron. J.* 108, 1-8.
- Marin F, Martha G, Cassman KG, Grassini P (2016) Prospects for increasing sugarcane and bioethanol production on existing crop area in Brazil. *BioScience* 66, 307-316.
- Farmaha BS, Lobell DB, Boone K, Cassman KG, Yang, SH, Grassini P (2016). Contribution of persistent factors to yield gaps in high-yield irrigated maize. *Field Crops Research* 186, 124-132.
- Aramburu Merlos F., Monzon JP, Mercu JL, Taboada, M, Andrade, FH, Hall AJ, Jobbagy E, Cassman KG, Grassini P (2015). Potential for crop production increase in Argentina through closure of existing yield gaps. *Field Crops Research* 184, 145-154.
- Makowski D, Asseng S, Ewert F, Bassu S., Durand JL, Lie T, Martre P, Adamh M, Aggarwal PK, Angulo C, Baron C, Basso B, Bertuzzi P, Biernath C, Boogaard H, Boote KJ, Bouman B, Bregaglio S, Brisson N, Buis S, Cammarano D, Challinorr AJ, Confalonieri R, Conijn JG, Corbeels M, Deryng D, De Sanctis G, Doltra J, Fumoto T, Gaydon D, Gayler S, Goldberg R, Grant RF, Grassini P, et al., 2015. A statistical analysis of three ensembles of crop model responses to temperature and CO2 concentration. *Agric. Forest Meteorol.* 214, 483-493.
- Grassini P, Torrión JA, Yang HS, Rees J, Andersen D, Cassman KG, Specht JE, 2015. Soybean yield gaps and water productivity in the western U.S. Corn Belt. *Field Crops Res.* 179, 150-163.
- Van Wart J, Grassini P, Yang HS, Claessens L, Jarvis A, Cassman KG, 2015. Creating long-term weather data from thin air for crop simulation modelling. *Agric. Forest Meteorol.* 208, 49-58.
- Grassini P, Van Bussel LGJ, Van Wart J, Wolf J, Claessens L, Yang H, Boogaard H, de Groot H, Van Ittersum MK, Cassman KG, 2015. How good is good enough? Data requirements for reliable crop yield simulations and yield-gap analysis. *Field Crops Res.* 177, 49-63.
- Van Bussel LGJ, Grassini P, Van Wart J, Wolf J, Claessens L, Yang H, Boogaard H, de Groot H, Saito K, Cassman KG, Van Ittersum MK, 2015. From field to atlas: Upscaling of location-specific yield gap estimates. *Field Crops Res.* 177, 98-108
- Sadras VO, Grassini P, Costa R, Cohan L, Hall AJ, 2014. How reliable are crop production data? Case studies in USA and Argentina. *Food Security* 6:447-459.

- Grassini P, Torrión JA, Cassman KG, Yang HS, Specht JE, 2014. Drivers of spatial and temporal variation in soybean yield and irrigation requirements. *Field Crops Res.* 163:32-46
- Bassu S, Brisson N, Durand J-L, Boote K, Lizaso J, Jones JW, Rosenzweig C, Ruane AC, Adam M, Baron C, Basso B, Biernath C, Boogaard H, Conijn S, Corbeels M, Deryng D, De Sanctis G, Gayler S, Grassini P, Hatfield J, Hoek S, Izaurralde C, Jongschaap R, Kemanian AR, Kersebaum KC, Kim S-H, Kumar NS, Makowski D, Müller C, Nendel C, Priesack E, Pravia MV, Sau F, Shcherbak I, Tao F, Teixeira E, Timlin D, Waha K. 2014. How do various maize crop models vary in their responses to climate change factors? *Global Change Biology* 20:2301-2320.
- Grassini P, Eskridge K, Cassman KG, 2014. Distinguishing between yield advances and yield plateaus in historical crop production trends. *Nat. Commun.* 4:2918 | DOI: 10.1038/ncomms3918
- Sibley AM, Grassini P, Thomas NE, Cassman KG, Lobell DB, 2014. Testing remote sensing approaches for assessing yield variability among maize fields. *Agron J* 106:24-32
- Cassman KG, Grassini P, 2013. Can there be a green revolution in Sub-Saharan Africa without large expansion of irrigated crop production? *Global Food Sec.* 2:203-209.
- Van Wart J, Grassini P, Cassman KG, 2013. Impact of derived global weather data on simulated crop yields. *Global Change Biology* 19:3822-3834.
- Van Ittersum MK, Cassman KG, Grassini P, Wolf J, Tittone P, Hochman Z. 2013. Yield gap analysis with local to global relevance – a review. *Field Crops Res.* 143:4-17
- Van Wart J, Van Bussel LGJ, Wolf J, Licker R, Grassini P, Nelson A, Boogaard H, Gerber J, Mueller ND, Claessens L, Cassman KG, Van Ittersum MK. 2013. Reviewing the use of agro-climatic zones to upscale simulated crop yield potential. *Field Crops Res.* 143, 44-55
- Grassini P, Cassman KG. 2012. High yield maize with large net energy yield and low global warming potential. *Proc. Natl. Acad. Sci. (PNAS)* 109:1074-1079.
- Irmak S, Burgert MJ, Yang HS, Cassman KG, Walters DT, Rathje WR, Payero JO, Grassini P, Kuzila MS, Brunkhorst KJ, Van DeWalle B, Rees JM, Kranz WL, Eisenhauer DE, Shapiro CA, Zoubek GL, Teichmeier GJ. 2012 Large scale on-farm implementation of soil moisture-based irrigation management strategies for increasing maize water productivity. *Trans. ASABE* 55:881-894
- Grassini P, Thornburn J, Burr C, Cassman KG. 2011. High-yield irrigated maize in the Western U.S. Corn Belt: I. On-farm yield, yield potential, and impact of agronomic practices. *Field Crops Res.* 120:144-152.
- Grassini P, Yang H, Irmak S, Thornburn J, Burr C, Cassman KG. 2011. High-yield irrigated maize in the Western U.S. Corn Belt: II. Irrigation management and crop water productivity. *Field Crops Res.* 120:133-144.
- Grassini P, You J, Hubbard K, Cassman KG. 2010. Soil water recharge in a semi-arid temperate climate of the Central U.S. Great Plains. *Agric. Water Manage.* 97:1063-1069.
- Grassini P, Yang HS, Cassman KG. 2009. Limits to maize productivity in the Western Corn-Belt: A simulation analysis for fully irrigated and rainfed conditions. *Agric. Forest Meteorol.* 149:1254-1265.
- Grassini P, Hunt E, Mitchell R, Weiss A. 2009. Simulating switchgrass growth and development under potential and water limiting conditions. *Agron. J.* 101:564-571.

