

Alice C. Kojima

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Alternative names: Alice U. Chapman, Alice C. Kojima-Clarke

Education

University of Arizona | Tucson, AZ

Expected June 2023

Ph.D., Geosciences

Cumulative GPA: 4.0/4.0

Research Focus: coral geochemistry and biomineralization, climate dynamics, paleoclimatology

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

Research Experience

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, 40+ hours/week, full-time

- Advisor: Dr. Diane Thompson
- Lead researcher for 5 concurrent interdisciplinary projects in collaboration with 9 institutions
- Planned project timelines, independently executed data collection, method development, data processing, and data visualization for communication through presentations and publications
- Published 1 first-author and 1 co-authored paper, with 1 first-author paper in review and 2 in prep.
- Analyzed large climate time series data sets (wind, SST) of various spatiotemporal resolutions (from hourly to annual, from 0.25°x0.25° grid to 5°x5° grid) including observations, reanalysis data, and climate model output using Python to understand past variability
- Analyzed geospatial data (bathymetry, salinity) using GIS software such as ArcGIS Pro and QGIS; performed data analysis, data conversion, data management, and automation using Python (ArcPy)
- Helped coordinate the logistics of international, cross-cultural field work experiences; spent 2 field seasons with a team of 3-4 scientists on Kiritimati Island, Republic of Kiribati collecting water, sediment, and dust samples to understand trace element cycling of the island system
- Extruded/extracted porewater from sediment cores, performed loss on ignition tests, sediment digestions
- Slabbed, milled, and analyzed coral core samples for trace metal analysis with ICP-Mass Spectrometer
- Wrote and submitted annual progress reports to the National Science Foundation
- Presented research in both oral and poster formats at national and international conferences

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, 40+ hours/week, full-time

- Advisor: Dr. Gabriela Farfan
- External fellowship during Ph.D.: research constitutes a chapter of my dissertation
- Analyzed coral samples with X-Ray Diffraction, Raman Spectroscopy, Scanning Electron Microscopy
- Determined how stress-related changes in coral skeletal aragonite crystal structure impacts trace element content to explore the reliability of trace element-based coral paleoproxies during marine heatwaves
- Presented research in oral format locally, as well as 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, 20 hours/week, part-time

- Advisor: Dr. Mea Cook
- Sampled tephra from three Bering Sea sediment cores and three nearby lacustrine cores
- Developed standard operating procedure for size fractionation of shards and grain mount preparation
- Photographed tephra shards, analyzed major/minor/trace elements, presented poster at AGU Fall 2015

NOAA Pacific Islands Fisheries Science Center (PIFSC) | Honolulu, HI

June – August 2014

“Establishing a Baseline for Net Calcium Carbonate Deposition Rates in U.S. Pacific Coral Reefs Via Calcification Accretion Units”

PIFSC Young Student Opportunity Intern, 40 hours/week, full-time

- 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

February – June 2014

Research Assistant in Paleoceanography lab, 10 hours/week, part-time

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

Sea Education Association Fall Semester | Woods Hole, MA

September – December 2013

“Effect of pH on Growth Rates of Phytoplankton in the Eastern Pacific Ocean”

Independent Project, 10 hours/week, part-time

- 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*) for 47 days from San Diego, CA to Papeete, Tahiti.

Bigelow Laboratory for Ocean Sciences | East Boothbay, ME

June – August 2013

“Regeneration of Fe(II) by Protist Grazing in the Ocean”

REU Independent Project, 40 hours/week, full-time

- 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
- Presented results in oral format internally, presented poster at Ocean Sciences Meeting 2014

Professional Experience

Divemaster | *The Dive Shop* | Tucson, AZ

July 2019 – present

- ~10 hours/month, part-time
- Lead PADI ReActivate refresher courses in pool: demonstrate and review skills with clients
- Assist instructor with supervising students and demonstrating key skills for Open Water and Advanced Open Water courses both in pool and in open water

Lab Coordinator | *Tropical Climate and Coral Reefs Lab* | UAZ Geosciences

March – September 2021

- 20 hours/week, part-time
- 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
- Collected, processed, analyzed geochemical data
- Wrote and revised standard operating procedures for sample preparation and analysis, instrument operation, and troubleshooting protocol

Dive & Travel Content Writer | *Liveaboard.com*

July – October 2019

- 5 hours/week, part-time
- Researched and wrote short articles on popular dive destinations and regions worldwide

Geoscientist | *e4sciences* | Stamford, CT

June 2015 – December 2017

- 40+ hours/week, full-time
- Operated marine and land geophysics instrumentation in the field; delineated wetlands
- 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 during biweekly phone calls

