

# Alice Chapman

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## Education

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**University of Arizona** | Tucson, AZ

August 2018 – present

*Ph.D. candidate, Geosciences*

Advisor: Dr. Diane Thompson | Cumulative GPA: 4.0/4.0

- Professional Geographic Information Systems Technology Certificate *Expected May 2023*

**National Center for Atmospheric Research** | Boulder, CO

August 2021

2021 Community Earth System Model (CESM) Tutorial (Virtual)

- Attended lectures on climate system simulations and CESM's components
- Completed practical exercises involving modifying and running components of CESM on NCAR's supercomputer Cheyenne and analyzed output

**Williams College** | Williamstown, MA

September 2011 – June 2015

*Bachelor of Arts degree in Geosciences, Chemistry*

- Cumulative GPA: 3.35/4.00
- Major GPA: 3.50/4.00
- Dean's List: Spring 2014 – Spring 2015

**Sea Education Association** | Woods Hole, MA

September – December 2013

*Fall Semester Program: Oceans & Climate*

## Research Experience

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**Smithsonian National Museum of Natural History** | Washington, D.C.

Fall 2021

*"Mineralogical insights into the coral Mn/Ca-based trade-wind proxy"*

- **Robert D. Hevey, Jr. and Constance M. Filling Fellowship in Mineral Sciences**
- Advisor: Dr. Gabriela Farfan
- Analyzed coral samples with X-Ray Diffraction, Raman Spectroscopy, Scanning Electron Microscopy, Cathodoluminescence Microscopy
- Compared changes in aragonite unit cell parameters to trace element concentrations to better understand the role of coral aragonite crystal structure in trace element-based coral paleoproxies

**University of Arizona Geosciences Department** | Tucson, AZ

August 2018 – present

*"Reconstructing Pacific Trade-wind Variability: Assessing and Extending the Coral Mn/Ca Proxy"*

- **Ph.D. Dissertation**; Advisor: Dr. Diane Thompson
- Spent 2 field seasons on Kiritimati Island, Republic of Kiribati collecting water, sediment, dust samples
- Extruded and extracted porewater from sediment cores, performed loss on ignition tests, sediment digestions
- Slabbed, milled, and analyzed coral samples for trace metal analysis with ICP-MS
- Analyzed wind observations and wind data generated from reanalysis and climate model output
- Presented research in both oral and poster formats at national and international conferences

**Williams College** | Williamstown, MA

September 2014 – May 2015

*"Matching Marine and Terrestrial Tephra in the Bering Sea/Aleutian Islands Region"*

- **Senior Thesis**; Advisor: Dr. Mea Cook
- Sampled tephra from three Bering Sea sediment cores and three nearby lacustrine cores
- Developed SOP for size fractionation of shards and grain mount preparation
- Photographed tephra shards (SEM), analyzed major/minor/trace elements (EPMA, LA-ICP-MS)
- Presented poster at AGU Fall Meeting 2015

**Pacific Islands Fisheries Science Center** | NOAA | Honolulu, HI *June – August 2014*  
*Summer intern in Coral Reef Ecosystem Program, Benthic Team (PYSO Program)*

- Advisors: Dr. Bernardo Vargas-Ángel (PI), Paula Misa
- Photographed, weighed, decalcified, filtered, archived coral samples from Calcification Accretion Units retrieved during Pacific Reef Assessment and Monitoring Program cruises to U.S. Pacific Islands
- Gave oral presentation of results at PIFSC

**Williams College Geosciences Department** | Williamstown, MA *Spring 2014*  
*Research Assistant in Paleoceanography lab*

- Advisor: Dr. Mea Cook
- Picked and sorted planktonic and benthic foraminifera microfossils for radiocarbon analysis

**Sea Education Association Fall Semester** | Woods Hole, MA *Fall 2013*  
*“Effect of pH on Growth Rates of Phytoplankton in the Eastern Pacific Ocean”*

- performed a series of incubation experiments with phytoplankton sampled from a coastal upwelling zone, gyre region, and equatorial upwelling zone as part of an independent project while sailing on a 135-ft research vessel (SSV *Robert C. Seamans*)

**Bigelow Laboratory for Ocean Sciences** | East Boothbay, ME *June – August 2013*  
*REU Intern in Trace Metal Geochemistry lab*

- **Independent Project**; Advisors: Dr. Benjamin S. Twining (PI), Dr. Jochen Nuester
- Conducted an original research project related to the regeneration of Fe(II) by protist grazing in the ocean, maintained cyanobacteria and dinoflagellate cultures
- Gave oral presentation of results at Bigelow Laboratory for Ocean Sciences, presented poster at Ocean Sciences Meeting 2014