BOOK CHAPTERS/TECHNICAL REPORTS

- Specht J, Hoegemeyer T, Graef G, Ruff L, Torrión J, Grassini P, et al. 2017. Nebraska Soybean and Corn Pocket Field Guide. NE Soybean Board, NE Corn Board and UNL.
- Wortmann C, Grassini P, Elmore RW. 2016. Optimizing maize-based cropping systems: sustainability, good agricultural practices (GAP) and yield goals. In: Watson, D. (ed.), *Achieving sustainable cultivation of maize Volume 2: Cultivation techniques, pest and disease control*, Burleigh Dodds Science Publishing, Cambridge, UK (ISBN: 978 1 78676 012 8; www.bdsublishing.com).

- Sadras V, Cassman KG, Grassini P, Hall AJ, Bastiaansen, WGM, Laborte AG, Milne AE, Sileshi G, Steduto P, 2015. Yield gap analysis of rainfed and irrigated crops: Methods and case studies. In: FAO Water Reports 41. Food and Agriculture Organization of the United Nations (FAO), Rome.
- Yang HS, Grassini P. 2014. Quantifying and Managing Corn Water Use Efficiencies under Irrigated and Rainfed Conditions in Nebraska Using the Hybrid-Maize Simulation Model. In: Practical Applications of Agricultural System Models to Optimize the Use of Limited Water (Laj R. Ahuja, Liwang Ma, and Robert J. Lascano, Eds), *Advances in Agricultural Systems Modeling*, Volume 5. ASA, CSSA, SSSA, 5585 Guilford Rd., Madison, WI 53711-5801, USA, pp. 113-137.
- Specht, JE, Diers BW, Nelson RL, Toledo JF, Torrión JA, Grassini P, 2014. Soybean (*Glycine max* (L.) Merr.). In: Smith JSC, Carver B, Diers BW, Specht JE (Eds.), *Yield Gains in Major US Field Crops: Contributing Factors and Future Prospects*. CSSA Special Publication #33, ASA-CSSA-SSSA, Madison, WI.
- Grassini P, Specht J, Tollenaar T, Ciampitti I, Cassman KG. 2014. High-yield maize-soybean cropping systems in the U.S. Corn Belt. In: *Crop Physiology-Applications for genetic improvement and agronomy* (2nd edition), Sadras VO, Calderini DF (Eds). Elsevier, The Netherlands.
- Sadras V, Grassini P, Steduto P. 2011. Status of water use efficiency of main crops. In: *The state of world's land and water resources for food and agriculture (SOLAW)*. Food and Agriculture Organization of the United Nations (FAO), Rome and Earthscan, London. URL: http://www.fao.org/fileadmin/templates/solaw/files/thematic_reports/TR_07_web.pdf
- Cassman KG, Grassini P, van Wart J. 2010. Crop yield potential, yield trends, and global food security in a changing climate. pp. 37-51. In Rosenzweig C and Hillel D (eds): *Handbook of Climate Change and Agroecosystems*. Imperial College Press, London.

