

Koffi Djaman, Ph.D.

Assistant Professor of Cropping systems, irrigation technology and water conservation
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Education

- Ph.D. 2011: Soil & Water Resources and Irrigation Engineering, University of Nebraska-Lincoln, USA.
- MS. 1999: Irrigation and water management, Institut Agronomique et Vétérinaire Hassan II, Rabat, Morocco.
- Agronomy Degree 1997: College of Agronomy, University of Lomé, Togo.

Professional fields of expertise

- Soil and water resources and irrigation engineering: design, installation and management of drip, sprinkler and surface irrigation systems
- Crop response to irrigation and fertilization under subsurface drip, center pivot, and surface irrigation and rainfed systems under variety of tillage and management practices
- Cropping systems, crop physiological/biophysical parameters and soil water characteristics
- Crop and reference evapotranspiration measurement and modeling
- Abiotic stresses management strategies to increase crop productivity and fertilizer use efficiency
- Interactions between Land Use/Land Cover changes, water resources and Climate Change
- Research and development - Education/Extension/Training.

Professional experience

- 2017 to present: Assistant Professor, New Mexico State University
- 2016-2017: Associate Principal Scientist, Agronomist at Africa Rice Center, Senegal station
- 2014 - 2016: Agronomist Field Fellow at Africa Rice Center, Senegal station
- 2012 - 2014: Postdoctoral Research Scientist in the Biological Systems Engineering Department, University of Nebraska-Lincoln (USA).
- 2008 - 2011: Graduate research Assistant in the Biological Systems Engineering Department, University of Nebraska-Lincoln (USA).
- 2005 - 2014: Lecturer in the College of Agronomy, University of Lomé (Togo)
- 2001 - 2004: Physics and Chemistry High School teacher, Togo
- 1997 - 1998: Graduate student at Agronomic and Veterinary Institute Hassan II, Agadir (Morocco).
- 1999 - 2008: Water and soil management consultant at SARTORY, Lomé (Togo).
- 1996 - 1997: Internship on integrated pest control, International Institute of Tropical Agriculture, Benin.

Academic Honors and Awards

- Review Confirmation Certificate for MDPI journal Water, December 13, 2018
- Certificate of Outstanding Contribution in Reviewing: Journal of Hydrology, April 2018
- Certificate of Outstanding Contribution in Reviewing: Agricultural Water Manage., December 2017
- Educational Aids Blue Ribbon Award from ASABE 2016
- Research assistantship, University of Nebraska: 2010-2011
- Fulbright Scholarship: 2008-2010

- Weston award 2009
- Francophonie scholarship for CRESA-IRRIGATION 1997-1999
- Diploma of Excellence, University of Lomé: 1997
- National Scholarship, Togo: 1990-1997

Professional Membership

- American Society of Agronomy (ASA)
- Crop Science Society of America (CSSA)
- Soil Science Society of America (SSSA)
- American Society of Agricultural and Biological Engineers (ASABE)

