

## HENRIETTA DULAI

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**UPDATED: AUGUST 2021**

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### EDUCATION

**Ph.D. in Chemical Oceanography** 2005  
FLORIDA STATE UNIVERSITY, DEPARTMENT OF OCEANOGRAPHY TALLAHASSEE, FLORIDA, USA  
Dissertation Thesis: Multiple Isotopic Tracers for Study of Coastal Hydrological Processes

**M.S. in Nuclear Chemistry** 1997  
CZECH TECHNICAL UNIVERSITY PRAGUE, CZECH REPUBLIC  
SCHOOL OF NUCLEAR SCIENCES AND PHYSICAL ENGINEERING  
Thesis: Determination of Uranium by Gamma-Spectrometry

**Certificate in Education – Pedagogy of STEM Subjects** 1997  
CZECH TECHNICAL UNIVERSITY PRAGUE, CZECH REPUBLIC  
MASARYK INSTITUTE OF ADVANCED STUDIES

### PROFESSIONAL EXPERIENCE

**Professor** August 2021 - present  
**Associate Professor** August 2014 - 2021  
**Assistant Professor** January 2009 – August 2014  
UNIVERSITY OF HAWAII, DEP. OF EARTH SCIENCES/GEOLOGY AND GEOPHYSICS

**Affiliate Faculty** January 2012 - present  
UNIVERSITY OF HAWAII, WATER RESOURCES RESEARCH CENTER

**Postdoctoral Scholar & Postdoctoral Investigator** November 2005 – November 2008  
WOODS HOLE OCEANOGRAPHIC INSTITUTION  
DEPARTMENT OF MARINE CHEMISTRY AND GEOCHEMISTRY

**Graduate Research Assistant** May 2000 – October 2005  
FLORIDA STATE UNIVERSITY, DEPARTMENT OF OCEANOGRAPHY

**Research Specialist** September 1997 – May 2000  
CZECH NATIONAL RADIATION PROTECTION INSTITUTE

**Graduate Research Assistant** September 1995 – July 1997  
CZECH TECHNICAL UNIVERSITY

### TEACHING EXPERIENCE (LAST 5 YEARS)

Undergraduate Courses: GG106/SUST116 Humans and the Environment (F21, F20, F19, F18, F16), GG200 Geologic Inquiry (S21, S19, S16, S14), SCI295 at KCC (F18, S19)

Graduate Courses: GG640 Coastal Geochemistry (S20, S17, S15), EARTH654 Groundwater Contamination (F20)

### ACADEMIC ADVISING

*Undergraduate student principal thesis advisor:* Eric Welch (BS 2018), Elizabeth Dionne (BS 2017), Hannah Azouz (BS 2016), Trista McKenzie (BS 2016), Alana Kleven (BS 2015), Kim Mayfield (BS 2014)

*Graduate student principal advisor and sponsor:* Casey McKenzie (MS current), Trista McKenzie (MS 2018, PhD 2020), Kelly Truax (MS 2020, PhD current), Eric Welch (MS 2019), Elizabeth Dionne (MGeo 2018), Catherine Hudson (MS 2018), Hannah Azouz (MS 2017), Christina Richardson (MS 2016), Camille Vautier (MS 2016), Samuel Wall (MS-), Christine Waters (MS 2014), Gabrielle Weiss (MS-), Kamila Stastna (MS-visiting)

*Postdoctoral scholar advisor and sponsor:* Jan Kamenik (now Czech Academy of Sciences), Olkeba Tolessa Leta (now St. Johns River Water Management District)

*Notable student research achievements:*

Kelly Truax – Best poster presentation at the annual Consortium for Monitoring, Verification and Technology meeting 2020.