WEBSITES

Global Yield Gap and Water Productivity Atlas. Available URL: www.yieldgap.org

COOPERATIVE EXTENSION PUBLICATIONS

- Grassini P, Rattalino Edreira JI, Rees J, Timmerman A, Rethwisch M, Pryor R, Lesoing G, Seymour R, Whitney T, Stepanovic S, Burr C, Rudnick D, Williams T, Glewen K, Mueller N, Tonn S, Nygren A, Vyhnaek A, Jarvi K, Wilson J, Ohnesorg W, Lemmons T, 2016. Help Us Identify Yield-Limiting Factors in Nebraska Soybean Fields. URL: <http://cropwatch.unl.edu/2016-soybean-survey>
- Rizzo G, Rattalino Edreira JI, Grassini P, Yang H, Elmore R, Glewen K, Rees J, Shapiro C, Coulter J., Licht M, Archontoulis S, Pittelkow C, Ciampitti I, Massey R, Thomison P, Lauer J, Brouder S, Graham C, 2016. Yield Forecast Center Predicts Corn Yields Well Below USDA-NASS Projections. URL: <http://cropwatch.unl.edu/2016/yield-forecast-center-predicts-corn-yields-well-below-usda-nass-projections>
- Grassini P, Rizzo G, Rattalino Edreira JI, Yang H, Elmore R, Glewen K, Rees J, Shapiro C, Coulter J., Licht M, Archontoulis S, Pittelkow C, Ciampitti I, Massey R, Thomison P, Lauer J, Brouder S, Graham C, 2016. Total of 5 UNL CropWatch articles. URLs:
- July 13: <http://cropwatch.unl.edu/2016/2016-corn-yield-forecasts-july-13>
- July 27: <http://cropwatch.unl.edu/2016/2016-corn-yield-forecasts-july-27>
- Aug 10: <http://cropwatch.unl.edu/2016/2016-corn-yield-forecasts-aug-10>
- Aug 24: <http://cropwatch.unl.edu/2016/corn-yield-forecasts-aug-24-now-state-forecasts>
- Sep 7: <http://cropwatch.unl.edu/2016/corn-yield-forecasts-sept-7>
- Grassini P, Rizzo G, Rattalino Edreira JI, Yang H, Elmore R, Glewen K, Rees J, Shapiro C, Coulter J., Licht M, Archontoulis S, Pittelkow C, Ciampitti I, Massey R, Thomison P, Lauer J, Brouder S, Graham C, 2016. 2016 Corn Yield Forecasts: Approach and Interpretation of Results. URL: <http://cropwatch.unl.edu/2016/2016-corn-yield-forecasts-approach-and-interpretation-results>
- Specht J, Thompson L, Rees J, Grassini P, Glewen K, Tenorio FA, 2016. Soybean seeding rate tips. UNL CropWatch. URL: <http://cropwatch.unl.edu/2016/soybean-seeding-rate-tips>

