

GETACHEW BERHAN DEMISSE
National Drought Mitigation Center (NDMC)
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EDUCATION

Ph.D. Information Systems (Honors), Addis Ababa University, July, 2013.

Dissertation title: Knowledge Discovery from Satellite Images for Drought Monitoring.
Advisors: Dr. Tsegaye Tadesse, Dr. Solomon Atnafu, Dr. Shawndra Hill.

MSc. Geo-information Science and Earth Observation (GIS and Remote Sensing),

International Institute for Geo-information Science and Earth Observation, ITC, The Netherlands, March 2006.

Thesis title: Spatial Distribution of Savannah Woody Species Biodiversity in Serowe, Botswana.

Advisor: Dr. Yousif Hussin.

BSc. Forestry, Alemaya University of Agriculture, Ethiopia, July 1995.

Advisor: Dr. Tarkegn Abebe

Certificate in Windows Programming Using C#, January 2015.

Certificate in Remote Sensing with Emphasis to Radar Technology for water resources assessment and management, July 2014.

Certificate in MATLAB for Digital Image Processing, November 2011.

Certificate in GEONETCAST for Natural and Water Resources Management, AAU-Dep't. Geography/IWMI/ITC, November 2010.

Certificate in GIS and Remote Sensing for the Use of Low cost Earth Observation Data in Environmental and Climate Monitoring Application, AMESD-Rwanda, October 2009.

Certificate in Geo-information for Food Security, Department of Geography, University of Johannesburg, South Africa, April 2007.

Certificate in Operating Video Cameras and Filming, March 2001.

Certificate in Computer Science, Ethio Computer Training, June 2000.

RESEARCH INTEREST

- i. Geographic Information Systems (GIS) and Remote Sensing
- ii. Big Data Management
- iii. Data Mining
- iv. Drought Modeling

AREAS OF EXPERTISE

- i. ArcGIS (ArcMap and ArcCatalog - from usage to customization using VBA).
- ii. Remote Sensing Software (ERDAS IMAGINE, ILWIS, eCognition, MapCubist)
- iii. Intelligent data analysis using RuleQuest Regression Tree and MapCubist.
- iv. Drought modeling using data mining and machine learning techniques.
- v. Drought prediction using satellite imagery and RuleQuest Regression Tree.
- vi. Data retrieval and sampling design using Hawth's Analysis Tools for ArcGIS.
- vii. Advanced application development using ESRI ArcObject model.
- viii. Internet GIS using API for Flex and ArcGIS Server.
- ix. Data Mining Software (Weka, RuleQuest Regression Tree)
- x. Programming Languages (C, C++, C#, Visual Basic, MatLab, R, gdal for .MPR data analysis and management)
- xi. Database Management Systems (Access, SQL Server)

PRESENT POSITION

Research Scholar, 5/2016 – Present, National Drought Mitigation Center, University of Nebraska, Lincoln.

TEACHING EXPERIENCE

1) Addis Ababa University:

- i) Fundamentals of Remote Sensing and GIS – [Ercs 661]
- ii) Spatial Analysis – [Ercs 664]
- iii) Open Source GIS and Programming – [Ercs 668]
- iv) Environmental Modeling – [Ercs 682]
- v) Advanced Topics in Information Systems – [CoS 626]

2) HiLCoE School of Computer Science and Technology:

- i) Principles of GIS – [CS 497]
- ii) Advanced Application Development – [CS 759]

- 3) **Addis Ababa University, Addis Ababa: 10/2009 – 6/2013, worked as GIS Technical Assistant and Lecturer of Geographic Information Systems (GIS).**

WORK EXPERIENCE

1. **Assistant Professor, 7/2013 – 4/2016, School of Earth Sciences, Addis Ababa University, Addis Ababa.**
2. **Assistant Professor, 7/2013 – 4/2016, HiLCoE School of Computer Science and Technology, Addis Ababa.**
3. **Short Term Scholar, 8/2015 – 2/2016, National Drought Mitigation Center, University of Nebraska, Lincoln.**
4. **Climate Science Center, Addis Ababa: 12/2013 to 8/2015, worked as Database Adviser.**