Trista McKenzie - First Place at the 2016 spring national Virtual Poster Showcase in Earth & Space Science sponsored by the American Geophysical Union; 2019 LOREX award

Eric Welch - First Place in Natural Sciences Oral Presentations at UH Manoa's Undergraduate Showcase

Christina Richardson – National Science Foundation Graduate Research Fellow

Christine Waters - National Science Foundation Graduate Research Fellow

### **PEER REVIEWED PUBLICATIONS 2016-PRESENT**

<sup>x</sup>student advisee \*postdoctoral advisee

Google scholar: <http://go.hawaii.edu/3bB>

1. McKenzie<sup>\*</sup>, T.A, S. Habel., H. Dulai, 2021. Sea-level rise drives wastewater leakage to coastal waters and storm drains. *Limnology and Oceanography Letters*, 6: 154-163. <https://doi.org/10.1002/lol2.10186>
2. Attias, E., S. Constable, D. Sherman, K. Ismail, C. Shuler, H. Dulai, 2021. Marine electromagnetic imaging and volumetric estimation of freshwater plumes offshore Hawai'i. *Geophysical Research Letters*, 48, e2020GL091249. <https://doi.org/10.1029/2020GL091249>
3. Volta, C., Ho, D. T., Maher, D. T., Wanninkhof, R., Friederich, G., Del Castillo, C., & Dulai, H., 2020. Seasonal variations in dissolved carbon inventory and fluxes in a mangrove-dominated estuary. *Global Biogeochemical Cycles*, 34, e2019GB006515. <https://doi.org/10.1029/2019GB006515>
4. Ghazal, K.A., O.T. Leta, A.I. El-Kadi, H. Dulai, 2020. Impact of coastal wetland restoration plan on the water balance components of Heeia watershed, Hawaii. *Hydrology*, 7(4), 86.
5. McKenzie<sup>x</sup>, T., C. Holloway, H. Dulai, J.P. Tucker, R. Sugimoto, T. Nakajima, K. Harada, I.R. Santos, 2020. Submarine groundwater discharge: A previously undocumented source of contaminants of emerging concern to the coastal ocean (Sydney, Australia), *Marine Pollution Bulletin*, 160, <https://doi.org/10.1016/j.marpolbul.2020.111519>
6. Okuhata<sup>x</sup>, B., H. Dulai, C. Shuler, J. Fackrell, A. El-Kadi, 2020. Metal mobilization as an effect of anthropogenic contamination in groundwater aquifers in Tutuila, American Samoa. *Water*, 12, 2118.
7. Engels, J.L., S. Watson, H. Dulai, K.M. Burnett, C.A. Wada, A. Aga, N. DeMaagd, J. McHugh, B. Sumida, L.L. Bremer, 2020. Collaborative research to support urban agriculture in the face of change: The case of the Sumida watercress farm on O'ahu. *PLoS ONE* 15(7): e0235661. <https://doi.org/10.1371/journal.pone.0235661>
8. Shuler, C., H. Dulai, O. T. Leta, J. Fackrell, E. Welch, A. El-Kadi, 2020. Understanding surface water-groundwater interaction, submarine groundwater discharge, and associated nutrient loading in a small tropical island watershed. *Journal of Hydrology*, 585.
9. Dudley, B., F. Hughes, G. Asner, J. Baldwin, Y. Miyazawa, H. Dulai, C. Waters, J. Bishop, N. Vaughn, J. Yeh, S. Kettwich, R. MacKenzie, R. Ostertag, T. Giambelluca, 2020. Hydrological effects of tree invasion on a dry coastal Hawaiian ecosystem. *Forest Ecology and Management*, 458.
10. McKenzie<sup>x</sup>, T., H. Dulai., J. Chang<sup>x</sup>, 2019. Parallels between stream and coastal water quality associated with groundwater discharge. *PLOS ONE*, 14(10):e0224513. doi: 10.1371/journal.pone.0224513.
11. Welch<sup>x</sup>, E., H. Dulai, A. El-Kadi, C.K. Shuler, 2019. Submarine groundwater discharge and stream base flow sustain pesticide and nutrient fluxes in Faga'alu Bay, American Samoa, *Frontiers in Environmental Sciences, Water and Wastewater Management*, 7 (162), <https://doi.org/10.3389/fenvs.2019.00162>.
12. Amato, D., R. Whittier, H. Dulai, C. Smith, 2019. Algal bioassay detect modeled loading of wastewater-derived nitrogen in coastal waters of Oahu, Hawaii. *Marine Pollution Bulletin*. 10.1016/j.marpolbul.2019.110668.
13. Taniguchi M., H. Dulai, K. M. Burnett, I. R Santos, R. Sugimoto, T. Stieglitz, G. Kim, N. Moosdorf, W. C. Burnett, 2019. Submarine Groundwater Discharge: Updates on its Measurement Techniques, Geophysical Drivers, Magnitudes and Effects. *Frontiers in Environmental Science, section Water and Wastewater Management*, 7 (141), <https://doi.org/10.3389/fenvs.2019.00141>.
14. Ghazal<sup>x</sup>, K.A., O.T. Leta\*, A.I. El-Kadi, H. Dulai, 2019. Assessment of wetland restoration and climate change impacts on water balance components of the Heeia coastal wetland in Hawaii. *Hydrology* 6, 37.

