CHUKWUEBUKA C. NWEKE, Ph.D., E.I.T

Assistant Professor
University of Southern California
Sonny Astani Department of Civil and Environmental Engineering

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RESEARCH INTERESTS

Site-specific and region-specific ground motion site effects modeling (sedimentary basins and non-basins), evaluation and application of physics-based earthquake simulation, non-invasive site characterization, determining the dynamic material properties of bio-cemented soils, earthquake effects on lifeline infrastructure systems, innovative hazard reconnaissance methods, cloud-based computation and data management for hazard preparation, and pre- and post-assessment.

EDUCATION

Ph.D. **University of California, Berkeley**
Civil and Environmental Engineering (Geotechnical) 2017
Dissertation - *Constitutive Modeling of Weakly Cemented Sands*
Dr. Nicholas Sitar (Chair/Advisor)
Dr. Juan Pestana (Advisor)
Minors: Geomorphology, Numerical Analysis/Finite Element Modeling

M.S. **University of California, Berkeley**
Civil and Environmental Engineering (Geotechnical) 2013

B.S. **University of California, Davis**
Civil and Environmental Engineering 2012

CERTIFICATIONS

Engineer-In-Training (EIT), State of California (Certificate No. *EIT 144450*)
Professional Engineer (PE) – In progress (to be acquired by November 2025)

EXPERIENCE

Assistant Professor, University of Southern California, Sonny Astani Department of Civil and Environmental Engineering (August 2021 – present)

Staff Engineer, ENGEO Incorporated (August 2020 – April 2021)

Postdoctoral Research Fellow, Department of Civil and Environmental Engineering, University of California at Los Angeles (October 2017 – July 2020)

Graduate Student Researcher/Instructor, Department of Civil and Environmental Engineering, University of California at Berkeley (August 2012 – August 2017)

RESEARCH FUNDING (*Total Funding @ USC: $153,448*)

University of Southern California, Sonny Astani Department of Civil and Environmental Engineering

Geometric Parameterization of Southern California Sedimentary Basins for Site Response Analysis and Modeling
Status: Selected for Funding
Sponsor: United States Geologic Survey
Role: PI
Amount: $74,448
Dates: January 2023 – December 2023
Brief: This project further explores alternative means for describing lateral and other 3D features in the development of region-specific models to improve the characterization of site response in sedimentary basins. This will be accomplished by developing basin geometric parameters/metadata to be used in basin site response analysis.

Reconciling Bias in Moderate Magnitude Earthquake Ground Motions Predicted by Cyershake Simulations
Status: Selected for Funding
Sponsor: Southern California Earthquake Center
Role: PI
Collaborator: Jonathan P. Stewart, UCLA
Amount: $35,000
Dates: February 2022 – April 2023
Brief: This project aims to investigate the reason(s) for the mismatch between spectral values obtained from 3D simulated and recorded ground motions in Southern California. The outcomes of the project will be a revelation into the physical mechanism controlling source and path effects in ground motions as described by simulations and an update/enhancement of the simulation platform components.

Assessment of Usable Parameter Ranges for CSN and CSMIP Ground Motion Data to Support Ground Motion Modeling and Emergency Response Applications
Status: Selected for Funding
Sponsor: California Strong Motion Instrumentation Program, Division of Mines and Geology, California Department of Conservation
Role: Co-PI (PI: Jonathan P. Stewart, UCLA; Co-PI's: Yousef Bozorgnia, UCLA; Monica Kohler, Caltech)
Amount: $79,835 (USC Portion: $14,000)
Dates: October 2021 – September 2022
Brief: This project focuses on establishing usable distance and frequency bandwidths that outline the applicable limits of the CSN (Community Seismic Network) data to leverage it as a component of future ground motion databases. The outcomes of the project will be an enrichment of available data, increased efficacy of model developments, ability to improve upon emergency response applications, opportunity to better understand ground motion mechanics and the driving factors in seismic hazard.

Site Amplification in San Francisco Bay Region Sedimentary Basins
Status: Selected for Funding
Sponsor: United States Geologic Survey
Role: PI
Amount: $30,000
Dates: July 2022 – June 2023
Brief: This project focuses on developing an updated sedimentary basin seismic site response model for the San Francisco Bay Area/ Northern California region. It will follow-up on similar work performed for Southern California where geomorphic features are introduced to capture lateral extent and variability in ground motion hazard. The project is a collaboration with UCLA.

STUDENTS

Graduate Students

- Piyush Vyas [3rd year PhD]
  Tentative Topic: *Dynamic Properties of Bio-cemented Sands using Enzyme Induced Calcite Precipitated (EICP) and Microbial Induced Calcite Precipitation (MICP).*

- Rashid Shams [2nd year PhD]
  Tentative Topic: *Path Effects in Seismic Site Response of Sedimentary Basins*

- Sajan K. C. [2nd year PhD]
  Tentative Topic: *3D Simulated Earthquakes and Deep Site Response*.

