

DR. OLUWASEUN IDOWU FADUGBA
Geophysics/Seismology PhD
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EDUCATION

- University of Memphis, Memphis, TN** GPA 3.98/4.0
PhD Earth Science (Geophysics) August 2021
Dissertation Title: Waveform and geodynamic modeling of seismicity associated with the Charlevoix Seismic Zone
Advisors: Dr. Charles Langston, Dr. Christine Powell, and Dr. Eunseo Choi
- Boston College, Chestnut Hill, MA** GPA 3.70/4.0
MSc Geophysics August 2015
Dissertation Title: Detection of Induced Seismicity due to Oil and Gas Extraction in the Northern Gulf of Mexico, USA
Advisor: Dr. John Ebel (Master's Comprehensive Exam: Passed with Distinction)
- Obafemi Awolowo University, Ile-Ife, Nigeria** GPA 4.54/5.0
BSc Applied Geophysics January 2011
Dissertation Title: Development of Empirical Equations Relating Formation Resistivity and Cone Tip Resistance using Sedimentary and Basement Terrains of Nigeria as Case Studies.
Advisor: Dr. Martins Olorunfemi

SOFTWARE SKILLS

- Python | C++ | MATLAB | FORTRAN | Mathematica | Cubit/Trelis/GMSH for mesh generation | LaTeX | PyLith | SW4 | Shell & Bash scripts | ProMAX | ArcGIS | GMT | Awk |

PROFESSIONAL EXPERIENCE

- Postdoctoral Scholar**, University of Oregon, Eugene, OR July 2021 – Date
- ROSES project titled “Three-dimensional kinematics and the crustal deformation of Tsunami Earthquakes”
 - **Earthquake source model development** and compilation using HR-GNSS for 11 tsunami earthquakes in Japan
 - **Conversion** of source models to FakeQuakes/SW4 input format and creating mesh for the Japan Trench using GMSH.
 - Establish the **modeling** framework for the Japan 1D vs. 3D study using FakeQuakes and SW4, respectively.
 - **Comparative data analysis** of displacement data between Japan 1D and 3D synthetic displacements, and HR-GNSS observations.
 - Model **validation** using the Cascadia- a region that hasn't experienced a Tsunami earthquake, as a case study.
- Research Assistant**, University of Memphis, Memphis, TN Aug.'15 – June 2021
- USGS NEHRP project titled “Seismotectonics and Seismic Potential of Three Intraplate Seismic Zone”
 - Investigation and analysis of high-quality focal mechanisms for relocated earthquakes in the Charlevoix Seismic Zone using Focal software package.
 - Development of two software packages used in the determination of a realistic fault geometry of the CSZ using:
 - **Focal** – determines the focal mechanisms of earthquakes using wave polarities and amplitude ratios as constraints.
 - **Cluster_Pick** – determines realistic fault geometry using a modified Optimal Anisotropic Dynamic Clustering algorithm.
 - NSF-ICER project “EarthCube Building Blocks: Collaborative Proposal: GeoTrust: Improving Sharing and Reproducibility of Geoscience App.”
 - Investigation of the combined effects of the preexisting structures and regional stresses on earthquake activity and stress rotations in CSZ.
 - **Design of Experimental** processes including 3D simulations of crustal deformation to determine stress distributions using PyLith.
 - Analysis and **correlation** of modeled stress distributions with the recently relocated hypocenters in the CSZ.
- Research Assistant**, Weston Observatory of Boston College, Weston, MA June - Aug. 2015
- Assemble earthquake forecast probabilities for the Massachusetts Emergency Management Agency project titled “Establishing an Operational Earthquake Forecasting System at Weston Observatory of Boston College”.
- Teaching Assistant**, Boston College, USA Aug.'13- May 2015
- Exploring the Earth (Fall, 2014), Environmental Hydrology (Fall, 2014), Astronomy (Spring, 2014), and Cosmos (Fall, 2013)
 - Organizing labs, fieldwork, and tutoring students during regular office hours
 - Grading assignments and class project exercises.
- Tutoring Position**, The Connors Family Learning Centre, Boston College, MA. June 2014-May 2015
- Worked as tutor for undergraduate classes: Calculus II and Physics (Spring, 2015), Intro to Physics I and Our Mobile Earth (First Session, Summer 2014); and Physics II and Environmental Issues and Resources (Second Session, Summer 2014)
- Trainee Geophysicist**, Verity Geosolutions Limited, Lekki, Lagos State, Nigeria. Feb. 2013 – Aug. 2013
- Participated in the Shell Nigeria Seis-Nav Merge Project.
 - Experience with tape reformatting, storage, transcription, and quality data control of 3D seismic data using ProMAX.
 - Participated in the training of Industrial Training (IT) students from the universities.
- High School Teacher**, Bens High School, Idomi, Cross River State, Nigeria Jan. – Oct. 2012
- Worked as a mathematics and physics teacher during the one-year National Youth Service Corps (NYSC).

