

Alice C. Kojima

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Education

University of Arizona | Tucson, AZ

Expected June 2023

Ph.D., Geosciences

Cumulative GPA: 4.0/4.0

Research Focus: climate science, climate dynamics, coral geochemistry

- Professional Geographic Information Systems Technology Certificate

Expected May 2023

Williams College | Williamstown, MA

September 2011 – June 2015

Bachelor of Arts, Geosciences & Chemistry

Major GPA: 3.50/4.00

Sea Education Association | Woods Hole, MA

Fall 2013

Fall Semester Program: Oceans & Climate

Research Experience

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 coral aragonite unit cell parameters to trace element concentrations to better understand the role of coral aragonite crystal structure in trace element-based coral paleoproxies
- Presented research in oral format locally, as well as at national and international conferences

University of Arizona Geosciences Department | Tucson, AZ

Fall 2018 – present

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

Ph.D. Dissertation

- Advisor: Dr. Diane Thompson
- Lead researcher for 5 concurrent interdisciplinary projects in collaboration with 9 institutions
- Collected and analyzed large climate datasets such as wind observations and data generated from reanalysis and climate model output using Python and Excel
- Helped coordinate the logistics of international, cross-cultural field work experiences; spent 2 field seasons on Kiritimati Island, Republic of Kiribati collecting water, sediment, dust samples
- Extruded/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
- Wrote and submitted annual progress reports to the National Science Foundation
- Presented research in both oral and poster formats at national and international conferences

Williams College | Williamstown, MA

Fall 2014 – Spring 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

NOAA Pacific Islands Fisheries Science Center (PIFSC) | Honolulu, HI *Summer 2014*
“Establishing a Baseline for Net Calcium Carbonate Deposition Rates in U.S. Pacific Coral Reefs Via Calcification Accretion Units (CAUs)”

PIFSC Young Scientist Opportunity Intern

- Advisors: Dr. Bernardo Vargas-Ángel (PI), Paula Misa of the Coral Reef Ecosystem Program
- Photographed, weighed, decalcified, filtered, archived samples from Calcification Accretion Units retrieved during Pacific Reef Assessment and Monitoring Program cruises to U.S. Pacific Islands
- Presented results of summer internship in oral format internally

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”

Independent Project, 10 hours/week

- performed a series of incubation experiments with phytoplankton sampled from a coastal upwelling zone, gyre region, and equatorial upwelling zone while sailing on a 134-ft research vessel (SSV *Seamans*)

Bigelow Laboratory for Ocean Sciences | East Boothbay, ME *Summer 2013*
“Regeneration of Fe(II) by Protist Grazing in the Ocean”

REU Independent Project

- Advisors: Dr. Benjamin S. Twining (PI), Dr. Jochen Nuester of the Trace Metal Geochemistry Lab
- Quantified Fe(II) produced by dinoflagellates as a result of grazing
- Maintained cyanobacteria and dinoflagellate cultures
- Gave oral presentation of results at Bigelow Laboratory for Ocean Sciences, presented poster at Ocean Sciences Meeting 2014

Professional Experience

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

- Oversaw daily operations, including operating, maintaining, and troubleshooting a Thermo Element 2 magnetic sector field Inductively Coupled Plasma-Mass Spectrometer with ESI FAST autosampler
- maintained trace elemental clean lab
- prepared and analyzed standards and samples, e.g., biogenic marine carbonates, lake and marine sediments, water samples; developed new analytical methods

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

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
- Analyzed wetland restoration regulations to resolve issues during project execution
- 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 project status and progress with clients
- Compiled reports on ecosystem restoration, historic bathymetry, and wetland delineation

Awards, Grants, Scholarships, and Fellowships

Graduate Student Geoscience Grant & Outstanding Mention | NSF/GSA *Awarded May 2022*