- Tenorio FA, Grassini P, Rees J, Glewen K, Mueller N, Thompson L, Specht J, 2016. Early bird gets the worm: Benefits of early soybean planting. UNL CropWatch. URL: <http://cropwatch.unl.edu/2016/early-bird-gets-worm-benefits-early-soybean-planting>
- Grassini P, Rees J, Specht, J, Cafaro La Menza N 2016. What does it take to produce 80 bu/ac soybean? Extension Circular 3000. University of Nebraska-Lincoln. URL: <http://extensionpubs.unl.edu/publication/9000017620473/what-does-it-take-to-produce-80buac-soybean/>
- Grassini P, Rattalino Edreira JI, 2016. Producers' Help Needed to Identify Current Soybean Practices. UNL CropWatch. URL: <http://cropwatch.unl.edu/producers-help-needed-identify-current-soybean-practices>
- Grassini P, Rees J, 2016. What does it take to produce 80 bu/ac soybean routinely? 2015 Crop Production Clinics Proceedings. University of Nebraska-Lincoln – Extension.
- Morell FJ, Grassini P, Yang H, Cassman KG, Elmore R, Van Wart J, Glewen K, Rees J, Kruger G, Shapiro C, Ciampitti I, Licht M, Thomison P, Lauer J, Brouder S, Vyn T, Massey R, Pittelkow C, Graham C, Coulter J., 2015. 2015 End-of-Season Corn Yields Based on Hybrid Maize Model Simulations. UNL CropWatch. URL: <http://cropwatch.unl.edu/2015-Hybrid-Maize-Final-Corn-Yield-Predictions>
- Morell FJ, Grassini P, Yang H, Cassman KG, Elmore R, Van Wart J, Glewen K, Rees J, Kruger G, Shapiro C, Ciampitti I, Licht M, Thomison P, Lauer J, Brouder S, Vyn T, Massey R, Pittelkow C, Graham C, Coulter J., 2015. 2015 Forecasted Corn Yields Based on Hybrid Maize Model Simulations. Total of 5 UNL CropWatch articles. URLs:
- July 15: <http://cropwatch.unl.edu/hybrid-maize-july-15-forecast>
 - July 29: <http://cropwatch.unl.edu/hybrid-maize-july-29-yield-forecast>
 - Aug 12: <http://cropwatch.unl.edu/2015-forecasted-corn-yields-based-august-12-hybrid-maize-simulations>
 - Sep 2: <http://cropwatch.unl.edu/hybrid-maize-sept.-2-yield-forecasts>
 - Sep 16: <http://cropwatch.unl.edu/corn-yield-forecasts-sept-16-2015>
- Morell FJ, Grassini P, Yang H, Cassman KG, Elmore R, Van Wart J, Glewen K, Rees J, Kruger G, Shapiro C, Ciampitti I, Licht M, Thomison P, Lauer J, Brouder S, Vyn T, Massey R, Pittelkow C, Graham C, Coulter J., 2015. The Corn Yield Forecasting Center: approach and interpretation of results. UNL CropWatch. URL: <http://cropwatch.unl.edu/yfc-corn-yield-forecasting-intro>
- Kranz W, Burr C, Farmaha B, Grassini P, Hergert G, Irmak I, Martin D, Nygren A, Shapiro C, Shaver T, Zoubek G. 2015. Irrigation and Nitrogen Management: User Education/Certification Program. EC2008 Nebraska Extension Division. 117 pp.
- Grassini P, Morell Soler F, Yang H, Cassman KG, Elmore R, Rees J, Glewen K, Shapiro C, Krueger G. 2015. In-season yield forecasting using a computer simulation model. 2015 Crop Production Clinics Proceedings. University of Nebraska-Lincoln – Extension.
- Specht JE, Rees J, Grassini P, Mueller N. 2015. Soybean Planting Tips for Optimal Yield. UNL CopWatch. URL: <http://cropwatch.unl.edu/soybean-planting-tips-optimal-yield-2015>
- Grassini P, Specht J, Shapiro C, Kruger G, Glewen K, Rees J. 2014. How 2013 Corn and Soybean Yields Stack Up Against Previous Yields. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/how-2013-corn-and-soybean-yields-stack-up-against-previous-yields
- Grassini P, Specht J, Kranz, W, Graef, G, Shapiro C, Giesler, L. 2014. High Irrigated Corn-to-Soybean Ratio in Northeast Nebraska Calls for Research Targeted At Increasing On-Farm Irrigated Soybean Yields. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/high-irrigated-corn-to-soybean-ratio-in-northeast-nebraska
- Elmore R, Jackson-Ziems T, Grassini P, Jhala A, Wright W. 2014. Time to Dig In and Assess Need for Replanting Corn. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/time-to-dig-in-your-planted-corn-fields-assess-need-for-replanting
- Elmore R, Specht J, Rees J, Grassini P, Glewen K. 2014. Why Planting Soybean Early Improves Yield Potential. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/why-planting-soybean-early-improves-yield-potential
- Grassini P, Yang H, Morell F, Elmore R, Cassman KG, Rees J, Shapiro C, Glewen K, Kruger G, Licht M, Ciampitti I, Thomison P, Lauer J. 2014. 2014 Forecasted Corn Yields Based on July 20 Hybrid Maize Model Simulations. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/2014-forecasted-corn-yields-based-on-hybrid-maize-model-simulations-as-of-july-20th

- Grassini P, Yang H, Morell F, Elmore R, Cassman KG, Rees J, Shapiro C, Glewen K, Kruger G, Licht M, Ciampitti I, Thomison P, Lauer J. 2014. 2014 Forecasted Corn Yields Based on Aug 1st Hybrid Maize Model Simulations. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/2014-forecasted-corn-yields-based-on-aug-1-hybrid-maize-model-simulations
- Grassini P, Yang H, Morell F, Elmore R, Cassman KG, Rees J, Shapiro C, Glewen K, Kruger G, Licht M, Ciampitti I, Thomison P, Lauer J. 2014. 2014 Forecasted Corn Yields Based on Aug 15th Hybrid Maize Model Simulations. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/2014-forecasted-corn-yields-based-on-hybrid-maize-model-simulations-as-of-aug-15
- Grassini P, Yang H, Morell F, Elmore R, Cassman KG, Rees J, Shapiro C, Glewen K, Kruger G, Licht M, Ciampitti I, Thomison P, Lauer J. 2014. 2014 Forecasted Corn Yields Based on Sep 12th Hybrid Maize Model Simulations. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/sept-12-hybrid-maize-forecasts
- Grassini P, Yang H, Morell F, Elmore R, Cassman KG, Rees J, Shapiro C, Glewen K, Kruger G, Licht M, Ciampitti I, Thomison P, Lauer J. 2014. 2014 End-of-Season Corn Yield Potential Based on Hybrid-Maize Simulations http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/2014-end-of-season-corn-yield-potential-based-on-hybrid-maizes-simulations
- Specht J, Rees J, Glewen K, Grassini P, 2014. Consider Planting Soybeans Deeper. URL: http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/soybean-planting-depth-consider-planting-deepe
- Yang H, Shapiro C, Kruger G, Glewen K, Zoubek G, Rees J, Grassini P, Cassman K, 2014. How Did 2013 Corn Yields Fare in Nebraska? URL: http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/was-2013-a-good-bad-or-average-year-for-corn-yield-across-nebraska
- Specht J, Grassini P, Rees J, 2013. Data Show Nebraskans Planting Soybeans Earlier Each Year. URL: https://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/data-show-nebraskans-planting-soybeans-earlier-each-year-unl-cropwatch-april-18-2013
- Yang H, Shapiro C, Kruger G, Rees J, Grassini P, Cassman K, 2013. Sept. 2 Evaluation of Simulated Corn Yields across Nebraska. URL: http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/sept-2-evaluation-of-simulated-corn-yields-across-nebraska-unl-cropwatch-sept-4-2013
- Yang H, Shapiro C, Kruger G, Rees J, Grassini P, Cassman K, 2013. Evaluation of Simulated Corn Yields Across Nebraska in 2013. http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/evaluation-of-simulated-corn-yields-across-nebraska-in-2013-unl-cropwatch-august-16-2013
- Grassini P, Specht J, Yang H, Rees J, Glewen K, 2013. How Corn and soybean yields fared by county in Nebraska? UNL CropWatch. URL: http://cropwatch.unl.edu/archive/-/asset_publisher/VHeSpfv0Agju/content/5270398
- Grassini P, Monzón JP, Aramburu F, Andrade F, Mercu JL, Jobbagy E, Taboada MA, Hall AJ. 2013. Desarrollando un Atlas de Brechas de Rendimiento con relevancia local y global. (Translation: Developing a yield gap atlas with local and global relevance). AAPRESID (Argentinean Association of No-till growers) bulletin.
- Grassini P, Yang H, Irmak S, Rees J, Burr C, Cassman KG. 2012. Evaluation of water productivity and irrigation efficiency in Nebraska corn production. Extension Circular 105. University of Nebraska-Lincoln. URL: <http://ianrpubs.unl.edu/epublic/live/ec105/build/ec105.pdf>
- Grassini P, Yang H, Irmak S, Rees J, Burr C, Cassman KG. 2012. Yield gaps and input-use efficiency of high-yield irrigated corn in Nebraska. Extension Circular 106. University of Nebraska-Lincoln. URL: <http://www.ianrpubs.unl.edu/epublic/live/ec106/build/ec106.pdf>
- Grassini P, Rees J. 2012. Corn and soybean yields in 2011 – How did they look for Nebraska. UNL CropWatch. URL: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4922519>
- Grassini P, Rees J, Yang H, Cassman KG, 2012. Forecasted corn yields based on Hybrid Maize model simulations. Six UNL CropWatch articles. URLs:
- July 1: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4921690>
 - July 15: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4921690>
 - July 30: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4958037>
 - Aug 15: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4967280>
 - Aug 30: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4978490>