## **Awards, Grants, Scholarships, and Fellowships**

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Graduate Student Geoscience Grant & Outstanding Mention   NSF/GSA	<i>Awarded May 2021, 2022</i>
Dr. Maria Teresa Velez Diversity Leadership Scholarship   UA	<i>Awarded March 2022</i>
Student & Early Career Chapter Registration Grant   ICRS	<i>Awarded March 2022</i>
GeoDaze Symposium Best Graduate Talk Award   UA Geosciences	<i>Awarded March 2020, 2022</i>
Graduate and Professional Student Council Travel Grant   UA	<i>Awarded November 2021</i>
College of Science Graduate Award for Teaching   UA	<i>Awarded April 2021</i>
College of Science Graduate Award for Service   UA	<i>Awarded April 2021</i>
R. Wilson Thompson Scholarship   UA	<i>Awarded February 2021</i>
Paul S. Martin Scholarship   UA	<i>Awarded February 2021</i>
Graduate Center Professional Development Award   UA	<i>Awarded June 2020</i>
College of Science Galileo Circle Scholar   UA	<i>Awarded March 2020</i>
Robert Hevey & Constance Filling Fellowship   Smithsonian NMNH	<i>Awarded March 2020</i>
Outstanding Student Presentation Award   American Geophysical Union	<i>Awarded December 2019</i>
Graduate and Professional Student Council Travel Grant   UA	<i>Awarded December 2019</i>
Kenneth A Lovstrom Memorial Scholarship   UA	<i>Awarded May 2019</i>
Graduate Research Fellowship Program Honorable Mention   NSF	<i>Awarded April 2019</i>
Sigma Xi Scientific Research Society   Williams College	<i>Awarded June 2015</i>
Multicultural Program Scholar   ASLO	<i>Awarded September 2013</i>
REU Travel Award   Bigelow Laboratory for Ocean Sciences	<i>Awarded August 2013</i>

## Publications

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**Chapman, A.U.**, Thompson, D.M., Hlohowskyj, S.R., Carilli, J.E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. (2022) A mechanistic investigation of the coral Mn/Ca-based trade-wind proxy at Kiritimati. *Geochimica et Cosmochimica Acta* **328**, 58-75.

<https://doi.org/10.1016/j.gca.2022.04.030>

- Collected water and sediment samples in field, extracted porewater samples in lab, processed all water, sediment, and porewater samples and analyzed via ICP-MS, analyzed data, wrote and revised manuscript

Sayani, H.R., Thompson, D.M., Carilli, J.E., Marchitto, T.M., **Chapman A.U.**, Cobb, K.M. (2021) Reproducibility of coral Mn/Ca-based wind reconstructions at Kiritimati Island and Butaritari Atoll. *Geochemistry, Geophysics, Geosystems*, **22**, e2020GC009398.

<https://doi.org/10.1029/2020GC009398>

- Slabbed and milled powder from two coral cores, analyzed major/minor/trace element geochemistry on ICP-MS, reviewed and edited manuscript

## Presentations

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**Chapman A.U.**, Farfan, G.A., Thompson, D.M., Carilli, J. E., Sayani, H.R., Marchitto, T.M. Mineralogical insights into coral trace element incorporation and stress. Oral presentation at UA Geosciences GeoDaze Symposium, 2022.

**Chapman A.U.**, Farfan, G.A., Thompson, D.M., Bullock, E.S., Carilli, J. E., Sayani, H.R., Marchitto, T.M. Mineralogical insights into the coral Mn/Ca-based trade-wind proxy. Virtual talk at Ocean Sciences Meeting, 2022.

**Chapman A.U.**, Farfan, G.A., Thompson, D.M., Bullock, E.S., Sayani, H.R., Marchitto, T.M., Carilli, J. E. Mineralogical insights into the coral Mn/Ca-based trade-wind proxy. Virtual talk at AGU Fall Meeting, 2021.

**Chapman A.U.**, Thompson, D.M., Carilli, J. E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. Behind-the-scenes of the Coral Mn/Ca-based Trade-wind Proxy: Interpreting the Mn Signal Lag. Virtual talk at the 14<sup>th</sup> International Coral Reef Symposium, 2021.

**Chapman A.U.**, Thompson, D.M., Carilli, J. E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. Lagoon Morphology: A Key Component of the Coral Mn/Ca-based Trade-wind Proxy. Virtual talk at UA Geosciences GeoDaze Symposium, 2021.

**Chapman A.U.**, Thompson, D.M., Carilli, J. E., Hlohowskyj, S. R., Gordon, G., Goepfert, T. Lagoon Morphology: A Key Component of the Coral Mn/Ca-based Trade-wind Proxy. Virtual poster at AGU Fall Meeting, 2020.