Peer Reviewed Journal Publications

- Rudnick D.R., S. Irmak, C. West, I. Kisekka, T.H. Marek, J.P. Schneekloth, D. Mitchell McCallister, V. Sharma, **K. Djaman**, J. Aguilar, J.L. Chávez, M.E. Schipanski, D.H. Rogers, and A. Schlegel. 2018. Deficit irrigation management of maize in the High Plains aquifer region: a review. *Journal of the American Water Resources Association*. DOI: 10.1111/1752-1688.12723 (in press).
- Djaman K.**, S. Irmak. 2017. Evaluation of critical N and P models for maize under full and limited irrigation conditions. *Italian Journal of Agronomy*. 13(1):80-92. Doi: 10.4081/ija.2017.958.
- Djaman K.**, M. O'Neill, C.K. Owen, K. Koudahe, M. West, D. Smeal, S. Allen, K. Lombard, S. Irmak. 2018. Crop evapotranspiration, irrigation water requirement and water productivity of maize from meteorological data under semiarid climate. *Water* 2018, 10, 405; doi:10.3390/w10040405.
- Djaman K.**, M. O'Neill, C. Owen, Daniel Smeal, M. West, D. Begay, S.V. Angadi, K. Koudahe, S. Allen, K. Lombard. 2018. Seed yield and water productivity of irrigated winter canola (*Brassica napus* L.) under semiarid climate and high elevation. *Agronomy* 8(6), 90.
- Djaman K.**, D.R. Rudnick, Y.D. Moukoumbi, A. Sow, S. Irmak. 2018. Actual evapotranspiration and crop coefficients of irrigated lowland rice under semiarid climate. *Italian J. Agronomy*. (accepted)
- Irmak, S., V. Sharma, A.T. Mohammed, **K. Djaman**. 2018. Impacts of Cover Crops on Soil Physical Properties: Field Capacity, Permanent Wilting Point, Soil-Water Holding Capacity, Bulk Density, Hydraulic Conductivity, and Infiltration. *Transactions of the ASABE*. <https://doi.org/10.13031/trans.12700>.
- Djaman K.**, M. O'Neill, L. Diop, A. Bodian, S. Allen, K. Koudahe, K. Lombard. 2018. Evaluation of the Penman-Monteith and other 34 Reference Evapotranspiration Equations under Limited Data in a Semiarid Dry Climate. *Theoretical and Applied Climatology*. DOI: 10.1007/s00704-018-2624-0.
- Mel V.C., V.B. Bado, S. Ndiaye, **K. Djaman**, D.A.B. Nati, B. Manneh, K. Futakuchi. 2018. Suitable management options to improve the productivity of rice cultivars under salinity stress. *Archives of Agronomy and Soil Science*. doi.org/10.1080/03650340.2018.1552785.
- Djaman K.**, M. Sall, A. Sow, B. Manneh, S. Irmak. 2018. Impact of air temperature and relative humidity measured over rice and grass canopies on Penman-Monteith reference evapotranspiration. *Journal of Irrigation and Drainage Engineering*. DOI: 10.1061/(ASCE)IR.1943-4774.0001362.
- Tao H., L. Diop, A. Bodian, **K. Djaman**, P.M. Ndiaye, Z. Yaseen. 2017. Adaptive neuro-fuzzy inference system model integrated with firefly optimization algorithm for evapotranspiration modeling: Regional case study in Burkina Faso. *Agricultural Water Management*. 208, 140-151
- Djaman K.**, M. O'Neill, C. Owen, K. Koudahe, K. Lombard. 2018. Evapotranspiration, Grain Yield, and Water Productivity of Spring Oat (*Avena sativa* L.) under Semiarid Climate. *Agricultural Science* 9(9): 1188-1204, DOI: 10.4236/as.2018.99083
- Koudahe K., **K. Djaman**, J. Adewumi. 2018. Evaluation of the Penman-Monteith reference evapotranspiration under limited data and its sensitivity to key climatic variables under humid and semiarid conditions. *Modeling Earth Systems and Environment*. 4:1239-1257.