15. Shuler, C.K., D.W. Amato, V. Gibbson, L. Baker, A.N. Olguin, H. Dulai, C.M. Smith, and R.A. Alegado, 2019. Assessment of Terrigenous Nutrient Loading to Coastal Ecosystems along a Human Land-Use Gradient, Tutuila, American Samoa. *Hydrology* 6, 18, 1-27.
16. Kelly<sup>x</sup>, J.L., H. Dulai, C.R. Glenn, P.G. Lucey, 2019. Integration of aerial infrared thermography and in situ radon-222 to investigate submarine groundwater discharge to Pearl Harbor, Hawaii, USA. *Limnology and Oceanography*, 64, 238-257.
17. Ghazal<sup>x</sup>, K.A., O.T. Leta\*, A.I. El-Kadi, H. Dulai, 2018. Quantifying dissolved silicate fluxes across Heeia shoreline in Hawaii via integrated hydrological modeling approach. *Universal Journal of Geoscience*. 6(5), 147-157.
18. Shuler, C.K., H. Dulai, R. DeWees, M. Kirs, C.R. Glenn, A.I. El-Kadi, 2018. Isotopes, microbes, and turbidity: A multi-tracer approach to understanding recharge dynamics and groundwater contamination in a basaltic island aquifer, *Groundwater Monitoring & Remediation*. 39(1), 20-25. doi:10.1111/gwmmr.12299
19. Leta\*, O.T., A.I. El-Kadi, H. Dulai, K.A. Ghazal, 2018. Assessment of SWAT model performance in simulating daily streamflow under rainfall data scarcity in Pacific Island watersheds. *Water*, 10 (11).
20. Leta\*, O.T., A. El-Kadi, H. Dulai, 2018. Impact of Climate Change on Daily Streamflow and Its Extreme Values in Pacific Island Watersheds. *Sustainability* 10, 2057; doi:10.3390/su10062057
21. McKenzie<sup>x</sup>, T. and H. Dulai, 2017. Fukushima-derived radiocesium fallout in Hawaiian soils. *Journal of Environmental Radioactivity*. 180, 106-113.
22. Richardson<sup>x</sup>, C., H. Dulai. B. N. Popp, K. Ruttenger, J. K. Fackrell, 2017. Submarine groundwater discharge drives biogeochemistry in two Hawaiian reefs. *Limnology and Oceanography*, 62(S1), S348-S363.
23. Bruno, B. C., J. Engels, G. Apuzen-Ito, J. Gillis-Davis, H. Dulai, G. Carter, C. Fletcher, D. Bottjer-Wilson, 2017. Two-stage exams a powerful tool for reducing the achievement gap in undergraduate oceanography and geology classes, *Oceanography*, 30(2), 198-208.
24. Shuler, C. A. El-Kadi, H. Dulai, C. Glenn, J. Fackrell, 2017. Source partitioning of anthropogenic groundwater nitrogen in a mixed-use landscape, Tutuila, American Samoa. *Hydrogeology Journal*, 25(8), 2419-2434.