- Grassini P, Rees J, Yang H, Cassman KG, 2012. Final 2012 dryland and irrigated corn yield potential prediction based on Hybrid Maize model simulations. UNL CropWatch. URL: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4987106>
- Yang H, Grassini P, Rees J., Glewen K, Cassman KG, 2012. Consideration of Dryland Corn Seeding Rate after a Season of Severe Drought. UNL CropWatch. URL: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=5009889>
- Grassini P, Cassman KG. 2011. Corn yield potential and input-use efficiency. Proceedings of UNL Cooperative Extension Crop Clinics.
- Rees J, Grassini P, Cassman KG, Glewen K. 2011. Projected Corn Yields Drop Below Average in Aug 1st Model. UNL CropWatch. URL: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4620074>
- Rees J, Grassini P, Cassman KG. 2011. End of Season Yields-What Did Hybrid Maize Predict? UNL CropWatch. URL: <http://cropwatch.unl.edu/web/cropwatch/archive?articleID=4680973>

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PEER-REVIEWED JOURNAL PUBLICATIONS IN PRINT

- Barker2, J. B., T. E. Franz, D. M. Heeren, C. M. U. Neale, and J. D. Luck. 2017. Soil water content monitoring for irrigation management: A geostatistical analysis. *Agricultural Water Management* 188: 36-49, doi: 10.1016/j.agwat.2017.03.024.
- Heeren, D. M., G. A. Fox, C. J. Penn, T. Halihan, D. E. Storm, and B. E. Haggard. 2017. Impact of macropores and gravel outcrops on phosphorus leaching at the plot scale in silt loam soils. *Transactions of the ASABE* 60(3): 823-835, doi: 10.13031/trans.12015.
- Lo1, T., D. M. Heeren, D. L. Martin, L. Mateos, J. D. Luck, and D. E. Eisenhauer. 2016. Pumpage reduction by using variable rate irrigation to mine undepleted soil water. *Transactions of the ASABE* 59(5): 1285-1298, doi: 10.13031/trans.59.11773.
- Miller, R. B., D. M. Heeren, G. A. Fox, T. Halihan, and D. E. Storm. 2016. Heterogeneity influences on stream water-groundwater interactions in a gravel-dominated floodplain. *Hydrological Sciences Journal* 61(4): 741-750, doi: 10.1080/02626667.2014.992790.
- Heeren, D. M., G. A. Fox, and D. E. Storm. 2015. Heterogeneity of infiltration rates in alluvial floodplains as measured with a berm infiltration technique. *Transactions of the ASABE* 58(3): 733-745, doi: 10.13031/trans.58.11056.
- Heeren, D. M., G. A. Fox, and D. E. Storm. 2014. Technical note: Berm method for quantification of infiltration at the plot scale in high conductivity soils. *Journal of Hydrologic Engineering* 19(2): 457-461, doi: 10.1061/(ASCE)HE.1943-5584.0000802.
- Penn, C. J., D. M. Heeren, G. A. Fox, and A. Kumar. 2014. Application of isothermal calorimetry to the study of phosphorus sorption onto soils in a flow-through system. *Soil Science Society of America Journal* 78(1): 147-156, doi: 10.2136/sssaj2013.06.0239.
- Heeren, D. M., G. A. Fox, A. K. Fox, D. E. Storm, R. B. Miller, and A. R. Mittelstet. 2014. Divergence and flow direction as indicators of subsurface heterogeneity and stage-dependent storage in alluvial floodplains. *Hydrological Processes* 28(3): 1307-1317, doi: 10.1002/hyp.9674.
- Miller, R. B., D. M. Heeren, G. A. Fox, T. Halihan, D. E. Storm, and A. R. Mittelstet. 2014. The hydraulic conductivity structure of gravel-dominated vadose zones within alluvial floodplains. *Journal of Hydrology* 513: 229-240, doi: 10.1016/j.jhydrol.2014.03.046.
10. Midgley, T. L., G. A. Fox, G. V. Wilson, D. M. Heeren, E. Langendoen, and A. Simon. 2013. Seepage-induced streambank erosion and instability: In situ constant-head experiments. *Journal of Hydrologic Engineering* 18(10): 1200-1210, doi: 10.1061/(ASCE)HE.1943-5584.0000685.
11. Midgley, T. L., G. A. Fox, G. V. Wilson, R. M. Felice, and D. M. Heeren. 2013. In situ soil pipeflow experiments on contrasting streambank soils. *Transactions of the ASABE* 56(2): 479-488, doi: 10.13031/2013.42685.