- Djaman K.**, M. O'Neill¹, C. Owen, D. Smeal, M. West, D. Begay, S. Allen, K. Koudahe, S. Irmak, K. Lombard. 2018. Long-term winter wheat seasonal irrigation amount, evapotranspiration, yield, and water productivity under semiarid climate. *Agronomy* 2018, 8(6), 96; DOI: 10.3390/agronomy8060096
- Djaman K.**, V.C. Mel, A. Sow, R. El-Namaky, L. Diop, B. Manneh, K. Saito, K. Futakuchi, S. Irmak. 2018. Effects of alternate wetting and drying irrigation regime and nitrogen fertilizer on yield and nitrogen use efficiency of irrigated rice in the Sahel. *Water* 10(6), 711; <https://doi.org/10.3390/w10060711>.
- Djaman K.**, V.C. Mel, F.Y. Ametonou, R. El-Namaky, M.D. Diallo, K. Koudahe. 2018. Effect of nitrogen fertilizer dose and application timing on yield and nitrogen use efficiency of irrigated hybrid rice under semi-arid conditions. *Journal of Agricultural Science and Food Research* 2018, 9:2.
- Bado, V.B., **K. Djaman**, V.C. Mel. 2018. Developing fertilizer recommendations for rice in Sub-Saharan Africa, achievements and opportunities. *Paddy Water Envir.* DOI: 10.1007/s10333-018-0649-8
- Bado V.B, **K. Djaman**, C.V Mel. 2018. Managing Fertilizer Recommendations in Rice-Based Cropping Systems Challenges and Strategic Approaches. In book: *Improving the Profitability, Sustainability and Efficiency of Nutrients Through Site Specific Fertilizer Recommendations in West Africa Agro-Ecosystems*. Volume 2. Editors: Bationo, A., Ngaradoum, D., Youl, S., Lompo, F., Fening, J.O. (Eds.), 339 pp. Publisher: Springer Inter. Publishing. DOI: 10.1007/978-3-319-58789-9_3
- Djaman K.**, K. Lombard, K. Koudahe, S. Allen, M. O'Neill. 2018. Variability of the Ratio of Alfalfa to Grass Reference Evapotranspiration Under Semiarid Climate. *Irrigation & Drainage Systems Engineering*. DOI: 10.4172/2168-9768.1000204
- Djaman K.**, K. Koudahe, K. Lombard, M. O'Neill. 2018. Sum of Hourly vs Daily Penman-Monteith Grass-Reference Evapotranspiration under Semiarid and Arid Climate. *Irrigation & Drainage Systems Engineering*, 7:1, DOI: 10.4172/2168-9768.1000202.
- Djaman K.**, P.M. Ndiaye, K. Koudahe, A. Bodian, L. Diop, M. O'Neill, S. Irmak. 2018. Spatial and Temporal Trend in Monthly and Annual Reference evapotranspiration in Madagascar for the 1980-2010 period. *International Journal of Hydrology*. 2(2); 110-120. DOI: 10.15406/ijh.2018.02.00058