25. Leta\*, O.T., A. I. El-Kadi, H. Dulai, 2017. Implications of climate change on water budgets and reservoir water harvesting of Nuuanu area watersheds, Oahu, Hawaii. *Journal of Water Resources Planning and Management*, 143(11).
26. Azouz<sup>x</sup>, H. and H. Dulai, 2017. In the wake of Fukushima: Radiocesium inventories in selected North Pacific fish. *Pacific Science*. 71(2), 107-115.
27. Amato, D.W., J. M. Bishop, C. R. Glenn, H. Dulai, C. Smith, 2016. Impact of Submarine Groundwater Discharge on Marine Water Quality and Reef Biota of Maui. *PLOS ONE*, 11(11): e0165825. <https://doi.org/10.1371/journal.pone.0165825>
28. Fackrell, J.K., Glenn, C.R., Popp, B.N., Whittier, R.W., and Dulai, H., 2016. Wastewater injection, biogeochemical reactions, and resultant groundwater N flux to coastal waters: Kā'anapali, Maui, Hawai'i. *Marine Pollution Bulletin* 110, 281-292.
29. Leta\*, O. T., A. El-Kadi, H. Dulai, K. Ghazal, 2016. Assessment of climate change impacts on water balance components of Heeia watershed in Hawaii. *Journal of Hydrology: Regional Studies* 8, 182-197.
30. Phillips, E.H, K.W.W. Sims, D.R.Sherrod, V.J.M. Salters, J. Blusztajn, H. Dulai, 2016. Isotopic constraints on the genesis and evolution of basaltic lavas at Haleakala, Island of Maui, Hawaii. *Geochimica et Cosmochimica Acta*, 195, 201-225.
31. Fröllje, H., K. Pahnke, B. Schnetger, H.-J. Brumsack, H. Dulai, J. N. Fitzsimmons, 2016. Hawaiian imprint on dissolved Nd and Ra isotopes and rare earth elements in the central North Pacific: local survey and seasonal variability. *Geochimica et Cosmochimica Acta*, 189, 110-131.
32. Dulai, H., A. Kleven<sup>x</sup>, K. Ruttenger, R. Briggs, F.I. Thomas, 2016. Evaluation of Submarine Groundwater Discharge as Coastal Nutrient Source and Its Role in Coastal Groundwater Quality and Quantity. A. Fares (ed.), *Emerging Issues in Groundwater Resources, Advances in Water Security*, DOI 10.1007/978-3-319-32008-3\_8
33. Dulai, H., J. Kamenik\*, C.A. Waters<sup>x</sup>, J. Kennedy, J. Babinec, J. Jolly, M. Williamson, 2016. Autonomous long-term gamma-spectrometric monitoring of submarine groundwater discharge trends