PEER-REVIEWED JOURNAL PUBLICATIONS ACCEPTED FOR PUBLICATION WITH OR WITHOUT REVISION

- Lo1, T., D. M. Heeren, L. Mateos, J. D. Luck, D. L. Martin, K. A. Miller, J. B. Barker2, and T. M. Shaver. 2017. Field characterization of field capacity and root zone available water capacity for variable rate irrigation. *Applied Engineering in Agriculture* 33(5), doi: 10.13031/aea.11963.

PEER-REVIEWED JOURNAL PUBLICATIONS SUBMITTED FOR REVIEW BUT NOT YET ACCEPTED

- Barker2, J. B., D. M. Heeren, C. M. U. Neale, and D. R. Rudnick. 2017. Response of maize and soybean to variable rate irrigation using soil water content monitoring and a remote-sensing-based water balance model. *Agricultural Water Management*.
- Barker2, J. B., C. M. U. Neale, D. M. Heeren, and A. E. Suyker. 2017. Evaluation of a hybrid reflectance-based crop coefficient and energy balance evapotranspiration model for irrigation management. *Transactions of the ASABE*.
- Miller, K. A., J. D. Luck, D. M. Heeren, T. Lo1, D. L. Martin, and J. B. Barker2. 2017. A geospatial variable rate irrigation control scenario evaluation methodology based on mining root zone available water capacity. *Precision Agriculture*.
- Finkenbinder, C. E., T. E. Franz, J. Gibson, D. M. Heeren, and J. D. Luck. 2017. Integration of hydrogeophysical datasets for improved water resource management in irrigated systems. *Precision Agriculture*.

EXTENSION PUBLICATIONS: PEER-REVIEWED

- Lo1, T., D. M. Heeren, J. D. Luck, D. L. Martin, L. Mateos, and D. E. Eisenhauer. 2016. Map for VRI pumping reduction: Potential pumping reductions by using VRI to mine undepleted soil water. Extension website, available at <http://heeren.unl.edu/map>.

EXTENSION PUBLICATIONS: OTHER THAN PEER-REVIEWED

- Koehler-Cole, K., R. W. Elmore, H. Blanco, C. A. Francis, D. M. Heeren, S. Irmak, C. Proctor, C. A. Shapiro, T. M. Shaver, and M. Stockton. 2016. Biomass production of winter annual cover crops in corn and soybean. Online extension article, UNL CropWatch.

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PUBLISHED AND IN-REVIEW ARTICLES