- Chukwuma Okonkwo [1st year PhD]
  Tentative Topic: *Investigating Site Parameters Beyond V_{S30} and z_x for Site Response in Sedimentary Basins: Focus on Basin Edge Effects using HVSR.*

Postdoctoral Researchers

- Kil-Wan Ko [October 2022 – October 2023]
  Tentative Topic: *Liquefaction Effects on Soil-Foundation-Structure Interactions via Analytical and Numerical Methods.*

Undergraduate Students

- Alexander Quiachon [Summer 2022]
  Tentative Topic: *Seismic Site Characterization: Horizontal to Vertical Spectral Ratio (HVSR) for Determination of Site Period.*

- Hilary Keuni [Fall 2022 – Spring 2023]
  Tentative Topic: *Variability in the Biocementation Chemical Reaction and the Impacts to Mechanical Properties of Biocemented Sands*.

- Anna Babchanik [Summer 2023]
  Tentative Topic: *Uncertainty in Repeatability of HVSR Ordinates in Non-Basin and Basin Sites.*

- Oscar Sosa Cordova [Summer 2023]
  Tentative Topic: *Micro CT Processing of Biocemented Sands Treated with and without Confinement.*

- Beatrice Tinoco [Summer 2023]
  Tentative Topic: *Characterization of Biocemented Sands*

PUBLICATIONS

(ORCID**:** https://orcid.org/0000-0002-8939-571X
Google Scholar: https://scholar.google.com/citations?user=8Jh86roAAAAJ&hl=en)
*Underlined Name with: * indicates Graduate Advisee; ** indicates Postdoc Mentee; dashed underline is PI*

Journals (Published)

2023:

Ikeagwuani, C. C., **Nweke, C. C.**, & Onah, H. N. (2023). Prediction of resilient modulus of fine-grained soil for pavement design using KNN, MARS, and random forest techniques. *Arabian Journal of Geosciences*, 16(6), 388. https://doi.org/10.1007/s12517-023-11469-z

Carey, T. J., Mason, H. B., Asimaki, D., Athanasopoulos-Zekkos, A., Garcia, F. E., Gray, B., Lavrentiadis, G., & **Nweke, C. C.** (2023). "The 2022 Chihshang, Taiwan, Earthquake: Initial GEER Team Observations". *Journal of Geotechnical and Geoenvironmental Engineering*, 149(5), 02823002. https://doi.org/10.1061/JGGEFK.GTENG-11522

2022:

Nweke, C.C., Stewart, J.P., Wang, P., Brandenberg, S.J., (2022) "Site Response of Sedimentary Basins and other Geomorphic Provinces in Southern California" *Earthquake Spectra*. https://doi.org/10.1177/87552930221088609

Nweke, C.C., Stewart, J.P., Graves, R.W., Goulet, C.A., Brandenberg, S. J. (2022) "Validating Predicted Site Response in Sedimentary Basins from 3D Ground Motions Simulations" *Earthquake Spectra*. https://doi.org/10.1177/87552930211073159

Omoya, M., Ero, I., Zaker Esteghamati, M., Burton, H.V., Brandenberg, S.J., Sun, H., Yi, Z., Kang, H., **Nweke, C.C.** (2022) "A Relational Database to Support Post-Earthquake Building Damage and Recovery Assessment" *Earthquake Spectra*. https://doi.org/10.1177/87552930211061167

2021:

Goulet, C. A., Wang, Y., **Nweke, C. C.**, Tang, B., Wang, P., Hudson, K. S., Ahdi, S. K., Meng, X., Hudson, M. B., Donnellan, A., Lyznega, G., Brandenberg, S. J., Stewart, J. P., Gallien, T., Winters, M. A., Hudnut, K. W. (2021) "Comparison of Near-Fault Displacement Interpretations from Field and Aerial Data for the **M**6.4 and **M**7.4 Ridgecrest Earthquake Sequence Ruptures", *Bull. Seismol. Soc. Am*. 111 (5), 2317–2333, doi: 10.1785/0120200222

Ikeagwuani, C. C., Nwonu, D.C., **Nweke, C. C.** (2021) "Resilient modulus descriptive analysis and estimation for fine-grained soils using multivariate and machine learning methods", *International Journal of Pavement Engineering*, 0 (0), 1-16, https://doi.org/10.1080/10298436.2021.1895993

2020:

Ahdi, S.K., S. Mazzoni, T. Kishida, P. Wang, **C. C. Nweke**, N. M. Kuehn, V. Contreras, B. Rowshandel, J. P. Stewart, and Y. Bozorgnia (2020). "Engineering Characteristics of Ground Motions Recorded in the 2019 Ridgecrest Earthquake Sequence", *Bull. Seismol. Soc. Am*. 110 (4), 1474–1494, doi: 10.1785/0120200036

Zimmaro, P., **C. C. Nweke**, J. L. Hernandez, K. S. Hudson, M. B. Hudson, S. K. Ahdi, M. L. Boggs, C. A. Davis, C. A. Goulet, S. J. Brandenberg, et al. (2020). "Liquefaction and Related Ground Failure from July 2019 Ridgecrest Earthquake Sequence", *Bull. Seismol. Soc. Am*. 110 (4), 1549–1566, doi: 10.1785/0120200025

