Michael Abraha
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EDUCATION

Post-doctoral research associate – Great Lakes Bioenergy Research Center, Michigan State University. (2013 – Present)

Post-doctoral research associate - University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa. (April 2010 – 2012)

PhD Studies - University of KwaZulu-Natal, Pietermaritzburg Campus, South Africa. (2005 to March 2010)

Dissertation title: Sensible heat flux and evaporation for sparse vegetation using temperature-variance and a dual-source model.

MSc Agric. (cum laude) - University of Natal, Pietermaritzburg Campus, South Africa. (Jan. 2002 – Jun. 2003)

Thesis title: Estimating solar radiation for water-use and yield simulations under present and projected future climate using CropSyst.

Non-degree Programme - University of Natal, Pietermaritzburg Campus, South Africa. (Mar. 2001 – Dec. 2001)

The non-degree programme included the following courses: Introduction to Agrometeorology, Environmental Instruments for the Life and Earth Sciences, Automatic Weather Station Technologies 1, Digital Data Treatment and Representation, Modelling Exchange in the SPAC System 1, Irrigation Design and Management, Measurement and Control Technologies 1C, Heat Pulse Measurement.

Awarded certificate of merit for outstandingly good work in all of the above courses.

BSc. - Department of Soil and Water Conservation, College of Agricultural and Aquatic Sciences, University of Asmara, Eritrea. (Sept. 1992 to Jun. 1997)

Final year project: The effect of farm yard manure on saturated hydraulic conductivity and aggregate stability.

Ranked first with a total CGPA of 3.66/4.

Research interest:

Biophysical modelling in the Soil-Plant-Atmosphere Continuum (SPAC);
Environmental and micrometeorological studies;
Climate change and greenhouse gas emission studies; and

Irrigation management.

Computing Skills:

Visual Basic Programming 6, Visual Basic for Applications (VBA), R (Basic)
PlotIT for Windows (Scientific programming, data analysis and graphing package)

Teaching Experience:

I have conducted lectures, tutorial and laboratory sessions for undergraduate students in the University of KwaZulu-Natal for the courses of Introduction to Agrometeorology, Environmental Instruments for Life and Earth Sciences, Bio-resources and Environmental Sciences in the academic year of 2008 and 2012, and part of 2009.

I have also conducted tutorials and laboratory sessions for the abovementioned courses from Jan. 2002 to Aug. 2003 in the University of Natal, and in the academic years of 2005, and 2008 - 2012 in the University of KwaZulu-Natal.

Work Experience:

I have worked as an assistant researcher with the Ministry of Agriculture, Department of Research and Human Resource Development from May 1998 to Dec. 2000, in Asmara, Eritrea,

Service:

I have served as an agricultural expert in Students' Summer Work Program of 1997 in Asmara, Eritrea, and I have also served as a teacher in Embeito Elementary and Junior School, Zoba Maekel, Eritrea from Sept. 1994 to Sept. 1995 as part of National Service.

REFEREES

M. J. Savage (Senior Professor), Agrometeorology Discipline, School of Environmental Sciences, Faculty of Agriculture and Science, University of KwaZulu-Natal.

S. K. Hamilton (Professor), Kellogg Biological Station, Department of Integrative Biology, Michigan State University, 3700 E. Gull Lake Dr., Hickory Corners, MI 49060.

J. Chen (Professor), Center for Global Change and Earth Observations (CGCEO), and Department of Geography, Michigan State University, 1405 S. Harrison Road, Manly Miles Building, Room 218, East Lansing, MI 48823.

G. Philip Robertson (Distinguished Professor), Kellogg Biological Station, Department of Plant and microbial Sciences, Michigan State University, 3700 E. Gull Lake Dr., Hickory Corners, MI 49060.