**Chapman A.U.**, Thompson, D.M., Carilli, J. E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. Assessing the Reliability of the Coral Mn/Ca-based Trade-wind Proxy: Interpreting the Mn Signal Lag. Virtual poster at AGU Fall Meeting, 2020.

**Chapman A.U.**, Thompson, D.M., Hlohowskyj, S. R., Gordon, G., Goepfert, T., Carilli, J. E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. From wind to coral: assessing the mechanism behind the coral Mn/Ca-based trade-wind proxy. Virtual talk at UA Geosciences GeoDaze Symposium, 2020.

**Chapman A.U.**, Thompson, D.M., Hlohowskyj, S. R., Carilli, J. E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. From Wind to Coral: Assessing the Mechanism Behind the Coral Mn/Ca-based Trade-wind Proxy. Presented poster at AGU Fall Meeting, 2019.

**Chapman A.U.**, Thompson, D.M., Marchitto, T.M., Sayani, H.R., Carilli, J. E., Hlohowskyj, S. R. Tropical Pacific Corals: Archives of Trade-wind Behavior. Presented poster at GeoDaze Symposium at University of Arizona, 2019.

**Chapman A.U.**, White-Nockleby, C.C., de Konkoly Thege, P.A., Rubel, J.N., Cook, M.S., Mix, A.C., Addison, J.A. Tephrochronology as a tool to constrain reservoir age in the deglacial Bering Sea. Presented poster at AGU Fall Meeting, 2015.

**Chapman A.U.**, Nuester J., Twining, B.S. Regeneration of Fe(II) by Protist Grazing in the Ocean. Presented poster at Ocean Sciences Meeting, 2014.

## Invited Talks

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**Chapman A.U.**, Farfan, G.A., Thompson, D.M., Carilli, J. E., Sayani, H.R., Marchitto, T.M. Mineralogical insights into coral trace element incorporation and stress. Invited talk for “No Bones” Seminar Series, Smithsonian NMNH Department of Invertebrate Zoology, April 2022.

**Chapman A.U.** Coral: the “canary” in the climate change “coal mine”. Short presentation for UA Ecological Restoration Club, March 2022.

**Chapman A.U.** How can we study El Niño events in the past? Guest lecture for Introduction to Oceanography (GEOS 212), UA Geosciences, March 2021.

**Chapman A.U.** Corals: what can they tell us about climate change? Talk at Desert Christian School (Tucson, AZ), March 2021.

**Chapman A.U.** Earth’s Climate & Paleoclimate. Guest lecture for Physical Geology (GEOS 251), UA Geosciences, November 2020.

**Chapman A.U.**, Thompson, D.M., Carilli, J. E., Hlohowskyj, S. R., Gordon, G., Goepfert, T. Lagoon Morphology: A Key Component of the Coral Mn/Ca-based Trade-wind Proxy. Virtual lightning talk at AGU Fall Meeting, 2020.

## Teaching Experience

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**Ocean Sciences** | GEOS 412 | UA Geosciences *Spring 2020, 2022*  
*Teaching Assistant*

**Physical Geology** | GEOS 251 | UA Geosciences *Fall 2020*  
*Teaching Assistant*

- Led two lab sections of 15 students; designed lab exercises for Plate Tectonics and Paleoclimatology
- Designed and gave a lecture on Earth’s Climate and Paleoclimate

**Introduction to Oceanography** | GEOS 212 | UA Geosciences *Spring 2019*  
*Teaching Assistant*

## Diversity, Equity, and Inclusion (DEI) Efforts and Volunteer Experience

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**Unlearning Racism in Geoscience** | *Pod Member* | Smithsonian NMNH *Fall 2021 – present*

- URGE is a nation-wide initiative whose objectives are to increase the Geoscience community’s awareness of how racism affects the participation and retention of underrepresented people in Geosciences, and build off of the existing literature and community members’ experiences to develop anti-racist policies and strategies that can be adopted by academic institutions
- Participate in monthly meetings, contribute 1 hour/week working on pod action items

**AWG Undergraduate Field Camp Scholarship Committee** | *Member* | UA *Fall 2020 – present*

- Helped design and revise an application and rubric for the Association of Women Geoscientists’ (AWG) Undergraduate Field Camp Scholarship for underrepresented students in Geosciences

**Geosciences Department DEI Committee** | *Graduate Representative* | UA *Fall 2020 – present*

- Design and implement surveys for graduate students to gauge their opinions on various issues related to Geosciences and our department
- Share graduate student opinions and perspectives on DEI in Geosciences with faculty committee