- Awarded \$3,000 for research and conference attendance

Dr. Maria Teresa Velez Diversity Leadership Scholarship UA Graduate College	<i>Awarded March 2022</i>
<ul style="list-style-type: none"> • Awarded \$25,000 stipend plus coverage of full base tuition and student health insurance 	
Student & Early Career Chapter Registration Grant ICRS	<i>Awarded March 2022</i>
<ul style="list-style-type: none"> • Awarded \$527 to cover registration fee for the 15th International Coral Reef Symposium 2022 	
GeoDaze Symposium Best Graduate Talk Award UA Geosciences	<i>Awarded March 2022</i>
<ul style="list-style-type: none"> • Awarded \$500 	
Graduate and Professional Student Council Travel Grant UA	<i>Awarded November 2021</i>
<ul style="list-style-type: none"> • Awarded \$1,000 to help defray costs of attending Ocean Sciences Meeting 2020 	
Graduate Student Geoscience Grant & Outstanding Mention NSF/GSA	<i>Awarded May 2021</i>
<ul style="list-style-type: none"> • Awarded \$3,000 for research and conference attendance 	
Kenneth A Lovstrom Memorial Scholarship UA Geosciences	<i>Awarded May 2021</i>
<ul style="list-style-type: none"> • Awarded \$1,500 to support research in Summer 2021 	
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 Geosciences	<i>Awarded February 2021</i>
<ul style="list-style-type: none"> • Awarded \$2,272 to support research in Spring 2021 	
Paul S. Martin Scholarship UA Geosciences	<i>Awarded February 2021</i>
<ul style="list-style-type: none"> • Awarded \$2,530 to support research in Spring 2021 	
Graduate Center Professional Development Award UA	<i>Awarded June 2020</i>
<ul style="list-style-type: none"> • Awarded \$150 to help defray costs of attending a conference 	
College of Science Galileo Circle Scholar UA	<i>Awarded March 2020</i>
<ul style="list-style-type: none"> • Awarded \$1,000 for research 	
GeoDaze Symposium Best Graduate Talk Award UA Geosciences	<i>Awarded March 2020</i>
<ul style="list-style-type: none"> • Awarded \$500 	
Robert Hevey & Constance Filling Fellowship Smithsonian NMNH	<i>Awarded March 2020</i>
<ul style="list-style-type: none"> • Awarded \$8,000 stipend, \$4,000 for research, and \$500 for travel 	
Outstanding Student Presentation Award AGU	<i>Awarded December 2019</i>
Graduate and Professional Student Council Travel Grant UA	<i>Awarded December 2019</i>
<ul style="list-style-type: none"> • Awarded \$750 to help defray costs of attending AGU Fall Meeting 2019 	
Kenneth A Lovstrom Memorial Scholarship UA Geosciences	<i>Awarded May 2019</i>
<ul style="list-style-type: none"> • Awarded \$1,500 to support research in Summer 2019 	
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 Scholarship ASLO	<i>Awarded September 2013</i>
<ul style="list-style-type: none"> • Awarded \$1,800 to cover expenses involved in attending Ocean Sciences Meeting 2014 	
REU Travel Award Bigelow Laboratory for Ocean Sciences	<i>Awarded August 2013</i>
<ul style="list-style-type: none"> • Awarded \$1,200 to present research at a conference 	

Service, Leadership, and Diversity, Equity, and Inclusion (DEI) Efforts

Virtual Student Federal Service Internship USGS	<i>Fall 2022 – present</i>
<i>“Data Visualization for USGS Science Communications”</i>	
<ul style="list-style-type: none"> • Supervisor: Peter Pearsall, Science Communications Specialist • Coordinate with USGS scientists to develop ArcGIS StoryMaps and other visualization products to communicate ongoing research at Pacific Coastal and Marine Science Center in Santa Cruz, CA 	
Unlearning Racism in Geoscience <i>Pod Member</i> Smithsonian NMNH	<i>Fall 2021 – Spring 2022</i>
<ul style="list-style-type: none"> • 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 • Participated in monthly meetings, helped develop codes of conduct for field and lab safety 	
AWG Undergraduate Field Camp Scholarship Committee <i>Member</i> UA	<i>Fall 2020 – present</i>
<ul style="list-style-type: none"> • Helped design an application and rubric for the Association of Women Geoscientists’ (AWG) Undergraduate Field Camp Scholarship for underrepresented students in Geosciences • Revise application and rubric annually, evaluate applications 	

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

- Design and implement surveys to gauge graduate students' opinions on various issues related to Geosciences, DEI, and our department; share opinions and perspectives with faculty committee

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

- ~5 hours/semester
- Evaluate travel and research grant applications, make recommendations for awards

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

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

- Initiated and co-organized AWG's graduate-undergraduate mentorship program
- Applied for and received a \$350 grant for mentorship program expenses
- Organize annual cycles of undergraduate mentee – graduate student mentor pairings based on interests

Graduate Student Panel | *Organizer, Panelist* | UA October 2018 – present

- Share experience and details of applying to graduate school in Geosciences with undergraduates in Geoscience Department
- Lead Q&A session, share to do's of reaching out to a potential advisor

Publications

Kojima, A.C., 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

Chapman A.U., Thompson, D.M., Carilli, J. E., Marchitto, T.M., Sayani, H.R., Cobb, K.M. Coral Mn/Ca: A Window into Pacific Trade-wind Behavior. Oral presentation at the 15th International Coral Reef Symposium, 2022.

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 14th 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. Poster presentation at UA Geosciences GeoDaze Symposium, 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. Poster presentation at AGU Fall Meeting, 2015.

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

Invited Talks

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 response. Oral presentation for “7oT2 Biomineralization: mechanisms, functions, and geochemical importance” session at Goldschmidt conference, Honolulu, HI, July 2022.

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. Virtual 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, Tucson, AZ, 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

Ocean Sciences | GEOS 412 | UA Geosciences

Spring 2020, 2022

Teaching Assistant

- Led four lab sections of 12 students
- Discussed ocean sediment types and sedimentation processes, familiarized students with types of invertebrates and their physical and behavioral characteristics

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

Professional Memberships

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

- Participate in regular discussions with group members regarding AAPI identity in Geosciences
- Serve as a mentor for an undergraduate member
- 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

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

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

Computer skills:

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

Programming languages:

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

Lab Skills:

- Operation and maintenance of Thermo Element 2 ICP-MS with ESI FAST autosampler
- Preparation and analysis of biogenic marine carbonate, lake and marine sediment, and seawater samples as well as standards
- Maintenance of trace elemental clean lab

Field Skills:

- Small boat handling (30' Pangas), hiking, snorkeling, diving, camping
- 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