PUBLICATIONS

- Zhang Y., **Fadugba** O.I., Powell C.A., Horton S., and Langston C.A. (in prep.). A New Madrid Seismic Zone Fault System Model from Relative Event Locations and Application of Optimal Anisotropic Dynamic Clustering (preprint available).
- **Fadugba, O.I.**, Langston, C.A. and Powell, C.A. (in prep.). Fault Geometry of the Charlevoix Seismic Zone (preprint available).
- **Fadugba, O.I.**, Langston, C.A. and Powell, C.A. (in review). Focal Mechanisms of Relocated Earthquakes and Stress Orientation in the Charlevoix Seismic Zone (Submitted to Journal of Geophysical Research: Solid Earth, preprint available upon request).
- **Fadugba, O. I.**, Choi, E., & Powell, C. A. (2019). Effects of preexisting structures on the seismicity of the Charlevoix Seismic Zone. *Journal of Geophysical Research: Solid Earth*, 124, 7370– 7386.
- **Fadugba, O.I.** and Olorunfemi M.O. (2012). WINGEOTECH_FAD Software for Estimating Cone Tip Resistance from Formation Resistivity in Sedimentary and Basement Terrains of Nigeria. *Pacific Journal of Science and Technology*, 13(1):544-555.
- **Fadugba, O.I.**, Olorunfemi M.O., & Odeyemi D. (2011). Development of Empirical Equations Relating Formation Resistivity and Cone Tip Resistance using Sedimentary and Basement Terrains of Nigeria as Case Studies. *Pacific Journal of Science and Technology*, 12(2), 548-557.

NOT PEER REVIEWED

- John E. Ebel, Nawa Dahal, **Oluwaseun Fadugba**, Anastasia Moulis and Alan Kafka (2017). “Establishing an Operational Earthquake Forecasting System at Weston Observatory of Boston College” for the Massachusetts Emergency Management Agency.
ftp://eclogite.geo.umass.edu/pub/stageologist/MEMA_1994_10_UMSISA/MEMAOEFSFinalReport6_19.pdf

PRESENTATIONS

- **Oluwaseun Fadugba**, Valerie J. Sahakian and Diego Melgar (2021). Three-Dimensional Kinematics and the Crustal Deformation of Tsunami Earthquakes. American Geophysical Union (AGU) Fall Meeting, New Orleans, LA.
- **INVITED TALK. Oluwaseun Fadugba** (2021). University of Oregon Department of Earth Sciences, Department Seminar.
- **Oluwaseun Fadugba**, Charles Langston and Christine Powell (2020). Focal mechanisms of relocated earthquakes and stress orientation in the Charlevoix Seismic Zone. AGU Fall Meeting (Virtual).
- **INVITED TALK. Oluwaseun Fadugba**, Charles Langston and Christine Powell (2020). Focal mechanisms of relocated earthquakes and stress orientation in the Charlevoix Seismic Zone. Dept of Geology and Geological Engineering, University of Mississippi, MS.
- **Oluwaseun Fadugba**, Charles Langston and Christine Powell (2019). Better constraining the geometry of faults in the Charlevoix Seismic Zone. AGU Fall Meeting, San Francisco, CA.
- **Oluwaseun Fadugba**, Charles Langston, Christine Powell & Eunseo Choi (2019). Better constraining the geometry of faults in the Charlevoix Seismic Zone. Big Data Workshop and Tech Fest, Boone Pickens School of Geology, Oklahoma State University, OK.
- **Oluwaseun Fadugba**, Charles Langston and Christine Powell (2019). Wave propagation analysis of the SP headwave observed in the CSZ and its application for constraining source depth. Seismological Society of America (SSA) Conference, Seattle, WA.
- **Oluwaseun Fadugba**, Charles Langston and Christine Powell (2018). Wave propagation and focal mechanisms of local earthquakes in the Charlevoix Seismic Zone. Fall Meeting of American Geophysical Union (AGU), Washington DC.
- **Oluwaseun Fadugba**, Eunseo Choi and Christine Powell (2017). Effects of pre-existing structures on the seismicity of the Charlevoix Seismic Zone. AGU Fall Meeting AGU, New Orleans, LA.
- Malik, T., D. G. Tarboton, J. L. Goodall, E. Choi, A. Bhatt, S. D. Peckham, I. Foster, D. Hai Ton That, B. Essawy, Z. Yuan, P. K. Dash, G. Fils, T. Gan, **O. I. Fadugba**, A. Saxena and T. A. Valentic, (2017). GeoTrust Hub: A Platform for Sharing and Reproducing Geoscience Applications. AGU Fall Mtg., New Orleans, LA.
- John Ebel and **Oluwaseun Fadugba** (2015). Operational Earthquake Forecasting of Aftershocks for New England. AGU Fall Meeting, San Francisco, CA.
- Constantin Andronache, Maren Kizershot, Regan McLaughlin, Claire Jasper, Rudolph Hon and **Oluwaseun Fadugba** (2015). Environmental impact of anthropogenic reactive nitrogen compounds. ESRI User Conference, San Diego, CA.
- **Oluwaseun Fadugba** (2014). Detection of Induced Seismicity due to Oil and Gas Extraction in the Northern Gulf of Mexico, USA. Eastern Section SSA conference, Charleston, SC.
- **Oluwaseun Fadugba** (2014). Propagation of P- and S- Waves and the Variation of Peak Amplitude from Earthquake's Epicenter Using the Mississippi 2012 Earthquake as a Case Study. Boston College Libraries.

