

ESSAYAS KABA AYANA

Department of Ecology, Evolution, and Environmental Biology
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EDUCATION

Ph.D., Biological and Environmental Engineering, Cornell University, Ithaca, New York USA, January 2013

Thesis: *Remote Sensing Tools for Land and Water Management in Data Scarce Blue Nile Basin*

Advisor: Tammo S. Steenhuis

M.Sc., Geo-information Science and Earth Observation, International Institute for Geo-Information Science and Earth Observation (ITC), the Netherlands, March 2007

B.Sc., Hydraulic Engineering, Arba Minch Water Technology Institute, Ethiopia, July 2002 (Honors)

FELLOWSHIP, HONORS AND AWARDS

- UNU fellowship for UN summer course, Tokyo, Japan 2005
- Netherlands Fellowship Program, the Netherlands 2005
- ECIHP fellowship, Cairo, Egypt 2007
- NPT-Demand Driven Action Research fellow 2011-2012
- Graduate Research Assistant
 - Cornell University, Biological and Environmental Eng'g Department 2009-2012
- NatureNet Science Fellow, The Nature Conservancy, 2014

RESEARCH EXPERIENCE

- Doctoral Research: Biological and Environmental Engineering, Cornell University, 2013 (research advisor, Prof. Tammo S. Steenhuis)
 - Development of water quality measurement tools using remote sensing techniques
 - Monitoring biomass recovery using image based disturbance index (DI)
 - Hydrologic modeling of total suspended solid (TSS) emissions from watersheds in to a freshwater lake
 - Water volume estimation using remote sensing techniques
- Graduate Research: Water Resource and Environmental Management, ITC, 2007
 - Validation of radar altimetry lake level measurements over Lake Tana, Ethiopia

RESEARCH INTEREST

- Estimation of hydrological parameters using remote sensing techniques
- Mapping spatial distribution of water stress and land degradation for use in conflict potential indexing
- Remote sensing tools development for trans-boundary rivers monitoring

TEACHING EXPERIENCE

- Assistant Professor: Applied hydrology, RS applications, Groundwater hydrology 2013 – June 2014
- Lecturer: Hydrology, GIS and Remote sensing, water supply and sewerage 2007- 2009
- Assistant Lecturer: Tutoring hydraulics and Engineering mechanics 2004 - 2005
- Teaching Assistant: BDU Hydraulics and hydrology laboratory 2003 - 2004

TRAINING

- Certificate, Advanced Applications of GIS and RS, TU Berlin, Berlin, Germany, December 2011
- Certificate, Facilitation skills in IWRM and conflict resolution, CapNet and Nile-IWRMnet, Kampala, Uganda, 2008
- Certificate, Environmental Hydrology for Arid and Semi-arid Regions, Hydraulic Research Institute (HRI), Egypt, Delta Barrage, July 2007
- Certificate, Global Environment: Science and Policy, United Nations University, International course, Tokyo, Japan., July 2005
- Certificate, International cooperation and Development”: United Nations University, International course, Tokyo, Japan., July 2005
- Certificate of attendance in “Geo-Informatics for Watershed Management”: International Institute for Geo-information Science and Earth Observation (ITC) in collaboration with Makerere University-Department of Geography, Kampala, Uganda, September 2004

APPOINTMENTS

- 2013 – June 2014, Director, Geo-spatial Data and Technology Center, Bahir Dar University, Ethiopia
- 2009 – 2013, Research Assistant, Biological and Environmental Engineering, Cornell University, Ithaca, NY
- 2010 – 2011, Interim Director, Blue Nile Water Institute, Bahir Dar University, Ethiopia
- 2008-2009, Vice Dean, Bahir Dar University, Institute of Technology, Bahir Dar, Ethiopia
- 2007-2008, Head of department, Water Resources Engineering Department, Bahir Dar University, Institute of Technology, Bahir Dar, Ethiopia

