

John P. Cornthwaite

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Education:

Rice University, Department of Earth, Environmental, and Planetary Science, Houston, TX, USA

- 2022 Ph.D., Earth Science: “Tectonic Evolution of the South Caribbean-Northwest South America Subduction Zone”

Georgia Southern University, Department of Mathematical Science, Statesboro, GA, USA

- 2013 M.S., Mathematics: “Pressure Poisson method for the incompressible Navier-Stokes equations using Galerkin finite elements”

Rice University, Department of Computational and Applied Mathematics, Houston, TX, USA

- 2003 B.A., Computational and Applied Mathematics

Rice University, Department of Civil and Environmental Engineering, Houston, TX, USA

- 2003 B.A., Environmental Engineering

Work and Research Experience:

Rice University, Department of Earth, Environmental, and Planetary Science, Houston, TX, USA

- 2014-2022 **Graduate Research Assistant.** Analyzed and organized large data sets to address regional questions to build a plausible geological history supported by detailed modeling. Utilized advanced skills in seismic imaging, numerical modeling, ArcGIS, machine learning, and deep learning methodologies. Presented key information at international conferences.

Key Achievements:

- Increased 3-fold the number of detected earthquakes in regional study using deep learning to detect earthquakes and classify seismic phases.
- Demonstrated utility of data mining active seismic data to detect micro earthquakes during induced seismicity.
- Built robust models of the subsurface using modern imaging algorithms.
- Modified curriculum to be used in the online version of ESCI 324, Earth’s Interior.

Houston Community College System, Houston, TX, USA

- 2017-2020 **Adjunct Instructor of Mathematics.** Mentored and instructed students from diverse backgrounds with a broad spectrum of personal goals. Created modules relevant to student goals while meeting department curriculum requirements. Always flexible, taught both college-ready and developmental courses including Business Calculus, Statistics, College Algebra and others.
 - Mastered the Instructure Canvas Learning Management System.
 - Successfully completed the 32-hour professional development program, Adjunct Academy.

Georgia Southern University, Department of Mathematical Science, Statesboro, GA, USA

- 2013-2014 **Visiting Instructor of Mathematics.** Integrated technology with instruction (moderated forums, video tutorials, Mathematica programming, etc.) to enhance educational outreach to a diverse population of 360 business calculus students and 60 college algebra students.

US Army, Fort Stewart, GA, USA; Fort Gordon, GA, USA;

- 2004-2011 **Project Manager** Managed projects from design to site investigations to contract

enforcement for \$2.5 million of projects including water distribution systems, recreational facilities, and school refurbishments. Coordinated with provincial and local governments, USAID, USACE, U.S. Embassy, and non-governmental organizations to synchronize humanitarian efforts with security resources.

Logistics Manager Coordinated training resources and tracked training results for 98 personnel. Enforced safety policies through-out training to zero incidents. Managed maintenance program to the best up-time in the organization.

All-source Intelligence Analyst Expert on external factors affecting Iraq security and oil & power infrastructure. Developed daily and long-term threat briefs. Held TS-SCI clearance.

Teaching Experience:

- Spring 2021 EEPS 220 Introduction to Computation in the Earth, Environment & Planetary Sciences, Teaching Assistant, Rice University
- Fall 2021 EEPS 110 Earth, Environment, & Society, Teaching Assistant, Rice University
- Spring 2020 MATH 1332 Contemporary Mathematics, HCCS
MATH 0332 Co-requisite Support for MATH 1332, HCCS
- Fall 2019 MATH 1332 Contemporary Mathematics, HCCS
MATH 0332 Co-requisite Support for MATH 1332, HCCS
- Fall 2018 MATH 1332 Contemporary Mathematics, HCCS
MATH 1342 Elementary Statistical Methods, HCCS
- Summer 2018 MATH 1314 College Algebra, HCCS
- Spring 2018 MATH 2412 Pre-Calculus, HCCS
MATH 2413 Calculus I, HCCS
- Fall 2017 MATH 1314 College Algebra, HCCS
MATH 1325 Calculus for Business and Social Sciences, HCCS
- Spring 2017 ESCI 324 Earth's Interior, Teaching Assistant, Rice University
- Summer 2014 MATH 1232 Survey of Calculus, Georgia Southern University
- Spring 2014 MATH 1232 Survey of Calculus (2 classes), Georgia Southern University
MATH 1111 College Algebra (2 classes), Georgia Southern University
- Fall 2013 MATH 1232 Survey of Calculus (5 classes), Georgia Southern University
- Summer 2013 MATH 1441 Calculus 1, Georgia Southern University
- Spring 2013 MATH 2242 Calculus 2, Teaching Assistant, Georgia Southern University
- Fall 2012 MATH 2242 Calculus 2, Teaching Assistant, Georgia Southern University