SELECTED FIELD PROGRAMS

- Research Cruise OC2108B offshore Oregon (R/V Oceanus) involving sediment strength with multicore, water samples with a CTD, and plankton net tow samples Aug. 2021
- IRIS Wavefields Experiment at Enid, Oklahoma involving 3-C nodes, broadband seismometers and infrasound sensors. June 2016
- Geological and geophysical mapping of Igarra, Edo State, Nigeria. June 2010
- Geological and geophysical mapping of Ibodi, Osun State, Nigeria. Jan. 2011
- NAPE/AAPG Immersive Field Exercise; “Structural, Tectonics and Reservoir Basin Analysis,” at Tobacco Root Mountains, Indiana University’s Judson Mead Geological Field Station, MT, USA. Sept. 2009

SCHOLARSHIPS AND AWARDS

- Honorable Mention, Big Data Workshop and Tech Fest, 2019, Oklahoma State University OK.
- SEG student travel grant and Student Education Program (SEP), SEG annual meeting, 2016, TX, USA.

- SSA student travel grant, SSA Conference, 2015, CA.
- Summer Research Scholarship, June 2014 & 2015, Boston College, MA, USA.
- Governing Board Chairman's Honors Award, 2012, NYSC Cross River State, Nigeria.
- SEG student grant and Student Leadership Symposium, SEG annual meeting, 2010, CO, USA.
- SEG Foundation Undergraduate Scholarship, 2008/2009 & 2009/2010
- First Prize Winner, Nigerian Mining Geoscientists Society Inter-College Quiz Competition, 2009, OAU.
- Faculty of Science Undergraduate Scholarship, 2008, OAU, Nigeria.

PROFESSIONAL DEVELOPMENT AND SERVICE

- **Journal Reviewer** for the Journal of Geophysical Research: Solid Earth. 2020-Present
- **Leadership Positions**
 - President, Young Adult and Singles' Ministries (YASM), RCCG, Memphis, TN. 2016-June 2021
 - Vice president, SEG Students' Chapter, University of Memphis, TN. 2016/2017
 - President, SEG Students' Chapter, OAU, Nigeria. 2009/2010
 - Financial Secretary, SEG Students' Chapter, OAU, Nigeria. 2008/2009
- **Community Development Service (CDS)**
 - Youth Villages, 7410 Memphis Arlington Rd, Memphis, TN 38135. 2015 - June 2021
 - Boston Rescue Mission, 39 Kingston St, Boston, MA 02111. 2013- 2015
 - Idomi Village, Yakurr Local Government, Cross River State. Worked as Development Knowledge Facilitator (DKF) of the Millennium Development Goals (MDGs) during the NYSC. Oct. 2011 – 2012
- **SEG Student Chapter Tutorial Program, OAU, Nigeria.**
 - Tutored undergraduate classes in mathematics, physics and structural geology. 2007-2011
- **Professional organizations (Regular member):** AGU, SSA, SEG and NABG.