PUBLICATIONS

- Kaba, E., W. Philpot and T. Steenhuis, 2014. Evaluating suitability of MODIS-Terra images for reproducing historic sediment concentrations in water bodies: Lake Tana, Ethiopia. *International Journal of Applied Earth Observation and Geoinformation*, 26:286-297.
- Ayana, E. K., Philpot, W. D., Melesse, A. M., Steenhuis, T. S. 2013. Application of MODIS images for shore area monitoring and bathymetric model generation, In: Assefa M. Melesse (ed.) *Nile River Basin: Ecohydrological Challenges, Climate Change and Hydropolitics*. Springer Science, Berlin.
- Ayana, E. K., Philpot, W. D., Steenhuis, T. S. 2013. Monitoring State of Biomass Recovery in the Blue Nile Basin Using Image Based Disturbance Index, In: Assefa M. Melesse (ed.) *Nile River Basin: Ecohydrological Challenges, Climate Change and Hydropolitics*. Springer Science, Berlin.
- Steenhuis, T. S., Tilahun, S. A., Tesemma, Z. K., Tebebu, T. Y., Ayalew, M. M., Zimale, F. A., Worqlul, A. W., Alemu, M. L., Ayana, E. K., Mohamad, Y. A. 2013. Soil Erosion and Discharge in the Blue Nile Basin: Trends and Challenges, In: Assefa M. Melesse (ed.) *Nile River Basin: Ecohydrological Challenges, Climate Change and Hydropolitics*. Springer Science, Berlin.
- Tegenu A. Engda, Haimanote K. Bayabil, Elias S. Legesse, Essayas K. Ayana, Seifu A. Tilahun, Amy S. Collick, Zachary M. Easton, Alon Rimmer, Seleshi B. Awulachew, and Tammo S. Steenhuis, 2011, *Watershed Hydrology of the (Semi) Humid Ethiopian Highlands* In: Assefa M. Melesse (ed.), *Nile River Basin – Hydrology Climate and Water use*. Springer Science, Berlin.
- Abeyou W., Mengeste A., Workaferahu M., Mulken M., Aemro B. and Essayas K. 2011. Opportunities of the Low-Cost Satellite Image Reception Station Established at GIS & RS Center of Bahir Dar University. *Proc. 2nd Symposium on Biodiversity and Nature Conservation, Arba Minch, 3 - 4 June*. 11 p.
- Dost R., Maathuis B., Ayana E. 2007. Validation techniques for Radar altimeter measurements over un gauged inland waters in the Ethiopian highland and Rift valley. *Proc. 2nd Space for Hydrology workshop, European Space Agency, Geneva, 12 - 14 November*. 7 p.
- Essayas K. Ayana. 2004. Dry spell analysis, *Ethiopian Journal of Technology, Education and Sustainable development*, 2, 1, 14-21

ORAL PRESENTATIONS

- 2012, Monitoring state of biomass recovery in the Blue Nile basin using image based disturbance index (DI), June 15, Bahir Dar, Ethiopia
- 2012. Cornell Master's in Integrated Watershed Management at Bahir Dar University, Vision for a Sustainable Planet, ASA, CSSA, and SSSA International Annual Meetings, October 21-24, Cincinnati, OH

- 2007. International Conference on the use of Space Technology for Water Management: April 12-16, King Abdulaziz City for Science and Technology, Riyadh, Saudi Arabia
- 2004. 2nd IERC Workshop on Environment and Sustainable Development: October 27-29, Gwangju Institute of Science and Technology, South Korea

POSTER PRESENTATIONS

- 2012. Evaluating suitability of MODIS/Terra, 250m products for turbidity and TSS time series data generation over Lake Tana, Ethiopia, AGU's 45th annual Fall Meeting, 3-7 December, San Francisco, CA

SYNERGISTIC ACTIVITIES

- 2012, paper review, "The Effect of Tillage Practices on Water Use Efficiency and Yield", CATENA
- 2012, paper review, "The effect of Tillage on Furrow Irrigation Hydraulics and Soil Water Storage", CATENA
- 2012, paper review, "Regional Analysis of Suspended Sediment Yield in the South and Southeast of the Caspian Sea", Hydrological Sciences Journal

COLLABORATORS & OTHER AFFILIATIONS

- 2008, Trainer on "Open source GIS & RS for Integrated Water Resources Management",
- Training for Nile Basin water resources professionals, Bahir Dar, Ethiopia
- 2012, EXCEED network for sustainable water management
- 2012, Trainer on "Regional training course on basic water quality testing (April 16 - 21)", Bahir Dar University (Ethiopia) and TU Braunschweig (Germany)

PROFESSIONAL SOCIETIES

- 2011, American Geophysical Union
- 2012, Soil Science Society of America, Graduate student member
- 2012, Ethiopian Geophysical Union - International, Graduate student member

GRADUATE ADVISORS: Tammo Steenhuis (Cornell University), Wilfried Brutsaert (Cornell University), William Philpot (Cornell University)