Major responsibilities:

- i. Develop Web-based Disaster Risk, Environment and Climate Services data center (available at www.dreecs.or.et),
 - ii. Manage GEONETCast Near-real time data reception station,
 - iii. Convert raw Meteosat data to georectified usable format for users,
 - iv. Advise all GEONETCast Near-real time data users,
 - v. Manage data sharing server.
5. **Short Term Scholar, 07/2011 – 1/2012, National Drought Mitigation Center, University of Nebraska, Lincoln.**
6. **Institute of Biodiversity Conservation, Addis Ababa: 5/2006 – 9/2009, worked as Associate GIS and Forestry Researcher with the following major duties and responsibilities:**
- i. Manage Geo-database for Biodiversity Conservation,
 - ii. Modeling potential distribution of threatened species,
 - iii. Mapping cultivated and wild species potential distribution,
 - iv. Mapping areas of high diversity,
 - v. Mapping areas where crop and wild relatives co-exist,
 - vi. Mapping areas representing ecogeographic gaps in germplasm collections,
 - vii. Mapping areas at high risk of genetic erosion,
 - viii. Land cover characterization using Remote Sensing with special emphasis for biodiversity conservation.

7. **Support for the Biodiversity Institute-GTZ, Addis Ababa: 11/1999 – 9/2004, worked as Forestry Expert with the following major duties and responsibilities:**
- i. Forest genetic resources database management,
 - ii. GIS data collection and encoding,
 - iii. Interpretation of Satellite Imagery Maps and Topographic maps for forest biodiversity conservation,
 - iv. Preparing maps for biodiversity survey and mapping biodiversity distribution,
 - v. Organize field mission in collaboration with the other team members,
 - vi. Analyze and evaluate all the data collected from the field and compile the results for biodiversity conservation,
 - vii. Compile information on Indigenous Trees and Shrubs of Ethiopia,
 - viii. Prioritize threatened ecosystems and recommend appropriate conservation measure,
 - ix. Evaluate the conservation status of all tree/shrub species of Ethiopia,
 - x. Establish and follow-up *in-situ* and *ex-situ* conservation sites,
 - xi. Collect seeds of priority species for Genebank storage,
 - xii. Develop appropriate guidelines for *in-situ* and *ex-situ* conservation sites.
8. **Woody Biomass Inventory and Strategic Planning Project, Addis Ababa: 9/1995 – 10/1999, Worked as Senior Forestry Technician with the following major duties and responsibilities:**
- i. Forest survey and inventory,
 - ii. Land cover description and mapping,
 - iii. Encoding GIS data,
 - iv. GIS data management,
 - v. Woody plants taxonomy,
 - vi. Herbarium specimen collections.

HONORS AND AWARDS

- **2016**, Best Publication Award, Addis Ababa University, Ethiopia.
- **2012**, Best Publication Award, Organization for Social Science Research in Eastern and Southern Africa (OSSREA).