Brandenberg, S. J., Stewart, J. P., Wang, P., **Nweke, C. C.**, Hudson, K., Goulet, C. A., Meng, X., Davis, C. A., Ahdi, S. K., Hudson, M. B., Donnellan, A., Lyyzenga, G., Pierce, M., Wang, J., Winters, M. A., Delisle, M., Lucey, J., Kim, Y., Gallien, T. W., Lyda, A., Yeung, J. S., Issa, O., Buckreis, T. (2020). "Ground Deformation Data from GEER Investigations of Ridgecrest Earthquake Sequence". *Seismological Research Letters*. 110 (4), 2024-2034, https://doi.org/10.1785/0220190291

Mangalathu, S., Sun, H., **Nweke, C. C.**, Yi, Z., & Burton, H. V. (2020). "Classifying earthquake damage to buildings using machine learning". *Earthquake Spectra*, 36(1), 183–208. https://doi.org/10.1177/8755293019878137

Journals (Accepted)

Journals (Submitted)

**Ko, K., Kayen, R. E., Kokusho, T., Makbule, I., Nozu, A., Nweke, C. C. "*Energy-Based Liquefaction Evaluation: A Case Study at the Port of Kushiro, Hokkaido, 2003 Tokachi-Oki Earthquake*" Submitted to the ASCE Journal of Geotechnical and Geoenvironmental Engineering.

**Ko, K., Kayen, R. E., Nweke, C. C. "*Estimation of Timing of Liquefaction Using Spectral Energy Ratio*" Submitted to the ASCE Journal of Geotechnical and Geoenvironmental Engineering.

Conference Papers

2023:

Stewart, J. P., Mohammed, S., **Nweke, C. C.**, *Shams, R., Buckreis, T. E., Kohler, M. D., & Bozorgnia, Y. (2023). *Comparison of Ground Motions from CSN Instruments and Proximate Sensors from Other Networks*. Proceedings of SMIP23 Seminar on Utilization of Strong Motion Data. https://www.conservation.ca.gov/cgs/documents/program-smi/seminar/SMIP23-P6-Paper-by-Stewart.pdf

Buckreis, T. E., **Nweke, C. C.**, Wang, P., Brandenberg, S. J., Mazzoni, S., & Stewart, J. P. (2023). "*Relational Database for California Strong Ground Motions*". In Geo-Congress 2023 (pp. 461-470). https://doi.org/10.1061/9780784484692.047

2022:

Birkel, B. C., Vidale, J. E., & **Nweke, C. C.** (2022, December). "*Comparison of Observed and Simulated Ground Motions in the Los Angeles Basin*". In AGU Fall Meeting Abstracts (Vol. 2022, pp. S45B-04).

Brandenberg, S. J., Goulet, C. A., Zimmaro, P., Wang, Y., **Nweke, C. C.**, Tang, B., Wang, P., Hudson, K. S., Ahdi, S. K., Meng, X., Hudson, M. B., Donnellan, A., Lyznega, G., Stewart, J. P., Gallien, T., Winters, M. A. (2022) "*Fault Rupture and Liquefaction Feature Mapping with Unmanned Aerial Systems after the Ridgecrest Earthquake Sequence*." In 12NCEE 2022.

Nweke, C.C., Stewart, J.P., Wang, P., Brandenberg, S.J., (2022) "*Sedimentary Basin Site Response for Different Basin Types in Southern California.*" In 12NCEE 2022. https://escholarship.org/uc/item/6vh7q486

Nweke, C.C., Davis, C.A., Hudson, K.S., Hudnut, K.W., Brandenberg, S.J., Stewart, J.P. (2022) "*Performance of Water Pipelines at Fault Crossings From the 2019 Ridgecrest Earthquakes*", In *Lifelines 2022: San Fernando Earthquake Conference – 50 Years of Lifeline Engineering* (pp. 343-355), ASCE Infrastructure Resilience at University of California, Los Angeles, February 7-11, 2022. https://www.doi.org/10.1061/9780784484449.031

Ahdi, S.K., Stewart, J.P., Kwak, D., Zimmaro, P., **Nweke, C.C.**, Hudson, K.S., Yong, A.K., Brandenberg, S.J., Hudson, M.B., Bozorgnia, Y. (2022) "*Seismic Site Characterization Data for Lifelines and Other Applications – A 50 Year Retrospective in Los Angeles, California*", In *Lifelines 2021/2022: San Fernando Earthquake Conference – 50 Years of Lifeline Engineering* (pp. 186), ASCE Infrastructure Resilience at University of California, Los Angeles, February 7-11, 2022. https://www.doi.org/10.34948/N3QP4X

2018:

Nweke, C.C., Wang, P., Brandenberg, S.J., Stewart, J.P., (2018). "*Reconsidering Basin Effects in Ergodic Site Response Models*", Proc. SMIP2018 Seminar on Utilization of Strong Motion Data, California Strong Motion Instrumentation Program, Sacramento, CA. https://escholarship.org/content/qt6048v74k/qt6048v74k.pdf