- Muñoz-Arriola, F., C. Allen, N. Shank, D. Uden, G. Ou, M. Otte. Toward Measuring Interdisciplinary in the Nexus of Systems in Response to Extreme Precipitation (to be submitted to Risk Analysis: Invited by Interdisciplinary Methods of Disaster Research).
- Jaimés-Correa, J.C., S Bartelt-Hunt, and F. Muñoz-Arriola. Streamflow Responses to Extreme Hydrometeorological and Climate Events in an Intensive Agricultural Watershed. (to be submitted to *Journal of Hydrology*).
- Werner, K., A. Sharma, M. Kumar Goyal, J.C. Chacon, G. Corzo, D. Rudnick, and F. Muñoz-Arriola. Agroecosystems' responses to Water Deficit and Surplus. (To be submitted).
- Amaranto, A., G. Meyer, D. Solomatine, G. Corzo, M. Kumar Goyal, and F. Muñoz-Arriola. Hydroclimatic and Management Controls on the Predictability of Water-table Changes Using Machine Learning Methods (to be submitted to *Water Resources Research*).
- Uden, D.R., C.R. Allen, F. Muñoz-Arriola, G. Ou, and N. Shank (submitted). Adaptive governance for encountering dilemmas and traps at the food-energy-water systems (FEWS) nexus. *Sustainability*.
- Singh, J., T. Lo, D.R. Rudnick, T.J. Dorr, C.A. Burr, R. Werle, T.M. Shaver, and F. Muñoz-Arriola (submitted). Performance Assessment of Factory and Field Calibrations for Electromagnetic Sensors in a Loam Soil. *Agricultural and Water Management*.
- Singh, V., M. Kumar Goyal, R. Y. Surampalli, and F. Muñoz-Arriola (submitted). Snowpack and snowmelt change assessment by implementing elevation bands and parameters sensitivity analysis over highly hilly terrains of Himalayan catchments. *Hydrology and Earth System Sciences*.
- Carrillo-Cruz, C.M. and F. Muñoz-Arriola (submitted). Sources of Extreme Rainfall Predictability in the Northern High Plains. *Journal of Atmospheric Research*.
- Das, A., F. Muñoz-Arriola, S. Singh, and M. Kumar (accepted). Nutrient Dynamics of Brahmaputra (Tropical River) during Monsoon Period. *Desalination and Water Treatment*.

- Avery, W.A., C. Finkenbinder, T. E. Franz, T. Wang, A. L. Nguy-Robertson, A. Suyker, and T. Arkebauer, and F. Muñoz-Arriola (2016). Incorporation of globally available datasets into the roving cosmic-ray neutron probe method for estimating field-scale soil water content *Hydrol. Earth Syst. Sci.*, 20, 3859–3872.
- Livneh, B., T. Bohn, D. Pierce, F. Muñoz-Arriola, B. Nijssen, R. Vose, D. Cayan, L. Brekke (2015): A spatially comprehensive, hydrometeorological data set for Mexico, the U.S., and southern Canada 1950–2013. *Nature - Scientific Data*, doi:10.1038/sdata.2015.42.
- Muñoz-Arriola, F. D. Martin, and D. Eisenhauer (2014). Nebraska's Water Resources in Changing Climate. In: Understanding and Assessing Climate Change: Implications for Nebraska.
- Perez-Morga, N., T. Kretzshmar, T. Cavazos, S. Smith, and F. Muñoz-Arriola (2013). Variability of Extreme Precipitation in coastal River Basins of the Southern Mexican Pacific Region. *Geofísica Internacional*. 52(3): 277–291.
- Frans, C, Istanbuloglu, E., M. Vimal, F. Muñoz-Arriola y D. P. Lettenmaier (2013). On runoff trends in the Upper Mississippi River Basin: influences of climate and land use. *Geophysical Research Letters*. 40, doi:10.1002 /grl.50262, 2013.

TECHNOLOGICAL DEVELOPMENTS AND TRANSFERS

- Rico, D. A. and F. Muñoz-Arriola (in progress). Data Mining platform with Applications Soil Physics.
- Craven, J. A. Amaranto, G. Corzo, F. Muñoz-Arriola. Groundwater well-level mapping and data (in progress). <https://nebraskagw.shinyapps.io/app1/>
- Muñoz-Arriola, F., and G. Lopez-Morteo (in progress). Water for Food Information System: From paper to Big Data. Funded by the Daugherty Water for Food Institute.
- Rico, D. and F. Muñoz-Arriola (2016). Seasonal Hydrological Forecast System: A Prototype. Funded by the Daugherty Water for Food Institute and UNL.
- Muñoz-Arriola, F. and G. Lopez-Morteo. (1) Two data-collectors of data via web services programed in Python and Java; (2) six APIs that standardize/translate/deliver data in multiple formats (CSV, JSON, netCDF, postgresSQL, SPSS, HDF and text); (3) three apps (2 for smart phone and webpage); (4) analytics to address crop, livestock, and community needs.

POLICY AND COMMUNICATION

- Shekhar, S. J. Colleti, F. Muñoz-Arriola, L. Ramaswamy, C. Krinz, L. Varshney, D. Richardson. Intelligent Infrastructure for Smart Agriculture: An Integrated Food Energy and Water System. Computing Community Consortium (Toward Infrastructure Investment Bill on Intelligent infrastructure for next generation food, energy and water systems)
- Contributor to AMS's Water Resources Policy Statement (accepted). American Meteorological Society-Water Resources, Committee Member and contributor.
- Greer, H., S. Rehna, A. Kumar, M. Ou, and F. Muñoz-Arriola. Editorial on Extreme events and climate change. Lincoln Journal Star (06/06/2017)

REPORTS

- Muñoz-Arriola, F., T. Franz, D. Hereen, H. Wang, and J. Luck (2016). Predictability of water distribution and transport across spatial and temporal scales: an application on cropland management (First Annual Report).
- Muñoz-Arriola, F., Amaranto, A. and Carrillo-Cruz, C. (2016). Hydroclimatic Controls on the Conjunctive Use of Surface and Ground Water in the Platte River Basin. USGS 104B, Nebraska Water Center.
- Muñoz-Arriola, F. L. Castro-Garcia, G. Lopez-Morteo, A. Rosales-Martinez, and C. Ancona-Villarreal (2015) Software Development for Water- and Agriculture-resources Data and Information Access: the case of the Water for Food Interoperability System (WaFIS). Robert B. Daugherty Water for Food Institute.