PUBLICATIONS

I. Peer Reviewed Journals

- 1) Hundera, H., Demisse, G. B., Weldeamlak. (2016). Remote Sensing and GIS Based Agricultural Drought Risk Assessment in East Shewa Zone, Central Rift Valley Region of Ethiopia. *Journal of Environment and Earth Science*, vol. 6(7), pp. 48 - 54.
<http://www.iiste.org/Journals/index.php/JEES/article/view/31895>
- 2) Eshetie, S. M., Demisse, G. B., Suryabhadgavan, K. (2016). Evaluation of Vegetation Indices for Agricultural Drought Monitoring in East Amhara, Ethiopia. *INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH*, 5, 535 – 540.
[https://www.worldwidejournals.com/international-journal-ofscientific-research-\(IJSR\)/articles.php?val=OTE1Mw==&b1=105&k=27](https://www.worldwidejournals.com/international-journal-ofscientific-research-(IJSR)/articles.php?val=OTE1Mw==&b1=105&k=27)
- 3) **Demisse, G.**, Tadesse, Bayisa, Y. (2016), Linking Seasonal Vegetation Condition Outlook Information to Decision Makers in Data-sparse Region: A Case Study in the Greater Horn of Africa, *Remote Sensing Applications: Society and Environment*, Submitted.
- 4) Tesfay, A., **Demisse, G.**, and Asfaw, M. (2016), Developing Conceptual Land Grade Model for Bench Mark Lease Price Determination using Fuzzy Analytical Hierarchy Process and GIS Approach: A Case of Woldiya City, Ethiopia, *Civil and Environmental Research*, Vol.8, No.5, pp. 20 – 35.
- 5) **Demisse, G.**, Tadesse, T, and Atnafu, S. (2016), Drought Spatial Object Prediction Approach using Artificial Neural Network, *Geoinformatics & Geostatistics: An Overview*, vol. 3, pp. 1 – 7, <http://dx.doi.org/10.4172/2327-4581.1000132>.
- 6) Tadesse, T., Tonya, H., Nicole, W., Andualem, S., Zaitchik., B., Shimelis, B. and **Demisse, G.**, Jacob, P. (2016), Linking Seasonal Predictions into Decision-making and Disaster Management in the Greater Horn of Africa, *Bulletin of the American Meteorological Society* 2015 ; e-View doi: <http://dx.doi.org/10.1175/BAMS-D-15-00269.1>.
- 7) Tadesse, T., Senay, G., **Demisse, G.**, Teshome, R., Shimelis, .B. (2015). Evaluating a satellite-based seasonal evapotranspiration product and identifying its relationship with other satellite-derived products and crop yield: A case study for Ethiopia, *International Journal of Applied Earth Observation and Geoinformation*, vol. 40, pp. 39–54.
- 8) **Demisse, G.**, Shawndra, H., Tadesse. T., Solomon, A. (2014). Drought Prediction System for Improved Climate Change Mitigation, *IEEE Transactions on Geoscience and Remote Sensing*, vol. 52(7), pp. 4032 - 4037, DOI 10.1109/TGRS.2013.2279020.
- 9) Tadesse, T., **Demisse, G.**, Zaitchik, B. and Dinku, T. (2014). Satellite-based Hybrid Drought Monitoring Tool for Prediction of Vegetation Condition in Eastern Africa: A Case Study for Ethiopia, *Water Resources Research (Impact Factor: 3.15)*. 01/2014; DOI: 10.1002/2013WR014281.
- 10) **Demisse, G.**, Tadesse, T., A. Solomon, H. Shawndra, and T. Yitaktu (2012), Normalized Difference Vegetation Index and Standard Precipitation Index Parameters to Monitor Drought at National Scale: The Case of Ethiopia," *Ethiopian Journal of Development Research*, vol. 34, pp. 67 - 94.
- 11) **Demisse, G.**, H., Shawndra, Tadesse, T., and A., Solomon (2011), Using Satellite Images for Drought Monitoring: A Knowledge Discovery Approach, *Journal of Strategic Innovation and Sustainability*, vol. 7, pp. 135 - 153.

- 12) **Demisse, G.** and Taye, B. (2006), Population structure and spatial distribution of four woody medicinal plants in Bonga Forest, Ethiopia, *JOURNAL OF NATURAL RESOURCES*, vol. 8, pp. 19 - 38.