Nweke, C. C., & Pestana, J. M. (2018). "*Modeling Bio-Cemented Sands: A Strength Index for Cemented Sands*." In *IFCEE 2018* (pp. 48-58). https://doi.org/10.1061/9780784481592.006

2017:

Nweke, C. C., & Pestana, J. M. (2017). "*Modeling Bio-Cemented Sands: Shear Strength and Stiffness with Degradation*." In *Grouting 2017* (pp. 34-45). https://doi.org/10.1061/9780784480793.004

Technical Reports

2023:

Stewart, J. P., Mohammed, S., **Nweke, C. C.**, *Shams, R., Buckreis, T. E., Kohler, M. D., & Bozorgnia, Y. (2023) "*Usability of Ground Motions Recorded by Community Seismic Network* UCLA B. John Garrick Institute for the Risk Sciences Report GIRS-2023-08, doi: 10.34948/N36K5M, https://doi.org/10.34948/N36K5M

2022:

Burton, H. V., Dwima, S., Gho, D., Guan, X., Gunay, S., Gupta, A., Khalil, Z., Kusumayani, N., Marinkovic, M., Merino, Y., **Nweke, C. C.**, Safiey, A., Mosalam, K. (2022) "*StEER 2022*

Mw 5.6 Indonesia Earthquake Preliminary Virtual Reconnaissance Report (PVRR)", in StEER November 21, 2022, Indonesia, Mw 5.6 Earthquake. DesignSafe-CI. v1 https://doi.org/10.17603/ds2-e2vq-nq61

2020:

Nweke, C.C., Stewart, J.P., Brandenberg, S.J., (2020). "*Site Response of Southern California Sedimentary Basins and Other Geomorphic Provinces*." UCLA B. John Garrick Institute for the Risk Sciences Report GIRS-2020-12, doi: 10.34948/N3159F, https://www.risksciences.ucla.edu/girs-reports/2020/12

2019:

Stewart, J.P., **Nweke, C.C.,** Goulet, C.A., Graves, R.W., (2019) "*CyberShake Simulation Validation using Ground Motion Recordings*." Southern California Earthquake Center Report SCEC-18136, https://www.scec.org/proposal/report/18136

Stewart, J.P. (ed.), Brandenberg, S.J., Wang, Pengfei, **Nweke, C.C.**, Hudson, K., Mazzoni, S., Bozorgnia, Y., Hudnut, K.W., Davis, C.A., Ahdi, S.K., Zareian, F., Fayaz, J., Koehler, R.D., Chupik, C., Pierce, I., Williams, A., Akciz, S., Hudson, M.B., Kishida, T., Brooks, B.A., Gold, R.D., Ponti, D.J., Scharer, K.M., McPhillips, D.F., Ericksen, T.., Hernandez, J., Patton, J., Olson, B., Dawson, T., Treiman, J., Duross, C.B., Blake, K., Buchhuber, J., Madugo, C., Sun, J., Donnellan, A., Lyzenga, G., and Conway, E., (2019). "*Preliminary report on engineering and geological effects of the July 2019 Ridgecrest Earthquake sequence: Geotechnical Extreme Events Reconnaissance Association Report"* GEER-064, https://doi.org/10.18118/G6H66K.

Stewart, J.P., **Nweke, C.C.**, Wang, P., Bozorgnia, Y., Brandenberg, S.J., (2019). "*Effects of Factors Beyond Sediment Depth on Site Response in Southern California Basins*" Report prepared for the California Department of Transportation.

2015:

Weber, J.P., Seed, R.B, Pestana, J. M., Moss, R.E.S., **Nweke, C.C.**, Deger, T.T., Chowdhury, K. (2015). *"Engineering Evaluation of Post Liquefaction Residual Strength."* Vol. 1&2. 400 pages. Report prepared for U.S. Nuclear Regulatory Commission.

Published Database

2022:

Burton, H. V., Dwima, S., Gho, D., Guan, X., Gunay, S., Gupta, A., Khalil, Z., Kusumayani, N., Marinkovic, M., Merino, Y., **Nweke, C. C.**, Safiey, A., Mosalam, K. (2022) "*2022 Mw 5.6 Indonesia Earthquake Media Repository*", in StEER November 21, 2022, Indonesia, Mw 5.6 Earthquake. DesignSafe-CI. v1 https://doi.org/10.17603/ds2-e2vq-nq61

Nweke, C.C., Stewart, J.P., Wang, P., Brandenberg, S.J., Buckreis, T.E. (2022) "*Data Files for Ground Motion Studies Pertaining to Southern California Basins and Other Geomorphic Provinces*" Designsafe-CI. https://doi.org/10.17603/ds2-93rk-hz83

2021:

Omoya, M., Ero, I., Esteghamati, M.Z., Burton, H.V., Brandenberg, S.J., **Nweke, C.C.** (2021) "*Relational Database for Post-Earthquake Damage and Recovery Assessment: 2014 South Napa Earthquake*" Designsafe-CI. https://doi.org/10.17603/ds2-3nvj-4127

2019:

Nweke, C., Graves, R., Goulet, C.A., Brandenberg, S. Stewart, J. (2019) "*Forward Simulation of Earthquakes in Southern California with UCVMs*", in Southern California Earthquake Center (SCEC) Simulation Validation for Southern California Basins using Ground Motion Recordings. DesignSafe-CI. https://doi.org/10.17603/ds2-762f-sg15.