- Djaman K.** 2018. Closure to "Evaluation of Valiantzas' Simplified Forms of the FAO-56 Penman-Monteith Reference Evapotranspiration Model in a Humid Climate" by Djaman, Koffi, Daran Rudnick, Valere C. Mel, Denis Mutibwa, Lamine Diop, Mamadou Sall, Isa Kabenge, Ansoumana Bodian, Hossein Tabari, and Suat Irmak. *J. Irrig. Drain. Eng.* DOI: 10.1061/(ASCE)IR.1943-4774.0001316.
- Diop L., A. Bodian, **K. Djaman**, Z.M. Yaseen, R.C. Deo, A. El-shafie, L.C. Brown. 2018. The influence of climatic inputs on stream-flow pattern forecasting: Case study of Upper Senegal River. *Environmental Earth Sciences* (2018) 77:182. <https://doi.org/10.1007/s12665-018-7376-8>.
- Bodian A., A. Dezetter, L. Diop, A. Deme, **K. Djaman**, A. Diop. 2018. Future Climate Change Impacts on Streamflow of Two Main West Africa River Basins: Senegal and Gambia. *Hydrology*, 5(1), 21; doi:10.3390/hydrology5010021.
- Koudahe K., **K. Djaman**, K.J. Adewumi, S.O. Awokola, A.A. Adekunle. 2018. Impact of climate variability on crop yields in southern Togo. *Environment Poll. Climate Change*. DOI: 10.4172/2573-458X.1000148.
- Djaman K.**, K. Koudahe, S. Allen, M. O'Neill, S. Irmak. 2017. Validation of Valiantzas' Reference Evapotranspiration Equation under Different Climatic Conditions. *Irrigation and Drainage Systems Engineering*, 2017, 6:3 DOI: 10.4172/2168-9768.1000196.
- Rudnick D.R., S. Irmak, **K. Djaman**, V. Sharma. 2017. Impact of irrigation and nitrogen fertilizer rate on soil water trends and maize evapotranspiration during the vegetative and reproductive Periods. *Agricultural Water Management* 191, 77-84.
- Djaman K.**, S. Irmak, M. Sall, A. Sow, I. Kabenge, 2017. Comparison of Sum-of-hourly and daily time step standardized ASCE Penman-Monteith (ASCE-PM) grass-reference evapotranspiration in Western Africa. *Theoretical Applied Climatology* DOI:10.1007/s00704-017-2291-6
- Sharma V., S. Irmak, V. Sharma, **K. Djaman**, L. Odhiambo. 2017. Soil-water dynamics, evapotranspiration and crop coefficients of cover crop mixtures in seed maize-cover crop rotation fields: part I. Soil-water dynamics and evapotranspiration. *J. Irrig. Drain. Eng.* | 143(9): 0001214.