**Graduate and Professional Student Council** | *Grants Judge* | UA *Spring 2020 – present*

- Evaluate travel and research grant applications, make recommendations for awards

**AWG Mentorship Program** | *Co-chair* | UA *August 2019 – present*

- Co-organized and initiated AWG's graduate-undergraduate mentorship program
- Applied for and received a \$350 grant for mentorship program expenses
- Pair undergraduates mentees with graduate student mentors based on interests, organize mixers

**Girl Scouts of Southern Arizona** | *Educator* | Tucson, AZ *March 2019, August 2021*

- Taught girls about plastics in the ocean and ways to reduce plastic usage in everyday life
- Showcased various sub-disciplines of the Geosciences at GS Fest Exposition

**Women in STEM Panel** | *Panelist* | UA *October 2019 – Spring 2021*

- Met with young women from Tucson high schools to discuss career pathways, research opportunities, and challenges women face in STEM fields

**SCUBA Mentorship with Desert Christian School** | *Divemaster* | Tucson, AZ *July 2019*

- Assisted instructor with supervising a group of 7 female high school students and demonstrated SCUBA skills for Open Water Diver certification in pool and open ocean (Catalina Island, CA)
- Mentored students: discussed academics, research opportunities, career paths, challenges that women face in STEM careers

**AWG Fundraising Initiative** | *Chair* | UA *August 2018 – May 2019*

- Applied for and secured grants to fund various AWG events throughout the year

**Graduate Student Panel** | *Panelist* | UA *October 2018*

- Shared experience and details of applying to graduate school in Geosciences with undergraduates; answered questions and offered advice

## Professional Experience

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**Divemaster** | *The Dive Shop* | Tucson, AZ *July 2019 – present*

- Assist instructor with supervising students and demonstrating key skills for Open Water and Advanced Open Water courses both in pool and in open water
- Lead PADI ReActivate refresher courses in pool: demonstrate and review skills with clients

**Lab Coordinator** | *Tropical Climate and Coral Reefs Lab* | UA *March – September 2021*

- Oversee daily operations, including operating, maintaining, and troubleshooting a Thermo Element 2 magnetic sector field Inductively Coupled Plasma-Mass Spectrometer with ESI FAST autosampler
- maintain trace elemental clean lab
- prepare and analyze standards and samples, e.g., biogenic marine carbonates, lake and marine sediments, and water samples and develop new analytical methods

**Dive & Travel Content Writer** | *Liveaboard.com* *July – October 2019*

- Researched and wrote short articles on popular dive destinations and regions worldwide

**Geoscientist** | *e4sciences* | Stamford, CT *June 2015 – December 2017*

- Operated marine and land geophysics instrumentation in the field; delineated wetlands; analyzed geotechnical borings
- Imaged and described carbonate rock cores from southeast Florida by identifying lithology, color, fossil grains, porosity/permeability, and depositional environment
- Digitized bathymetric contours of historic nautical charts of New York Harbor

- Communicated with clients to discuss project progress
- Compiled reports on ecosystem restoration, historic bathymetry, and wetland delineation

## **Professional Memberships**

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**Asian Americans and Pacific Islanders in Geosciences (AAPiG) | Member** *Fall 2020 - present*

- Participate in regular discussions with group members regarding AAPI identity in Geosciences
- Support other members in professional settings

**International Coral Reef Society | Student Member**

*Spring 2020 – present*

**Geological Society of America | Student Member**

*Spring 2019 – present*

**American Geophysical Union | Student Member**

*Fall 2015 – present*

## **Additional Skills**

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**Certifications:** PADI certified Divemaster, 150 logged dives; PADI certified Emergency First Responder

**Languages:** Fluent in Japanese; knowledge of French, knowledge of written Spanish

**Computer software:**

- Proficient in: Microsoft Office, Adobe Illustrator, ArcGIS Pro, ArcGIS online, StoryMaps, Tableau, QGIS, Zotero, Jupyter Notebook
- Experience with: FIJI, AutoCAD, Canvas

**Programming languages:**

- Proficient in: Python, LaTeX
- Experience with: Visual Basic, MATLAB

**Field Skills:**

- Small boat handling (30' Pangas), hiking, snorkeling, diving
- Sonar: side-scan, single-beam, multi-beam
- Operation of underwater survey instrumentation: sonar (side-scan, single-beam, multibeam), Van Dorn water sampler, YSI Multiparameter Sonde
- Operation of land survey instrumentation: GPR, LiDAR, hand-held and RTK GPS

**Lab Skills:**

- Operation and maintenance of Thermo Element 2 ICP-MS
- Preparation and analysis of biogenic marine carbonate, lake and marine sediment, and seawater samples
- Maintenance of trace elemental clean lab