Brandenberg, S.J., Goulet, C.A., Wang, P., **Nweke, C.C.**, Davis, C.A., Hudson, M.B., Hudson, K.S., Ahdi, S.K., and Stewart, J.P. (2019). "*GEER Field Reconnaissance*." In Ridgecrest, CA Earthquake Sequence, July 4 and 5, 2019, Designsafe-CI. https://doi.org/10.17603/DS2-VPMV-5B34.

Media Articles

Katherine Kornei, (December 2021) "Earthquakes Ripple Through 3D Printed Models of Los Angeles", EOS, Science News by The American Geophysical Union. https://eos.org/articles/earthquakes-ripple-through-3d-printed-models-of-los-angeles

Nweke C.C., (November 2020) "Civil & Environmental Engineering Postdoc Recounts Journey from Nigeria". UCLA Samueli Newsroom. https://samueli.ucla.edu/civil-environmental-engineering-postdoc-recounts-journey-from-nigeria/

Gardner, M., Lanzafame, R., Cohen-Waeber, J., **Nweke, C. C.**, (April 2018). *Lessons learned from Geolegends: Richard E. Goodman, PhD, NAE*. Geostrata – Geo Institute of ASCE, 22(2) pp. 26-30,32-33.

PRESENTATIONS

Invited Lectures and Seminars

Nweke, C. C., *Geometric Parameterization of Southern California Sedimentary Basins for Site Response Analysis and Modeling*. Presentation for the Civil Engineering Geosystems Group Lecture Series at the University of California, Berkeley [February 2024]

Nweke, C. C., *Reconciling Bias in Moderate Magnitude Earthquake Simulations: Validation and Calibration of Physics-Based Ground Motion Simulations in Southern California*. Presentation for Structural Engineering and Mechanics Seminar at Stanford University [January 2024]

Nweke, C. C., *Data Science in Geotechnical Earthquake Engineering: Seismic Site Response of Sedimentary Basins*. Presentation in the session titled "Emerging modeling techniques in geotechnical earthquake engineering: Research to practice" for the 8th Annual ASCE Geo-Institute Web Conference [December 2023]

Nweke, C. C., *Geometric Parameterization of Sedimentary Basins for Site Response Analysis and Modeling*. Presentation (Lightening) in the "Advancement in Modeling Physical Impacts of Disasters Track for the 2023 Researcher Meeting (48th Annual Natural Hazards Research and Applications Workshop) hosted by the Natural Hazards. Center and the Natural Hazards Engineering Research Infrastructure (NHERI) CONVERGE Facility, held in Broomfield, CO [July 2023]

Nweke, C. C., Stewart, J.P., Brandenberg, S.J., *Pending Study on Regional Site Response in The Greater San Francisco Bay Area*. Presentation for the San Francisco – Bay Area Community Velocity Model (SF-CVM) Workshop hosted by the United States Geologic Survey (USGS) [February 2023]

Nweke, C. C., *Seismic Site Response in Southern California Sedimentary Basins*. Presentation for the Department of Earth Sciences Seminar at the University of Southern California [February 2023]

Nweke, C. C., *Seismic Site Response in Southern California Sedimentary Basins*. Presentation for the 2023 Geo-Congress Sneak Preview Seminar Series Hosted by the American Society of Civil Engineers Geo-Institute (ASCE-GI) [December 2022] Video Link.

Nweke, C. C., *Seismic Site Response in Sedimentary Basins*. Presentation for the Fall Seminar Series Hosted by the Geotechnical Graduate Student Society (GGSS) of the Civil and Environmental Engineering Department at the University of California, Davis (UCD) [October 2022]

Nweke, C. C., *Seismic Hazard Parameters for Site Response Analysis and Assessment: Basin Effects*. Presentation for the Geotechnical Site Characterization Seminar Hosted by ASCE Orange County Geo-Institute at Irvine, CA [July 2022]

Nweke, C. C., *Seismic Site Response in Sedimentary Basins*. Presentation for the Spring Seminar Series Hosted by the Geotechnical group of the Department of Structural Engineering at the University of California, San Diego (UCSD) [May 2022]

Nweke, C. C., *Seismic Site Response in Sedimentary Basins*. Presentation for the Spring Seminar Series Hosted by the Geotechnical group of the Department of Civil and Environmental Engineering at the University of Washington (UW) [April 2022]