in Hawaii. *Journal of Radioanalytical and Nuclear Chemistry*. 307: 1865-1870. DOI 10.1007/s10967-015-4580-9

34. Swarzenski, P.W, H. Dulai, K.D. Kroeger, C.G. Smith, N. Dimova, C.D. Storlazzi, N.G. Prouty, S.B. Gingerich, C.R. Glenn, 2016. Observations of nearshore groundwater discharge: Kahekili Beach Park submarine springs, Maui, Hawaii. *Journal of Hydrology: Regional Studies*. 11:147-165. <https://doi.org/10.1016/j.ejrh.2015.12.056>
35. Richardson<sup>x</sup>, C.M, H. Dulai, R.B. Whittier, 2016. Sources and spatial variability of groundwater-delivered nutrients in Maunaloa Bay, Oahu, Hawai'i. *Journal of Hydrology: Regional Studies* 11: 178-193. <http://dx.doi.org/10.1016/j.ejrh.2015.11.006>

#### **PUBLICATIONS (NON-PEER REVIEWED) 2016-PRESENT**

36. Dulai, H., I.R. Santos, Taniguchi, M., R. Sugimoto, A. Mukherjee, 2021. Editorial to special issue: Submarine Groundwater Discharge: Impacts on Coastal Ecosystem by Hidden Water and Dissolved Materials, *Frontiers in Environmental Sciences, Water and Wastewater Management* 8, 10.3389/fenvs.2020.629509.
37. Smith, J.R., L. Watling, L., N. Summers, E.B. Roark, N. Morgan, B. Lensing, S.C. France, H. Dulai, G.S. Carter, S. Bingo, and Amy Baco-Taylor, 2020. Exploring for a Biogeographic Boundary along the Emperor Seamount Chain: A Multidisciplinary Approach, in Raineault, N.A, and J. Flanders, eds. *New Frontiers in Ocean Exploration: The E/V Nautilus, NOAA Ship Okeanos Explorer, and R/V Falkor 2019 field season. Oceanography* 33(1), supplement, 122 pp., <https://doi.org/10.5670/oceanog.2020.supplement.01>.
38. Dulai, H. 2016. Submarine Groundwater Discharge. *Ka Pili Kai*, 38(1). p.6.

#### **GRANTS 2016-PRESENT**

1. NOAA CRCP: Investigating the role of groundwater in pollutant transport to Nu'uuli Pala Lagoon, American Samoa. PI: K. Knee AU, UH subaward PI: H. Dulai. Funding period: August 1, 2019-January 31, 2021.
2. DOE Consortium for Monitoring, Technology, and Verification. UH subaward PI: Milton Garces, co-PIs: H. Dulai & J. Learned. Funding period: August 1, 2019- July 31, 2024.
3. NSF EPIK: Project EPIK - Earth, Planets, Ike, and Kuleana - Preparing the next generation of diverse geoscientists in Hawai'i. PI: B. Smith-Konter, co-PIs: H. Dulai, J. Engels, J. Konter, S. Rowland. Funding period: August 1, 2019- July 31, 2022.
4. UH Sea Grant (NOAA): Tracking groundwater nutrients using novel tracers to inform coastal watershed management in South Kōhala, Hawai'i. PI: H. Dulai, co-PI: K. Falinksi. Funding period: February 1, 2020-January 31, 2022.
5. County of Kauai: Hydrological Investigation at Kaua'i Salt Pond, PI: R. Papp, co-PIs: H. Dulai, A. El-Kadi, N. Grobbe, N.Lautze. Funding period: March 1, 2019-October 31, 2020.
6. UH Strategic Investment Initiative: Strategic Monitoring And Resilience Training in the Ala Wai Watershed – SMART Ala Wai, PI: B. Glazer, project contributor: H. Dulai. Funding period: 2018-2019.
7. NSF ASPIRE: Groundwater sustainability for small farmers of O'ahu. PI: J. Engels, water quality lead H. Dulai. Funding Period: May 1, 2018-April 30, 2019.
8. NOAA OER: The Current Wall: Exploring the Bathyal Biogeography of the Emperor Seamounts. PI: J. Smith, co-PIs H. Dulai, L. Watling, G. Carter. Funding period: January 1, 2017-August 30, 2020.
9. NSF EPSCoR: Ike Wai: Securing Hawaii's Water Future. UH institutional proposal PI G. Jacobs, Dulai – SGD group lead. Funding period: May 1, 2016 – April 30, 2021.
10. USGS WRRC: Stream pesticide and nutrient loads from baseflow, surface runoff, and sediment contributions on Tutuila Island, American Samoa. PI: H. Dulai. Funding period: March 1, 2016-February 29, 2018.
11. UH Sea Grant (NOAA): The role of surface and groundwater inputs in driving water quality in Kane'ohē Bay, Oahu. PI: H. Dulai. Funding period: March 1, 2016-February 29, 2018.

## **PROFESSIONAL ACTIVITIES**

### **INTERNATIONAL SERVICE:**

Expert delegated by the International Atomic Energy Agency, 2017 Expert Mission: Applying Isotope Hydrology to the Study of Surface and Groundwater Mixing in the Unconsolidated Aquifer Along Lower Ping River, Thailand

### **EDITORSHIP:**

Associate Editor: Limnology & Oceanography Letters

Associate Editor: Marine Chemistry

Associate Editor: Frontiers Environmental Science - Water and Wastewater Management

#### *Special Issues Guest Editor:*

Frontiers Environmental Science - Water and Wastewater Management: Submarine Groundwater

Discharge: Research progress during the last two decades.