Awards, Grants, Scholarships, and Fellowships

Graduate and Professional Student Council Travel Grant UAZ	<i>Awarded October 2022</i>
• Awarded \$1,500 to help defray costs of attending ICRS 2022 and Goldschmidt 2022	
Graduate Student Geoscience Grant & Outstanding Mention NSF/GSA	<i>Awarded May 2022</i>
• Awarded \$3,000 for research and conference attendance	
Dr. Maria Teresa Velez Diversity Leadership Scholarship UAZ	<i>Awarded March 2022</i>
• 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>
• Awarded \$527 to cover registration fee for the 15 th International Coral Reef Symposium 2022	
GeoDaze Symposium Best Graduate Talk Award UAZ Geosciences	<i>Awarded March 2022</i>
• Awarded \$500	
Graduate and Professional Student Council Travel Grant UAZ	<i>Awarded November 2021</i>
• 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>
• Awarded \$3,000 for research and conference attendance	
Kenneth A Lovstrom Memorial Scholarship UAZ Geosciences	<i>Awarded May 2021</i>
• Awarded \$1,500 to support research in Summer 2021	
College of Science Graduate Award for Teaching UAZ	<i>Awarded April 2021</i>
College of Science Graduate Award for Service UAZ	<i>Awarded April 2021</i>
Graduate Center Professional Development Award UAZ	<i>Awarded June 2020</i>
• Awarded \$150 to help defray costs of attending a conference	
College of Science Galileo Circle Scholar UAZ	<i>Awarded March 2020</i>
• Awarded \$1,000 for research	
GeoDaze Symposium Best Graduate Talk Award UAZ Geosciences	<i>Awarded March 2020</i>
• Awarded \$500	
Robert Hevey & Constance Filling Fellowship Smithsonian NMNH	<i>Awarded March 2020</i>
• 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 UAZ	<i>Awarded December 2019</i>
• Awarded \$750 to help defray costs of attending AGU Fall Meeting 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>
• 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>
• Awarded \$1,200 to present research at a conference	

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

Virtual Student Federal Service Internship U.S. Geological Survey	<i>August 2022 – present</i>
“Data Visualization for USGS Science Communications”, 10 hours/week	
• 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	
Geosciences Department DEI Committee <i>Graduate Representative</i> UAZ	<i>August 2020 – present</i>
• ~10 hours/semester	
• 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 <i>Grants Judge</i> UAZ	<i>January 2020 – present</i>
• ~5 hours/semester	
• Evaluate travel and research grant applications, make recommendations for awards	
AWG Mentorship Program <i>Co-chair</i> UAZ	<i>August 2019 – present</i>
• ~10 hours/semester	
• Co-founded 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	

Colorado River Basin Overflight Project | *Volunteer Cartographer* | Planet Women June – October 2022

- ~5 hours/week
- Created ArcGIS web maps containing various flight tracks and associated photographs
- Developed an [ArcGIS StoryMap](#) that documents the Overflight project's components

AWG Undergraduate Field Camp Scholarship Committee | *Member* | UAZ August 2020 – April 2022

- ~20 hours/semester
- Helped design an application and rubric for the Association of Women Geoscientists' (AWG) Undergraduate Field Camp Scholarship for underrepresented students in Geosciences
- Revised application and rubric annually, evaluated applications

Unlearning Racism in Geoscience | *Pod Member* | Smithsonian NMNH October 2021 – March 2022

- 2 hours/week
- 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

Graduate Student Panel | *Organizer, Panelist* | UAZ Geosciences October 2018 – December 2021

- ~5 hours/year
- Shared how-to guide for applying to graduate school with undergraduates in Geoscience Department
- Lead Q&A session, share to do's of reaching out to a potential advisor

Women in STEM Panel | *Panelist* | UAZ October 2019 – May 2021

- ~5 hours/semester
- Met with young women from Tucson high schools to discuss career pathways, research opportunities, and challenges women face in STEM fields

Publications

Kojima, A.C. (2023) A long-awaited ICRS 2022. *Reef Encounter* 37(2), 51-53.

- Wrote, revised, and published a reflection piece about the programming and successes/challenges of the 15th International Coral Reef Symposium, hosted by the International Coral Reef Society.

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, extracted porewater samples; processed all water, sediment, and porewater samples and analyzed via ICP-MS; analyzed data; wrote, revised, and published 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 UAZ 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, 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 UAZ 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 UAZ 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. Poster presentation 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 UAZ 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”. Presentation for UAZ 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), UAZ 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), UAZ 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 | UAZ Geosciences

Spring 2020, 2022

Teaching Assistant, 20 hours/week, part-time

- 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 | UAZ Geosciences

Fall 2020

Teaching Assistant, 20 hours/week, part-time

- 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 | UAZ Geosciences

Spring 2019

Teaching Assistant, 20 hours/week, part-time

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

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
- Slabbing and micro-milling of coral cores; 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

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

References

Dr. Diane Thompson, Assistant Professor

Department of Geosciences

Director of Marine Research, Biosphere 2

University of Arizona

(520) 621-2341; thomsod@arizona.edu (email preferred)

Dr. Gabriela Farfan, Coralyn Whitney Curator of Gems and Minerals

Department of Mineral Sciences

National Museum of Natural History, Smithsonian Institution

(608) 334-1244; FarfanG@si.edu (email preferred)