Nweke, C. C., *Seismic Site Response in Sedimentary Basins*. Presentation for the Fall Seminar Series Hosted by the Department of Civil and Environmental Engineering at the University of California, Irvine (UC Irvine) [November 2021]

Nweke, C. C., *Seismic Site Response in Sedimentary Basins*. Presented to the Seismo Lab at the California Institute of Technology (Caltech) [October 2021]

Nweke, C. C., *Site Response of Sedimentary Basins and other Geomorphic Provinces in Southern California*. Presented to the Community Seismic Network Group at the California Institute of Technology (Caltech) [August 2021]

Nweke, C. C., *Sedimentary Basin Effects in Ground Motions from Empirical Models and Simulation Platforms*. Presented at the Department of Civil and Environmental Engineering Seminar Series at Rensselaer Polytechnic Institute [April 2021]

Nweke, C. C., *Seismic Site Response in Sedimentary Basins and Other Geomorphic Domains*. Presented to the Geotechnical group at University of Massachusetts, Darthmouth [November 2020]

Nweke, C. C., *Sedimentary Basin Effects in Ground Motions from Empirical Models and Simulation Platforms*. Presented at the Earthquake Seminar Series (https://earthquake.usgs.gov/contactus/menlo/seminars/1297) to the Earthquake Science Center at United States Geologic Survey [September 2020]

Nweke, C. C., *Basin Effects in Simulated and Observed Ground Motions for Southern California*. Presented to the ARUP Geotechnical Group [May 2020]

Nweke, C. C., *Nature & Infrastructure Harmony – Resilient methods, Reliable systems, and Resilient Design: Seismic Hazards.* Presented at the Department of Biosystems and Agricultural Engineering Seminar, University of Kentucky [September 2019]

Nweke, C. C., *A Constitutive Model for Weakly Cemented Sands.* Presented at the Geotechnical Graduate Students Society Seminar, University of California, Davis [February 2019]

Nweke, C. C., *Reconsidering Basin Effects in Ergodic Site Response Models.* Presented at the Geotechnical Lecture Series, Oregon State University [February 2019]

Nweke, C. C., *Nature & Infrastructure Harmony – Resilient methods, Reliable systems, and Resilient Design: Seismic Hazards.* Presented at the Sonny Astani Department of Civil and Environmental Engineering Seminar, University of Southern California [January 2019]

Nweke, C. C., *Reconsidering Basin Effects in Ergodic Site Response Models.* Presented at the Civil Engineering Seminar Series, Loyola Marymount University [November 2018]

Nweke, C. C., *The Life and Experience of an Engineer who is Black in Academia.* Presented at the Civil Engineering Seminar Series, Loyola Marymount University [November 2018]

Nweke, C. C., *Constitutive Modeling of Weakly Cemented Sands*. Presented at the Samueli School of Engineering Civil Engineering Seminar Series, University of California, Irvine [October 2018]

Nweke, C. C., *Constitutive Modeling of Weakly Cemented Sands*. Presented at the 2018 California Alliance Retreat, Berkeley CA

Nweke, C. C. and Pestana, J. M. *Modeling Bio-Cemented Sands: A Strength Index for Cemented Sands.* Presented at the 2017 RIT Future Faculty Career Exploration Program

Guest Lectures

"Natural Hazards – Earthquakes: Impacts to Infrastructure and Communities", CE-EC 100: Geologic Hazards and Pop Culture – Myths Versus Reality, Boise State University [Fall 2021, Fall 2023]

"*Shear Strength of Sands and Clays*", CEE220: Advanced Soil Mechanics, University of California, Los Angeles [Fall 2018]

"*Numerical Modeling In Foundation Engineering using PLAXIS2D and 3D*", CIVL411: Foundations, Loyola Marymount University [Spring 2018]

"*Consolidation in soft soils*" CEE120: Principles of Soil Mechanics, University of California, Los Angeles [Fall 2017]

Conference Presentations

Nweke, C. C., Stewart, J. P., Wang, P., Brandenberg, S. J., *Sedimentary Basin Site Response for Different Basin Types in Southern California*. Presented at the 12th National Conference on Earthquake Engineering (12NCEE) in Salt Lake City, UT [June 2022]

Nweke, C. C., *Basin Effects in Simulated and Observed Ground Motions for Southern California*. Presented at Consortium of Organizations for Strong Motion Observation Systems (COSMOS) Technical Session [January 2021]

Nweke, C. C., *Basin Effects in Simulated and Observed Ground Motions for Southern California*. Presented at the 2020 National Earthquake Conference in San Diego [March 2020]

Nweke, C. C., *Not the Big One, But some Good Ones: Strong Motion Data and Geotechnical Engineering Impacts from the Ridgecrest Earthquake Sequence*. Presented at the Geo-PIT Speaker Series during the 2020 GeoCongress in Minneapolis [February 2020] Video Link.