Department and Community Service:

- Fall 2021 EEPS representative at the undergraduate academic fair
- Fall 2019 EEPS representative at the undergraduate academic fair
- Fall 2015 Houston Geophysics Society: Operated booth for Earth Science Day at HMNS
- Spring 2015 Warrior 100K Mountain Bike Ride: Rebuilt bike trails for wounded veterans
- Spring 2014 Georgia Southern Math Days (high school math competition)

Awards:

- 2021 Rice University Sam P. Worden Endowed Memorial Award in Geophysics
- 2018 Rice University Torkild Rieber Award in Geology
- 2017 Rice University Alison Henning Teaching Award in Earth Science

- 2016 TABPHE Ivory Moore Graduate Scholarship
- 2015 Houston Geological Society Calvert Memorial Scholarship
- 2015 Chevron Scholarship

Certificates

- Mathematics for Machine Learning Specialization, Coursera (Imperial College London), March 2019
- Deep Learning Specialization, Coursera (DeepLearning.AI), May 2019
- Business Statistics and Analysis Specialization, Coursera (Rice University), October 2022
- Introduction to Computational Statistics for Data Scientists, Coursera (Databricks), November 2022

Practical and Analytical Proficiency:

Excel, Powerpoint, Instructure Canvas, Matlab, Python programming, TensorFlow, Mathematica, C programming, FORTRAN 90/95 programming, SQL programming, ArcGIS Pro, R Programming

Refereed Publications:

Cornthwaite, J., Bezada, M., Miao, W., Schmitz, M., Prieto, G., Dionicio, V., Niu, F., Levander, A., 2021. Caribbean Slab Segmentation beneath Northwest South America Revealed by 3-D Finite Frequency Teleseismic P-Wave Tomography. *Geochemistry, Geophysics, Geosystems*, 22 (4), e2020GC009431. <https://doi.org/10.1029/2020GC009431>

Sun, M., Bezada, M. J., **Cornthwaite, J.**, Prieto, G. A., Niu, F., and Levander, A., 2022. Overlapping slabs: Untangling subduction in NW South America through finite-frequency teleseismic tomography. *Earth and Planetary Science Letters*, v. 577, p. 117253. <https://doi.org/10.1016/j.epsl.2021.117253>

Bartal, M.F., Cornthwaite, J.A., Ghafir, D., Ward, C., Ortiz, G., Louis, A., **Cornthwaite, J.**, Chauhan, S. and Sibai, B.M., 2022. Time in range and pregnancy outcomes in people with diabetes using continuous glucose monitoring. *American Journal of Perinatology*, AAM. <http://dx.doi.org/10.1055/a-1904-9279>

Bitar, G., Cornthwaite, J.A., Sadek, S., Ghorayeb, T., Daye, N., Nazeer, S., Ghafir, D., **Cornthwaite, J.**, Chauhan, S.P., Sibai, B.M., Bartal, M.F., 2023, Continuous Glucose Monitoring and Time in Range: Association with Adverse Outcomes Among People with Type 2 or Gestational Diabetes. *American Journal of Obstetrics & Gynecology* DOI: 10.1055/s-0043-1764208

Cornthwaite, J., Miao, M., Schmitz, M., Prieto, G., Dionicio, V., Niu, F., Levander, A., IN PREPARATION, Upper mantle structure of the southern Caribbean – northwest South American subduction zone revealed by local P-wave and S-wave tomography.