- Djaman K.**, A.B. Balde, D.R. Rudnick, O. Ndiaye, S. Irmak. 2017. Long-term trend analysis in climate variables and agricultural adaptation strategies to climate change in the Senegal River Basin. *International Journal of Climatology*, 37(6):2873-2888.
- Djaman K.**, V.C. Mel, A.B. Balde, B.V. Bado, L. Diop., B. Manneh, D. Mutiibwa, D. Rudnick, S. Irmak, K. Futakuchi. 2017. Evapotranspiration, irrigation water requirement and water productivity of rice (*Oryza sativa L.*) in the Sahelian environment. *Paddy and Water Environment* 15(3), 469-482.
- Djaman K.**, D. Rudnick, V.C. Mel, D. Mutiibwa, L. Diop, M. Sall, I. Kabenge A. Bodian, H. Tabari, S. Irmak. 2017. Evaluation of the Valiantzas' simplified forms of the FAO-56 Penman-Monteith Reference Evapotranspiration model under humid climate. *J. Irrig. Drain. Eng.* 133(8): 0001191.
- Djaman K.**, V. Sharma, D.R. Rudnick, K. Koudahe, S. Irmak, K.A. Amouzou, J.M. Sogbedji. 2017. Spatial and Temporal Variation in Precipitation in Togo. *International Journal of Hydrology* 1(4):97-105.
- Moukoumbi Y.D., El-Namaky R., **Djaman K.**, Mbodj D., Manneh B. 2017. Alternate phenotype-genotype selection method for developing superior high yielding irrigated rice lines. *The Crop Journal* doi:10.1016/j.cj.2017.08.010.
- Djaman K.**, K. Koudahe, C.O. Akinbile, S. Irmak. 2017. Evaluation of Eleven Reference Evapotranspiration Models in Semiarid Conditions. *Journal of Water Resource and Protection*, 9, 1469-1490. <https://doi.org/10.4236/jwarp.2017.912094>.
- Djaman K.**, K. Koudahe, K.K. Ganyo. 2017. Trend analysis in annual and monthly pan evaporation and pan Coefficient in the context of climate change in Togo. *Journal of Geoscience and Environment Protection* 5, 41-56. DOI: 10.4236/gep.2017.512003.
- Koudahe K., **Djaman K.**, A. Bodian; S Irmak, M. Sall, L. Diop, D.R. Rudnick, A.B. Balde. 2017. Trend Analysis in Rainfall, Reference Evapotranspiration, and Aridity Index in the Southern Senegal: Adaptation to the Vulnerability of Rainfed Rice Cultivation to Climate Change. *Atmospheric and Climate Sciences* 7, 476-495. DOI: 10.4236/acs.2017.74035.
- Ndiaye P.M., A. Bodian, L. Diop, **K. Djaman**. 2017. Sensitivity analysis of the Penman-Monteith reference evapotranspiration to climatic variables: case of Burkina Faso. *J. Water Res. Prot.*, 9, 1364-1376.
- Djaman, K.**, Koudahe, K., Sall, M., Kabenge, I., Rudnick, D. and Irmak S. 2017. Performance of twelve mass transfer based reference evapotranspiration models under humid climate. *Journal of Water Resource and Protection*, 9, 1347-1363. DOI: 10.4236/jwarp.2017.912086.
- Koudahe K., A.J. Kayode, A.O. Samson, A.A. Adebola, **K. Djaman**. 2017. Trend analysis in standardized precipitation index and standardized anomaly index in the context of climate change in Southern Togo. *Atmospheric and Climate Sciences* 7, 401-423.
- Ndiaye P.M., A. Bodian, L. Diop, **K. Djaman**. 2017. Evaluation de vingt méthodes d'estimation de l'évapotranspiration journalière de référence au Burkina Faso. *Physio-Geo* 11 | -1, 129-146.
- Diop L., Z.M. Yaseen, A. Bodian, **K. Djaman**, L. Brown. 2017. Trend analysis detection of multiple scales stream-flow: Case study of upper Senegal River Basin. *ISH Journal of Hydraulic Engineering*, doi.10.1080/09715010.2017.1333045.
- Djaman K.**, S. Irmak, K. Futakuchi. 2017. Daily reference evapotranspiration estimation under limited data in Eastern Africa. *J. Irrig. Drain. Eng.* 143(4):0001154.
- Irmak S., **Djaman, K.** 2016. Effects of planting date and density on plant growth, yield, evapotranspiration and water productivity of subsurface drip irrigated and rainfed maize. *Trans. ASABE* 59(5): 1235-1256.
- Diedhiou A.G., F.K. Mbaye, D. Mbodj, M.N. Faye, S. Pignoly, I. Ndoye, **K. Djaman**, S. Gaye, A. Kane, L. Laplaze, B. Manneh, A. Champion. 2016. Field Trials Reveal Ecotype-Specific Responses to Mycorrhizal inoculation in Rice. *PLoS ONE* 11(12): e0167014.
- Djaman K.**, H. Tabari, A.B. Balde, L. Diop, K. Futakuchi, S. Irmak. 2016. Analyses, calibration and validation of evapotranspiration models to predict grass reference evapotranspiration in the Senegal River Delta. *Journal of Hydrology: Regional Studies* 8: 82-94.
- Djaman K.**, S. Irmak, I. Kabenge, K. Futakuchi. 2016. Evaluation of the FAO-56 Penman-Monteith model with limited data and the Valiantzas models for estimating reference evapotranspiration in the Sahelian conditions. *J. Irrig. Drain. Eng.* 142(11): 04016044.