Haishun Yang, Crop and Ecosystem Modeler, Associate Professor, UNL Agronomy and Horticulture

PUBLICATIONS

Simulation model software and online decision support tools

Yang, HS, Chengchou Han, etc. 2015. CornSoyWater: online decision support tool for irrigation corn and soybean

Yang, HS; Setiyono, T; Walters, DT; Cassman, KG and Dobermann, A. 2015. Maize-N: Nitrogen Rate Recommendation for Irrigated Maize. University of Nebraska (version 2008, 2014, 2015).

REFEREED JOURNALS

Thompson, L. J., Ferguson, R. B., Kitchen, N., Frazen, D. W., Mamo, M., Yang, H., and Schepers, J. S. 2015. Model and Sensor-Based Recommendation Approaches for In-Season Nitrogen Management in Corn. *Agron.J.* 107, 2020-2030.

Liu, Xing, Andresen, Jeff, Yang, Haishun, and Niyogi, Dev. 2015. Calibration and Validation of the Hybrid-Maize Crop Model for Regional Analysis and Application over the U.S. Corn Belt. *Earth Interactions.* 19, 1-16.

Grassini, Patricio, van Bussel, Lenny G. J., van Wart, Justin, Wolf, Joost, Claessens, Lieven, Yang, Haishun, Boogaard, Hendrik, de Groot, Hugo, van Ittersum, Martin K., and Cassman, Kenneth G. 2015. How good is good enough? Data requirements for reliable crop yield simulations and yield-gap analysis. *Field Crops Research.* 177, 49-63.

van Bussel, Lenny G. J., Grassini, Patricio, van Wart, Justin, Wolf, Joost, Claessens, Lieven, Yang, Haishun, Boogaard, Hendrik, de Groot, Hugo, Saito, Kazuki, Cassman, Kenneth G., and van Ittersum, Martin K. 2015. From field to atlas: Upscaling of location-specific yield gap estimates. *Field Crops Research.* 177, 98-108.

Van Wart, Justin, Grassini, Patricio, Yang, Haishun, Claessens, Lieven, Jarvis, Andrew, and Cassman, Kenneth G. 2015. Creating long-term weather data from thin air for crop simulation modeling. *Agricultural and Forest Meteorology.* 209, 49-58.

Grassini, Patricio, Torrión, Jessica A., Yang, Haishun S., Rees, Jennifer, Andersen, Daryl, Cassman, Kenneth G., and Specht, James E. 2015. Soybean yield gaps and water productivity in the western US Corn Belt. *Field Crops Research.* 179, 150-163.

Yang, HS and Grassini, P. 2014. Quantifying and Managing Corn Water Use Efficiencies under Irrigated and Rainfed Conditions in Nebraska Using the Hybrid-Maize Simulation Model. *Advances in Agricultural Systems Modeling.* 5, 113-138.

Hou, P; Cui, Z; Bu, L; Yang, HS; Zhang, F; and Li, S. 2014. Evaluation of a Modified Hybrid-Maize Model Incorporating a Newly Developed Module of Plastic Film Mulching. *Crop Sci.* 54, 2796-2804.

Grassini, P; Torrión, Jessica A; Cassman, KG; Yang, HS; and Specht, JE. 2014. Drivers of spatial and temporal variation in soybean yield and irrigation requirements in the western US Corn Belt. *Field Crops Research.* <http://dx.doi.org/10.1016/j.fcr.2014.04.005>

Kumudini, S; Andrade, FH; Boote, KJ; Brown, GA; Dzotsi, KA; Edmeades, GO; Gocken, T; Goodwin, M; Halter, AL; Hammer, GL; Hatfield, JL; Jones, JW; Kemanian, AR; Kim, SH; Kiniry, J; Lizaso, JI; Nendel, C; Nielsen, RL; Parent, B; Stockle, CO; Tardieu, F; Thomison, PR; Timlin, DJ; Vyn, TJ; Wallach, D; Yang, HS; and Tollenaar, M. 2014. Predicting Maize Phenology: Intercomparison of Functions for Developmental Response to Temperature. *Agron. J.* 106, 2087-2097.

Liska, A; Yang, HS; Milner, M; Goddard, S; Zhu, H; Blanco-Canqui, H; Pelton, MP; Fang XX; and Suyker, AE. 2014. Biofuels from Crop Residue Can Reduce Soil Carbon and Increase CO₂ Emissions. *Nature Climate Change,* 4, 398-401.

Liska, AJ; Yang, HS; Pelton, MP and Suyker, AE. 2014. Reply to 'CO₂ emissions from crop residue-derived biofuels'. *Nature Clim.Change.* 4, 934-935.