II. Peer Reviewed Textbook

- 13) **Demisse, G.** (2012) GIS and Remote Sensing for Mapping Species Spatial Distributions: GIS and Remote Sensing for Natural Resources Management, ISBN : 9783846542125 / 3846542121, available at <http://www.bookrenter.com/getachew-berhan-demisse/textbooks-by>

III. Peer Reviewed Book Chapter

- 14) **Demisse, G.,** Tadesse, T., A. Solomon, and H. Shawndra (2010), Drought Monitoring in Food-Insecure Areas of Ethiopia by Using Satellite Technologies, in *Experience of Climate Change Adaptation in Africa, Climate Change Management*, DOI: 10.1007/978-3-642-22315-0_11, W. L. Filho, Ed., 2010, pp. 1145 - 1162.

IV. Peer Reviewed Proceedings

- 15) Negash, S. & **Demisse, G.** (2013), Mobile early drought warning system, *AWERProcedia Advances in Applied Sciences*. [Online]. 2013, 1, pp 622-626. Available at <http://www.world-education-center.org/index.php/paas>.
- 16) **Demisse, G.,** Tadesse, T.; Atnafu, S., Hill, S. (2012). Drought information mining from satellite images for improved climate change mitigation, *Information and Communication Technologies (WICT-IEEE), 2012 World Congress*, October 30, 2012 - November 2, 2012, pp. 197 – 202, ISBN: 978-1-4673-4806-5, DOI: 10.1109/WICT.2012.6409074, available at http://ieeexplore.ieee.org/xpl/login.jsp?tp=&arnumber=6409074&url=http%3A%2F%2Fieeexplore.ieee.org%2Fxppls%2Fabs_all.jsp%3Farnumber%3D6409074
- 17) **Demisse, G.,** Tadesse, T., A. Solomon, and H., Shawndra (2011). Drought Object Modeling for Climate Change Mitigation: The Case of Ethiopia, in *Building Software in the Developing World, Proceedings of the 1st EICTF October 27, 2011*, Addis Ababa: Ethiopian ICT Forum, 2011.
- 18) **Demisse, G.,** A. Solomon, and H., Anat (2010). Knowledge Discovery from Satellite Images for Drought Monitoring in Food Insecure Areas, in *Americas Conference on Information Systems (AMCIS) 2010 Conference Proceeding*: AMCIS.
- 19) Shawndra, H., Anita, **Demisse, G.,** Nathan, E. (2010). Reality Mining Africa, Association for the Advancement of Artificial Intelligence, www.aaai.org.
- 20) **Demisse, G.,** Solomon, N., Amoroso, D. (2009). Determinants of Business Process Management for Successful Project Implementation in Low Income Countries, *AMCIS 2009 Proceedings*. Paper 41, <http://aisel.aisnet.org/amcis2009/41/>.
- 21) **Demisse, G.,** Y.A. Hussin, I. van Duren, M. Lubczynski and O.T., Obakeng (2006), Remote Sensing and Geostatistics for the assessment of spatial distribution of savannah woody species biodiversity for up-scaling transpiration in Serowe, Botswana, in: 6th International Conference on Earth Observation & Geoinformation Science in Support of Africa's Development, Cairo, Egypt.