Nweke, C. C., *Sedimentary Basin Amplification in Southern California Based on Physics-Based Simulations*. Presented at the Le Val Lund Student Symposium, California Institute of Technology [November 2019]

Nweke, C. C., *Sedimentary Basin Amplification in Southern California Based on Physics-Based Simulations*. Presented at the NSF Alliance for Graduate Education and the Professoriate (AGEP) Research Exchange Retreat, Mechanical and Civil Engineering, Stanford University [October 2019]

Nweke, C. C., *Reconsidering Basin Effects in Ergodic Site Response Models.* Presented at the 2019 Annual Pacific Earthquake Engineering Research (PEER) Meeting, University of California, Los Angeles [January 2019]

Stewart, J. P., and Nweke, C. C., *Reconsidering Basin Effects in Ergodic Site Response Models*. Presented at the Le Val Lund Student Symposium, University of Southern California [November 2018]

Nweke, C. C. and Pestana, J. M. *Modeling Bio-Cemented Sands: A Strength Index for Cemented Sands.* Presented at the 2018 International Foundation Congress and Equipment Exposition (IFCEE 2018**)**

Nweke, C. C. and Pestana, J. M. *Modeling Bio-Cemented Sands: Shear Strength and Stiffness with Degradation.* Presented at the 2017 Grouting Conference

Panels and Media

"*Impacts of Natural Hazards of Infrastructure*", The Geotechnical Engineering Podcast [November 2022] Video Link.

"*Maximizing your PhD: Preparing for Academia or Industry*", 44th Annual Convention, National Society of Black Engineers [March 2018]

TEACHING EXPERIENCE

University of Southern California, Civil and Environmental Engineering Department

Instructor

CE 599: Ground Vibrations and Response [Spring 2024]
Characterizing ground vibration hazards; wave propagation in subsurface materials, earthquakes, ground failures, and ground response assessment through mixed models, causal inference, and spatial statistics.

CE 482: Subsurface Foundation Design [Fall 2022]
Site exploration and characterization; analysis and design of structural foundations, including spread footings, mats, piles and drilled shafts; retaining wall and braced excavation design.

University of California, Los Angeles, Civil and Environmental Engineering Department

Instructor

ENGR 87: Introduction to Engineering Disciplines [Fall 2018; Fall 2019]
Part of a group of four instructors leading a course for freshman engineering students to explore differences between engineering disciplines and the functions engineers perform. We instruct students on the required skills (computer programming, analysis techniques, etc.), and coordinated teams to enable further development.

University of California, Berkeley, Civil and Environmental Engineering Department

Graduate Student Instructor/Teaching Assistant

ENG 7: Introduction to Computer Programming [Spring 2016]
CE 270: Advanced Geomechanics [Fall 2015]

Reader/Grader

CE 130/ME 85: Introduction to Solid Mechanics [Summer 2014]
CE 275: Geotechnical Earthquake Engineering [Fall 2013]

Citizens Schools at the United for Success Academy, Oakland CA

Volunteer "After School" Teacher

Dam Well Done, [Spring 2013]
Designed and executed lesson plans to teach middle school students (mixed class of 6^{th} – 8^{th} graders) how to build a miniature Mechanically Stabilized Earth Retaining Wall (MSE Wall) using a prefabricated wooden box filled with beach sand, a poster board for the wall, and Kraft paper for reinforcing strips.

Los Padrinos Juvenile Detention School, Downey CA

Tutor, [Summer 2009]
Served as an additional teaching source for student inmates. Assisted in executing lesson plans for Math and Science curriculum. Focus was placed on Pre-Algebra, Algebra, Geometry, Biology, and Pre-Physics.

LEADERSHIP AND PROFESSIONAL AFFILIATIONS

Professional Memberships and Affiliations:

- Seismological Society of America (SSA), **Member** [2022 – Present]
- Earthquake Engineering Research Institute (EERI), **Member** [2018 – Present]
- Consortium of Organizations for Strong Motion Observation Systems (COSMOS):
  - **Member** [2021 – Present]
  - Early Career and Student Engagement Committee**, Member** [2021 – Present]
- National Center for Faculty Development and Diversity, **Member** [2017 – Present]
- Geotechnical Extreme Event Reconnaissance (GEER), **Member** [2016 – Present]
  - 2019 Ridgecrest Earthquake Sequence (Ridgecrest Earthquake events, **M**6.4 & **M**7.1) Reconnaissance Team.
- Geo-Institute
  - **Member** [2012 – Present]
  - Soil Properties and Modeling Technical Committee, **Member** [2017 – Present]
  - Earthquake Engineering and Soil Dynamics Committee, **Member** [2019 – Present]
- American Society of Civil Engineers (ASCE), **Member** [2010 – Present]
- National Society of Black Engineers (NSBE):

- **Member** [2010 – Present]
- Region Six **Programs Chair** [2011 – 2012]

Academic Service (Peer Reviewer):

Journals

- ASCE Natural Hazards Review Journal: 2019, 2020, 2021, 2022
- Earthquake Spectra: 2021, 2023
- ASCE Journal of Geotechnical and Geoenvironmental Engineering: 2021, 2023
- Seismological Research Letters: 2022
- Earthquake Engineering and Structural Dynamics: 2022
- Geophysical Journal International: 2023
- Nature Natural Hazards Journal: 2023