Scientific Presentations and Abstracts:

Bitar, G., Cornthwaite, J.A., Sadek, S., Ghorayeb, T., Daye, N., Nazeer, S., Ghafir, D., **Cornthwaite, J.**, Chauhan, S.P., Sibai, B.M., Bartal, M.F. Pregnancy outcomes in people with diabetes using continuous glucose monitoring. SMFM Pregnancy Meeting, 2023 <https://doi.org/10.1016/j.ajog.2022.11.550>

Bartal, M.F., Cornthwaite, J.A., Ghafir, D., Ward, C., Ortiz, G., Louis, A., **Cornthwaite, J.**, Chauhan, S. and Sibai, B.M. Time in range and pregnancy outcomes in diabetic people using continues glucose monitoring. SMFM Pregnancy Meeting, 2023 <https://doi.org/10.1016/j.ajog.2021.11.394>

Cornthwaite, J., Niu, F., Levander, A., Schmitz, M., Prieto, G., Dionicio, V., 2022. Upper mantle structure of the southern Caribbean – northwest South American subduction zone. University of Utah SeisTea (talk)

Cornthwaite, J., Niu, F., Levander, A., Schmitz, M., Prieto, G., Dionicio, V., 2021. Caribbean Slab Dynamics Beneath Northwest South America from SKS and Local S Splitting. SSA Annual Meeting (talk)

- Cornthwaite, J.**, Niu, F., Levander, A., Schmitz, M., Prieto, G., Dionicio, V., 2021. Caribbean Slab Dynamics Beneath Northwest South America from SKS and Local S Splitting. EGU Annual Meeting (poster)
- Cornthwaite, J.**, Miao, W., Levander, A., Niu, F., Bezada, M., 2020. Structures in the Caribbean flat slab subduction zone, potential timing and contribution to the Laramide-style uplift of the Merida Andes. Geiss, 10/23/20 (talk)
- Cornthwaite, J.**, Miao, W., Levander, A., Niu, F., Bezada, M., 2019. Slab Tear and Fold of the Caribbean Plate beneath Northwestern South America. American Geophysical Union, Fall Meeting (poster)
- Cornthwaite, J.**, Miao, W., Levander, A., Niu, F., Bezada, M., 2018. The role of the geometry and composition of the Caribbean-South American subduction interface in the uplift of the Merida Andes. American Geophysical Union, Fall Meeting (poster)
- Cornthwaite, J.**, Meng, X., Shi, J., Begland, K., Xiong, N., Levander, A., Niu, F., 2018. Microseismic Event Detection via Two Data Mining Approaches. Rice Data Science Conference (poster)
- Cornthwaite, J.**, Meng, X., Shi, J., Begland, K., Xiong, N., Levander, A., Niu, F., 2018. Microseismic Event Detection via Two Data Mining Approaches. Department GEISS Seminar Fall Presentation (talk)
- Cornthwaite, J.**, Miao, W., Levander, A., Niu, F., Bezada, M., 2018. The role of the geometry and composition of the Caribbean-South American subduction interface in the uplift of the Merida Andes. IRESS (poster)
- Cornthwaite, J.**, Miao, W., Levander, A., Niu, F., Bezada, M., 2017. The role of the geometry and composition of the Caribbean-South American subduction interface in the uplift of the Merida Andes. American Geophysical Union, Fall Meeting (poster)
- Cornthwaite, J.**, 2017. The role of the geometry and composition of the Caribbean-South American subduction interface in the uplift of the Merida Andes. Annual Department Seminar Spring Presentation (talk)
- Cornthwaite, J.**, Levander, A., 2016. Levander Group Research: Synthetic Receiver Functions in Anticipation of CARMA Experiment. IRESS (poster)
- Cornthwaite, J.**, Zheng, S., Zhang, C., Spring, 2013. Finite element solution of the incompressible Navier-Stokes equations using a pressure Poisson equation. Georgia Southern College of Science and Math Research Day (poster)