- 22) Tesfaye Messele and **Demisse, G.** (2004). The Ethiopian biodiversity perspective the current challenge and conservation strategies: Literature review. Biannual Newsletter of Institute of Biodiversity Conservation (IBC). Vol. 2 No. 2.
- 23) **Demisse, G.** and Taye Bekele (2004). Genetic conservation status of some woody medicinal plants in southwest moist montane forests of Ethiopia. Proceedings of the first National workshop on non-timber forest products in Ethiopia, 5-6 April 2004, Addis Ababa, Ethiopia.
- 24) Elias Taye and **Demisse, G.** (2004). REGENERATION STATUS OF MOIST MONTANE FORESTS OF SOUTH WEST ETHIOPIA. Proceeding of the inaugural conference of forestry genebank, "Forest Resources of Ethiopia Status Challenges Opportunities", 27-29 Nov. 2002, Addis Ababa, Ethiopia.
- 25) Mateos Ersado and **Demisse, G.** (2003). INTEGRATION OF BIODIVERSITY CONSERVATION WITH RESETTLEMENT AREAS, Biannual Newsletter of Forest Genetic Resources Conservation Project, IBCR. Vol. 2 No. 1.
- 26) **Demisse, G.** and Yoseph Assefa (2003). Conservation status of Boginda forest in SNNPR, Kefa zone, Gimbo woreda, Ethiopia. Proceeding of the inaugural conference of forestry genebank, "Forest Resources of Ethiopia Status Challenges Opportunities", 27-29 Nov. 2002, Addis Ababa, Ethiopia.
- 27) **Demisse, G.** and Shiferaw Dessie (2003). MEDICINAL PLANTS IN BONGA FOREST AND THEIR USES. Biannual Newsletter of Forest Genetic Resources Conservation Project, IBCR. Vol. 1 No. 2.
- 28) **Demisse, G.** (2003). EFFECT OF SETTLEMENT ON FOREST RESOURCES, Biannual Newsletter of Forest Genetic Resources Conservation Project, IBCR. Vol. 2 No. 1.
- 29) Taye Bekele, **Demisse, G.**, Elias Taye, Mateos Ersado and Kumachew Yeshitela (2002). REGENERATION STATUS OF MOIST MONTANE FORESTS OF ETHIOPIA: CONSIDERATION FOR CONSERVATION P I. JOURNAL OF THE ETHIOPIAN WILD LIFE AND NATURAL HISTORY SOCIETY, No. 22, Addis Ababa, Ethiopia.
- 30) Taye Bekele, **Demisse, G.**, Sisay Zerfu and Kumlachew Yeshitela (2001). Biodiversity Conservation in ancient church and monastery yards in Ethiopia, Proceeding of a workshop on The Darwin Initiative for the Survival of Species Program, 1 – 2 August 2001, Addis Ababa, Ethiopia.
- 31) Taye Bekele, Kumlachew yeshitela, **Demisse, G.**, and Sisay Zerfu (2001). Forest Biodiversity Conservation: Perspectives of Ethiopian Orthodox Church, Proceeding of International Workshop BIO-REFOR, 7 –11 October 2001, Tokyo, Japan.

ABSTRACTS FOR PROFESSIONAL MEETING

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- 32) **Demisse, G.** (2015) Improving Temporal Resolutions of Drought Predictions Using Knowledge Discovery from Database Approach, AGU CHAPMAN CONFERENCE, Irvine, California, U.S.A., 20 – 22 April, 2015, available at
<https://agu.confex.com/agu/15chapman1/webprogram/Paper33467.html>
<https://agu.confex.com/agu/15chapman1/webprogram/allauthors.html>
-

UNIVERSITY SERVICE

- **Postgraduate School Graduate Committee**, School of Earth Sciences, AddisAbaba University (2014-2015).