Marine Chemistry: Radium and radon tracers in aquatic systems.

Journal of Environmental Radioactivity: Measurement and Application of Radium and Radon Isotopes in Environmental Sciences.

## **PROFESSIONAL AFFILIATIONS**

American Geophysical Union

American Society of Limnology and Oceanography

## **GRADUATE STUDENT COMMITTEES**

Brytne Okuhata Earth, PhD current (committee member)

Diamond Tachera Earth, PhD current (committee member, comprehensive exam committee)

Lucie Knorr Oceanography, PhD current (committee member)

Veronica Gibson Botany, PhD current (committee member, comprehensive exam committee)

Jordan Mason GG, MS 2020 (committee member)

Haunani Kane GG, PhD 2019 (committee member)

Christopher Shuler GG, PhD 2019 (committee member, comprehensive exam committee)

Michael Mathioudakis GG, MS 2019 (committee member)

Kariem Ghazal NREM, PhD 2019 (committee member, comprehensive exam committee)

Florybeth LaValle, Marine Biology, PhD 2018 (committee member, comprehensive exam committee)

Joseph Kennedy GG, MS 2018 (committee member)

Kristen Fogaren Oceanography, PhD 2017 (committee member)

Joseph Fackrell GG, PhD 2016 (committee member)

Ken Lewis, GG MGeo 2016 (interim advisor)

James Bishop GG MS, 2016 (committee member)

Jacque Kelly GG, Ph.D. 2012 (committee member, comprehensive exam committee)

Kayla Holleman GG, M.S. 2011 (committee member)

Elaine Lampitoc GG, M.S. B 2010 (committee member)

Kristen A. McReynolds Chemistry, MS (committee member)

## **UNDERGRADUATE ADVISING (OTHER THAN BS THESIS ADVISOR)**

Aston Benjamin Ramos – Earth Science on Volcanic Islands, Research Experience for Undergraduates, project advisor, project advisor, summer 2017

Sofia Suesue - Pacific Islands Climate Adaptation Science Center Summer Fellow, project advisor, summer 2017

Joe Kennedy, Global Environmental Studies, undergraduate co-advisor, B.S. 2011

Samuel Wall – Undergraduate Research and Mentoring in the Biological Sciences Fellow, project advisor, summer 2013

La Noa O Pono Keahinuuano –Internship Partnership Between Geology & Geophysics and Kokua Puni at the University of Hawaii at Manoa, spring 2013

Jennet Chang – Earth Science on Volcanic Islands, Research Experience for Undergraduates, project advisor, summer 2017

Funded undergraduate interns: Sierra Stammer, Raymond Moore, Vanessza Lopez, Haley Currier, U'ilani Jesse-Kealanahele

### **SERVICE**

UH Manoa Faculty Senate 2015-2017

UH Manoa Graduate Council – Course Committee & Grievance Committee 2012/2013

UH Manoa Graduate Council – Administrative-Admissions-Advisory Committee 2013/2014

UH Manoa Academic Grievance Committee - member 2012/2013 and 2013/2014

New Student Orientation Parent & Family Sessions – panelist 2014, 2015, 2016

### **SOEST service:**

Search Advisory Committee: SOEST Biogeochemical Analytical Laboratory Manager

GG rep on SOEST student cohort host committee fall 2014

COSEE Science Advisory Committee – member 2012/2013

SOEST S-lab advisory board member 2018/19

SOEST Research Council member 2018/19

### **Department service:**

GG Graduate Admissions Committee – member, 2010/11 and 2013/14

GG Honors and Relations Committee – member, 2010/11; chair, 2011/12; member, 2012/13

GG Curriculum Committee – member 2012/13

GG Student Committee – member 2013/14 and Chair 2014/15

GG Ad Hoc Planning Committee - member 2013/14

GG Graduate Studies – 2018/2019

Earth Department Committee – chair 2019/20 and 2020/21

GG/Earth Associate Chair–2015/16 and 2016/17 and 2021/22

MEG Division Head 2018-2020, 2021/22