SORAYA ALFRED

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EDUCATION

The University of Texas at Austin, Jackson School of Geosciences	PhD, Geological Sciences Advisors: Sean Gulick and Marc Hesse	Expected Graduation 2028
The University of Texas at Austin, Jackson School of Geosciences	M.S., Geological Sciences Thesis: *Modeling post-impact hydrothermal dynamics at Chicxulub crater: insights from geophysical and drilling data* Advisors: Sean Gulick and Marc Hesse	August 2024
University of South Florida	B.S., Geology Minor: Geographic Information Systems and Technology	December 2020

RESEARCH EXPERIENCE

The University of Texas Institute for Geophysics (UTIG), Austin, TX August 2024 – Present

Doctoral Research

- Building on master's thesis research and expanding exploration of mechanisms playing a role in Chicxulub's long-lived hydrothermal system (via modeling work and experimental methods)

The University of Texas Institute for Geophysics (UTIG), Austin, TX August 2022 – August 2024

Graduate Research Fellow

- Developed numerical model for hydrothermal circulation at Chicxulub Crater using MATLAB software and data from IODP-ICDP Expedition 364 data
- Assisted with processing of seismic data from Expedition 364 using Paradigm

University of the West Indies, St. Augustine, Trinidad March 2021 – March 2022

Research Assistant

- Assisted faculty members and graduate students with data acquisition including collecting weekly soil samples and rainwater samples for isotope analysis, conducting surveys using a permeameter to better understand soil properties followed by lab analyses including organic content measurements
- Utilized GIS software to assist with ongoing temperature and precipitation research

University South Florida, Tampa, FL May 2020 – March 2021

Undergraduate Research Assistant

- Investigated various genera of echinoderms in order to better understand the link between evolutionary changes and the occurrences of these echinoderms throughout time and space

University South Florida, Tampa, FL October 2019 – May 2020

Undergraduate Research Assistant

- Utilized MATLAB and GPRMax software to model the response of ground penetrating radar to lava tubes on the Earth, Moon and Mars

SELECTED ABSTRACTS

Alfred, S. M., Gulick, S. P. S., Hesse, M. A., and McCall, N. T.,Rae A. S. P.;(2025) Impact Cratering as a Mechanism for Habitat Generation: Insights from Chicxulub. 56th Annu. Lunar Planet. Sci. Conf. Abstr. #2556.

Alfred, S. M., Gulick, S. P. S., Hesse, M. A., and McCall, N. T. (2024) development of numerical model for the post-impact hydrothermal system at Chicxulub Crater. 55th Annu. Lunar Planet. Sci. Conf. Abstr. #2404

Alfred, S., Gulick, S. P., Hesse, M. A., McCall, N., Tikoo, S., Bhandari, A. R., Vanorio, T., Rasmussen, C., Kring, D. A., & Le-Ber, E. (2023). Modeling of the Post-Impact Hydrothermal System at the Chicxulub Crater. AGU23.

Gulick, S. P., Pérez-Cruz, L. L., Meckel, T. A., Wei, J., Duncan, D., Wiederspahn, M., **Alfred, S.**, Davis, M. B., Reichert, S., & Fucugauchi, J. U. (2023). Ultra-high resolution 3D seismic data within the K-Pg Chicxulub impact structure. AGU23.

TEACHING EXPERIENCE

The University of Texas at Austin, Austin, TX August 2024 –December 2024

Teaching Assistant

- Taught 3 weekly sections for and undergraduate course, 'Introduction to Geosciences'. Topics covered include mineralogy, structural geology and groundwater

ADDITIONAL EXPERIENCE

Environmental Management Authority, Port of Spain, Trinidad and Tobago April 2022- July 2022

Environmental Program Assistant (Strategy and Research Unit)

- Assisted with completion of organization's annual report assessing the state of the environment as based on the Environmental Management Act
- Researched strategies for achieving Sustainable Development Goals
- Utilized GIS software to create story maps highlighting ongoing projects in the country that followed guidelines from the National Environmental Policy

Water and Sewerage Authority, St. Joseph, Trinidad and Tobago Summer 2019

On-the-job trainee

- Operated software such as 'Engauge' to aid in the digitization of well logs that would ultimately be used d in a company-wide database

EOG Resources, Port of Spain, Trinidad and Tobago Summer 2018

Intern

- Used different software to identify faults, perform log correlations, and create contour maps for both net sands and reservoir facies

VOLUNTEER AND LEADERSHIP EXPERIENCE

Graduate Student Executive Council (GSEC), UT Austin

Marketing Chair August 2023- May 2024

- Designed new logo for the organization, facilitated design and ordering of branded merchandise and assisted with advertising organization sponsored events

Geology Club, University of South Florida, Tampa, FL

Treasurer Spring 2020

Fondes Amandes Community Reforestation Project May 2019 and December 2019

- Assisted with environmental education outreach via facilitation of nature tours for students in K-12.
- Created new database to track past and future visitor satisfaction.

CHARGE, USF September 2018

- Cleaned up outdoor public spaces in the Tampa Bay area.

Habitat for Humanity, Trinidad June 2018

- Assisted with painting and furnishing a house for a family in need

RELEVANT COURSEWORK

Numerical Modeling, Physics of the Earth, Basin Geomechanics, Marine Geology and Geophysics Field Course, Planetary Geophysics, Advance Fluid Flow in Porous Media

HONORS AND AWARDS

LPI Career Development Award ($1000 travel stipend to attend LPSC)	2024
UTIG Fellowship (monthly stipend & tuition waiver for duration of M.S. program)	2022
Judy Genshaft Honors College academic scholarship, USF ($2000)	2020
USF Withlacoochee Rock Hound Scholarship ($1000)	2019
USF Director's Award (reduced tuition)	2017

ADDITIONAL INFORMATION

Computer Skills: MATLAB, Python, GIS (ArcGIS Pro), R programming software

Professional Organizations: American Geophysical Union (AGU), Universities Space Research Association (USRA)