MASTER ADVISEE COMPLETED

- Syume Melese (2015), EVALUATION OF VEGETATION INDICES FOR AGRICULTURAL DROUGHT MONITORING IN EAST AMHARA, ETHIOPIA, School of Earth Sciences, Addis Ababa University, July 2015.
- Teklit Berhe (2015) REMOTE SENSING AND GIS BASED URBAN LAND SUITABILITY MODELING AT PARCEL LEVEL USING MULTICRITERIA DECISION ANALYSIS: A CASE STUDY OF BOLE SUB CITY, ADDIS ABABA, ETHIOPIA, Addis Ababa University, July 2015.
- Kemahu Abreham (2015), PHOTOGRAMMETRIC TECHNOLOGY FOR IMPROVED ACCURACY AND COST EFFECTIVE 3D MODELING, Addis Ababa University, July 2015.
- Tsegaye Ayele (2015), EXPLORING THE RELATIONSHIP BETWEEN LAND SURFACE TEMPERATURE AND LU/LC TO ANALYZE URBAN HEAT ISLAND EFFECT IN ADDIS ABABA CITY, ETHIOPIA, Addis Ababa University, July 2015.
- Yared Mesfin (2015), SUITABLE HABITAT ZONE ANALYSIS IN ALLIDEGI WILDLIFE RESERVE, ETHIOPIA: A CASE STUDY FOR GREVY'S ZEBRA, Addis Ababa University, July 2015.
- Abraha Tesfay (2014) FUZZY ANALYTICAL HIERARCHY PROCESS FOR IMPROVED URBAN LAND GRADING SYSTEM, Addis Ababa University, July 2014.
- Tariku Geda (2014), MODELING FOREST STAND VOLUME AND LIVE ABOVEGROUND WOODY BIOMASS USING LANDSAT 5 TM SATELLITE IMAGERY SPECTRAL AND TEXTURAL FEATURES, Addis Ababa University, July 2014.
- Melkamu Dessalegn (2014), AN INTEGRATED APPLICATION OF AHP AND GIS FOR ENVIRONMENTAL SUITABILITY ANALYSIS FOR VILLAGIZATION SITE SELECTION, Addis Ababa University, July 2014.
- Yetnayet Fantaye (2014), GIS AND REMOTE SENSING BASED PHYSICAL ACCESSIBILITY TO HEALTH FACILITY: A CASE STUDY OF NORTH SHEWA ZONE, AMHARA REGIONAL STATE OF ETHIOPIA, Addis Ababa University, July 2014.

MASTER ADVISEE IN PROGRESS

- Aden Ali (2016), GIS AND REMOTE SENSING BASED SUITABLE SITE SELECTION FOR SOLID WASTE DISPOSAL: A CASE STUDY FOR ASAITA TOWN, AFAR REGIONAL STATE, ETHIOPIA, Addis Ababa University.
- Asfaw Demeke (2016), REMOTE SENSING & GIS BASED ASSESSMENT OF BIODIVERSITY CONSERVATION OF ENTOTO NATURAL PARK FOR ECOTOURISM DEVELOPMENT, Addis Ababa University.
- Tewodros Getachew (2016), ASSESSMENT OF SOIL EROSION RISK AREA USING OBJECT BASED IMAGE ANALYSIS AND RUSLE3D MODEL: A CASE STUDY OF WENBERTA WATERSHED, ATSBI-WENBERTA WOREDA, TIGRAY, ETHIOPIA, Addis Ababa University.
- Ahmed Hamid (2016), 3D MODELLING FOR URBAN CADASTERAL REGISTRATION, MANAGEMENT AND ADMINISTRATION, Addis Ababa University.

- Eshetu Gebre (2016), REMOTE SENSING AND GIS BASED CHARACTERIZATION OF AGRICULTURAL DROUGHT CONDITIONS IN NORTH WOLLO ZONE AMHARA REGIONAL STATE, ETHIOPIA, Addis Ababa University.
- Getachew Workneh (2016), EVALUATION OF REMOTE SENSING BASED SURFACE ENERGY BALANCE SYSTEM (SEBS) ALGORITHM FOR ESTIMATION OF EVAPOTRANSPIRATION IN EASTERN ETHIOPIA, Addis Ababa University.
- Megersa Tafesse (2016), FOREST FIRE RISK ZONE MODELING AND MAPPING IN BALE MOUNTAINS NATIONAL PARK, Addis Ababa University.
- Hurgesa Hundera (2016), MAPPING AGRICULTURAL DROUGHT AND IT'S COPING STRATEGIES USING REMOTE SENSING AND GIS TECHNIQUES IN ADAMA DISTRICT, CENTRAL RIFT VALLEY REGION OF ETHIOPIA, Addis Ababa University.

REFERENCES

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2. Dr. Gabriel Senay,
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3. Dr. Solomon Atnafu
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 Addis Ababa University
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