- Irmak, S., **K. Djaman**, D. Rudnick. 2016. Effect of full and limited irrigation amount and frequency on subsurface drip-irrigated maize evapotranspiration, yield, water use efficiency and yield response factors. *Irrigation Science* 34(4): 271-286.
- Irmak S., **K. Djaman**, V. Sharma. 2015. Evapotranspiration and single (normal) and basal crop coefficients of winter wheat (*Triticum aestivum* L.). *Transactions of the ASABE* 58(4): 1047-1066.
- Rudnick, D., Irmak, S., Ferguson, R., Shaver, T., **Djaman, K.**, Slater, G., Bereuter, A., Ward, N., Francis, D., Schmer, M., Wienhold, B., Van Donk, S. 2016. Economic Return versus Crop Water Productivity of Maize for Various Nitrogen Rates under Full Irrigation, Limited Irrigation, and Rainfed Settings in South Central Nebraska. *J. Irrig. Drain. Eng.* 142 (6): 04016017.
- Djaman K.**, B.V. Bado, V.C. Mel. 2016. Effect of nitrogen fertilizer on yield and nitrogen use efficiency of four aromatic rice varieties. *Emirates J. Food and Agriculture.* 28(2): 126-135.
- Sharma V., S. Irmak, **K. Djaman**, V. Sharma. 2015. Large-Scale Spatial and Temporal Variability in Evapotranspiration, Crop Water-Use Efficiency, and Evapotranspiration Water-Use Efficiency of Irrigated and Rainfed Maize and Soybean. *J. Irrig. Drain. Eng.* 142 (3): 04015063.
- Rudnick, D.R., **K. Djaman**, S. Irmak. 2015. Performance analysis of capacitance and electrical resistance-type soil moisture sensors in the silt-loam soil. *Transactions of the ASABE.* 58(3): 649-665.
- Djaman K.**, K. Ganyo. 2015. Trend analysis in reference evapotranspiration and aridity index in the context of climate change in Togo. *J. Water and Climate Change* 06(4): 848-864.
- Djaman K.**, A.B. Balde, A. Sow, B. Muller, S. Irmak, M.K. N'Diaye, B. Manneh, Y.D. Moukoumbi, K. Futakuchi, K. Saito. 2015. Evaluation of sixteen reference evapotranspiration methods under sahelian conditions in the Senegal River Valley. *J. Hydro: Reg. Stud.*, 3: 139-159.
- Irmak, S., L.O. Odhiambo, J.E. Specht, **K. Djaman**. 2013. Hourly and daily single and basal evapotranspiration crop coefficients as a function of growing degree days, days after emergence, leaf area index, fractional green canopy cover, and plant phenology for soybean. *Transactions of the ASABE* 56(5):1785-1803.
- Djaman, K.**, S. Irmak. 2013. Actual crop evapotranspiration and alfalfa- and grass- reference crop coefficients of maize under full and limited irrigation and rainfed conditions. *J. Irrig. Drain. Eng.* 139(6): 433-446.
- Djaman, K.**, S. Irmak, W.R. Rathje, D.L. Martin, D.E. Eisenhauer. 2013. Maize evapotranspiration, yield production function, biomass, grain yield, harvest index, and yield response factors under full and limited irrigation. *Transactions of the ASABE* 56 (2): 273-293.
- Djaman, K.**, S. Irmak, D.L. Martin, R.B. Ferguson, M.L. Bernards. 2013. Plant nutrient (N, P, K) uptake, grain nutrient content, and soil nutrient dynamics under full and limited irrigation and rainfed maize production. *Agronomy Journal* 105: 527-538
- Djaman, K.**, S. Irmak. 2012. Soil water extraction patterns, crop, irrigation, and evapotranspiration water use efficiency under full and limited irrigation and rainfed conditions. *Transactions of the ASABE* 55(4):1223-1238.

Extension publications

- O'Neill M.K., J. Lillywhite, G. Hawkes, M. Trillanes, **K. Djaman**. 2018. Opportunities to Produce Canola in Northern New Mexico: Results of Field Variety Trials. NMSU, PES Research Report 793.
- O'Neill M.K., D. Smeal, M.M. West, S.C. Allen, and **K. Djaman**. 2018. Forty-Eight Years (1969-2016) of Climatological Data: NMSU Agricultural Science Center – Farmington, NM. NMSU, PES B.809.
- Irmak S., V. Sharma, **K. Djaman**. 2016. Winter Wheat (*Triticum aestivum* L.) Evapotranspiration and Crop Coefficients. *University of Nebraska-Lincoln Extension Circular EC3005*.
- Irmak S., **K. Djaman**. 2015. Basic Terminology Related to Soil and Water Resources and Irrigation Engineering and Agricultural Water Management. Institute of Agriculture and Natural Resources. University of Nebraska-Lincoln Extension Circular EC2900

Language skills: English and French