Conferences

- Conference paper **reviewer**, 2022 Geo-Congress in Los Angeles, ASCE Geo-Institute Earthquake Engineering & Soil Dynamics, Soil Properties & Modeling Committee [2022 – 2023]
- Conference paper **reviewer**, 2022 12NCEE in Salt Lake City, Earthquake Engineering Research Institute [2021 – 2022]
- Conference paper **reviewer**, 2020 Geo-Congress in Minneapolis, ASCE Geo-Institute Soil Properties & Modeling Committee [2019 – 2020]
- Conference paper **reviewer**, 2018 IFCEE Conference in Orlando, ASCE Geo-Institute Soil Properties & Modeling Committee [2017 – 2018]

Proposals

- United States Geologic Survey (USGS) Earthquake Hazard Program (EHP): 2021
- National Science Foundation: 2023, 2024

Leadership and Other Affiliations:

- National Science Foundation (NSF) California Alliance Community Engagement Board, **Member** [2018 – 2020]
- Black Graduate Engineering and Science Students Association, UC Berkeley:
  - **Communications Chair** [2015 – 2017]
  - **Member** [2012 – 2017]
- American Society of Civil Engineers Mid-Pac Geo-Challenge Team (ASCE), UC Davis, **Captain** [2010 – 2012]
- Black Engineers Association, University of California, Davis NSBE Chapter:
  - **Member** [2010 – 2012]
  - **President** [2010 – 2011]

DISTINCTIONS AND AWARDS

2023 Outstanding Reviewer, EERI Earthquake Spectra Journal. One of 10 selected worldwide

Editor's Choice Paper, EERI Earthquake Spectra Journal for "*Site Response of Sedimentary Basins and other Geomorphic Provinces in Southern California*" [Nov. 2022]

2021 – 2022 Provost Faculty Fellowship, University of Southern California

2020 Georgia Institute of Technology Focus Fellow

National Science Foundation (NSF) Alliance for Graduate Education and the Professoriate (AGEP); California Alliance Postdoctoral Fellow: UCLA; [2017 – 2020]

2017 University of Michigan NEXTProf Participant

2017 Rochester Institute of Technology Future Faculty Career Exploration Program Participant
One of seventeen selected

NSF Leverage Awardee and Participant; NSF Grants #1649384 & #1548322 (2016, 2017, 2018, 2019)

University of California (UC) Dissertation Award Fall 2016 – Spring 2017
One of twelve awarded

NSF Bridge-to-Doctorate Fellowship Fall 2012 – Spring 2014
One of nine awarded

Ford Foundation Fellowship 2016 Dissertation Competition, Honorable Mention

SERVICE

- **Coordinator/Host**, COSMOS Early Career Professionals and Student Meeting at The Sonny Astani Department of Civil and Environmental Engineering, University of Southern California. [November 2023]
- **Moderator**, "Innovations in Hazard Modeling" Session, 2023 Researchers Meeting at the 48th Annual Natural Hazards Research and Applications Workshop
- **Member**, USC Civil and Environmental Engineering Department Seminar Committee [2021-Present]
- **Coordinator**, Seismological Society of America (SSA) 2022 Session: "*The Effects of Sedimentary Basins on Earthquake Ground Motions*"
- **Co-coordinator,** Consortium of Organizations for Strong Motion Observation Systems (COSMOS) 2021 Technical Session: "*Early Career and Students Session Panel*" Sponsored by FEMA

- **Chair,** Site Response and Data Session at the ASCE Geo-Congress 2023 in Los Angeles

OUTREACH

- **Faculty Mentor**, CURVE (Center for Undergraduate Research in Viterbi Engineering) USC, Student: Hilary Keuni [Fall 2022 – Spring 2023]
- **Faculty Mentor**, SURE (Summer Undergraduate Research Experience) USC, Student: Alex Quiachon [Summer 2022], Anna Babchanik [Summer 2023], Oscar Sosa Cordova [Summer 2023], Beatrice Tinoco [Summer 2023]
- **Mentor**, SMASH (Summer Math and Science Honor Academy) UCLA [Summer 2019, 2020]
- **Coordinator**, UCLA Semiconductor Research Corporation (SRC) Summer Research Program [Summer 2019]
- **Coordinator**, UCLA Summer Bridge Review for Enhancing Engineering Students (BREES) [Summer 2018]
- **Mentor**, Engineering 87 (E87) – Introduction to Engineering Disciplines, UCLA Center for Excellence in Engineering Diversity (CEED) [Fall 2017]
- **Mentor**, Sankofa Academy Mentor Moments Program for 6^{th} – 8^{th} grade, Oakland CA [Spring 2017]
- **Mentor**, Chevron E-Bike Volunteer at Richmond High School, Richmond, CA [February – April, 2014]
- **Tutor**, Citizens Schools Volunteer for 6^{th} and 7^{th} grade at United for Success Academy, Oakland, CA [February – April, 2013]