SCIENTIFIC CONTRIBUTIONS

Conferences

Abraha, M., Gelfand, I., Hamilton, S.K., Chen, J., Robertson, G.P., 2017. Carbon Debt of CRP Lands Converted to Annual and Perennial Bioenergy Crops. AGU Fall Meeting Abstracts, 11–15 December 2017, New Orleans, LA. (Oral presentation)

Publications:

Peer reviewed journal articles:

Abraha, M., Gelfand, I., Hamilton, S.K., Chen, J., Robertson, G.P., 2018. Legacy effects of land use on soil nitrous oxide emissions in annual crop and perennial grassland ecosystems. Ecological Applications. https://doi.org/10.1002/eap.1745 (Data available on https://doi.org/10.5061/dryad.17g36j4)

Abraha, M., Hamilton, S.K., Chen, J., Robertson, G.P., 2018. Ecosystem carbon exchange on conversion of Conservation Reserve Program grasslands to annual and perennial cropping systems. Agricultural and Forest Meteorology. 253–254:151–160. (Data available on http://dx.doi.org/10. 5061/dryad.sc41rn3)

Shao, C., Chen, J., Housen, C., Lafortezza R, Dong, G., **Abraha, M.**, Batkhishig, O., John, R., Ouyang, Z., Zhang, Y., Qi, J., 2017. Grassland productivity and carbon sequestration in Mongolian grasslands:The underlying mechanisms and nomadic implications. Environmental Research. 159: 124–134.

Shao, C., Chen, J., Li, L., Dong, G., Han, J., **Abraha, M.**, John, R., 2017. Grazing effects on surface energy fluxes in a desert steppe on the Mongolian Plateau. Ecological Applications. DOI:10.1002/eap.1459

Yang, Q., Zhang, X., **Abraha, M.**, Del Grosso, S., Robertson, G.P., Chen, J., 2017. Enhancing the SWAT model for simulating N2O emissions of three agricultural systems. Ecosystem Health and Sustainability. DOI:10.1002/ehs2.1259.

Abraha, M., Gelfand, I., Hamilton, S.K., Shao, C., Su, Y.-J., Robertson, G.P., Chen, J., 2016. Ecosystem water use efficiency of annual corn and perennial grasslands: contributions from land use history and species composition. Ecosystems, DOI: 10.1007/s10021-016-9981-2.

Abraha, M., Chen, J., Chu, H., Zenone, T., Ranjeet, J., Su, Y-J., Hamilton, S.K., Robertson, G.P., 2015. Evapotranspiration of annual and perennial biofuel crops in a variable climate. Global Change Biology Bioenergy, doi: 10.1111/gcbb.12239.

Savage, M.J., **Abraha, M.G.**, Moyo, N.C., Babikir E.S.N., 2014. Web-based teaching, learning and research using accessible real-time data obtained from field based agrometeorological measurement systems. South African Journal of Plant and Soil, 31: 13–23.

Abraha, M.G., Savage, M.J., 2012. Energy and mass exchange over incomplete vegetation cover. Critical Reviews of Plant Sciences, 31:321–341.

Abraha, M.G., Savage, M.J., 2010. Validation of a simple three-dimensional solar radiation interception model for tree crops. Agriculture Ecosystems & Environment, 139:636-652.

Abraha, M.G., Savage, M.J., 2008. Comparison of estimates of daily solar radiation from air temperature range for application in crop simulations. Agricultural and Forest Meteorology, 148:401–416.

Abraha, M.G., Savage, M.J., 2008. The soil water balance of rainfed and irrigated oats, Italian rye grass and rye using the CropSyst model. Irrigation Science, 26:203–212.

Abraha, M.G., Savage, M.J., 2006. Potential impacts of climate change on the grain yield of maize for the midlands of KwaZulu-Natal, South Africa. Agriculture Ecosystems & Environment, 115:150-160.

In preparation :

Abraha et al., 2018. Lingering carbon debts of Conservation Reserve Program grasslands converted to perennial biofuel crops.

Book chapters:

Abraha, M.G., Savage, M.J., 2009. Soil water balance and yield of dryland maize using the CropSyst model. In: Danforth, A.T., (Ed.), Corn Crop Production, Growth, Fertilization and Yield. Nova Science Publishers, Inc.