Hector E. Delgado Diaz

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Education

Ph.D.   **University of Washington**, Astronomy and Astrobiology   Sept 2019 – present
- M.S. in Astronomy degree conferred 2021-03
- GPA: 3.71/4.00

M.S.   **California State University Los Angeles**, Physics   Aug 2017 – May 2019
- Dissertation Title: Stability of Nitrogen in Planetary Atmospheres in Contact with Liquid Water

B.Sc.   **Universidad de Puerto Rico en Cayey**, General Sciences   Aug 2012 – May 2017

Academic Experience

University of Washington, Research Assistant   Seattle, WA, USA   Sept 2019 – present
- VPLanet Group; Advisor: Rory Barnes
- Using VPLanet, an open source code written in C, developed simulations of exoplanets orbiting M dwarf stars and studied their habitability based on stellar, orbital, rotational, and atmospheric parameters.
- With Python, created simulations of exoplanetary atmospheric spectra and used bayesian approach to simulate JWST observations of such atmosphere to assess habitability.

University of Washington, Instructor   Seattle, WA, USA   Sept 2024 – present
- Co-Instructor of Cosmology (ASTR 425) with Dr. Jessica Werk
- Instructor of Pre-Major in Astronomy Program (ASTR 192)

Universidad Nacioinal Autonoma de Mexico, Research Assistant   Ciudad de Mexico, Mexico   June 2024 – Sept 2024
- Instituto de Ciencias Nucleares; Advisor: Antigona Segura
- Used Python and Fortran to understand how energetic particles from solar flares could affect atmospheric nitrogen on exoplanets.

Stanford University, Research Assistant   Palo Alto, CA, USA   June 2023 – Sept 2023
- Earth and Planetary Sciences; Advisor: Laura Schaefer
- Used MATLAB to add the physics of CO_2 outgassing from planetary interior on a magma ocean code.

University of Washington, Teaching Assistant   Seattle, WA, USA   Sept 2019 – May 2021
- Taught the Activity portion of Introduction to Astronomy for undergraduate students in-person and online.
- Moderated discussions for 30+ students in the online course.
- Migrated Introduction to Astrobiology course from in-person to online Canvas platform during the COVID pandemic and the course is still available online.

CERN, Research Intern   Geneva, Switzerland   June 2019 – Sept 2019
- ATLAS group; Advisor: Matt LeBlanc
- Used C++ to process and clean data from particle collisions gathered by the ATLAS detector.

NASA Jet Propulsion Laboratory, Visiting Research Student   La Canada, CA, USA   Aug 2018 – May 2019
- Astrobiology Division; Advisor: Renyu Hu
- Used MATLAB to calculate the effect of lightning on atmospheric nitrogen when bodies of water are present on the exoplanet around Gj 876.

California State University Los Angeles, Research Assistant — Los Angeles, CA
Jan 2018 – June 2018
- Physics Department; Advisor: Luca Ricci
- Used ALMA radio telescope data to study the chemical components of protoplanetary disks.

Universidad de Puerto Rico en Cayey, Student Researcher — Cayey, PR, USA
Aug 2015 – May 2017
- Laboratorio de Modelaje y Simulaciones Teoricas
- Modeled rate of reaction for different configurations of atmospheric CO_2 and H_2O.

NASA Goddard Space Flight Center, Summer Research Intern — Greenbelt, MD, USA
June 2016 – Aug 2016
- Planetary Systems Laboratory; Advisor: Paul Romani
- Used data from the Cassini-Huygens mission to constrain the source of stratospheric water of Saturn

The Washington Center, International Relation Interns — Washington, DC, USA
Jan 2015 – June 2015
- Social Inclusion Division at Organization of American States; Advisor: Alexandra Barrantes
- Assisted in communications between the Division of Social Inclusion and Diplomats of the American States for diplomatic meetings.
- Assisted in Translating, proofreading, and formatting the book "Protocolo San Salvador"
- Live English scribe for the Secretary of Social Inclusion Meetings for the American States.

San Jose State University, Summer Research Intern — San Jose, CA, USA
June 2014 – Aug 2014
- Laboratory of Neuroscience; Advisor: Katherine Wilkinson
- Used mice leg muscles to study the effects of lactic acid on nociceptors III and IV neurons and how obesity could be related to associated muscular and joint pain.

Publications

Climates of Gl 514 b (in-prep)
Hector Delgado Diaz, Rory Barnes, Russell Deitrick, Mario Damasso

Stability of Nitrogen in Planetary Atmospheres in Contact with Liquid Water — Nov 2019
Renyu Hu, *Hector Delgado Diaz*
10.3847/1538-4357/ab4cea ⧉ (The Astrophysical Journal)

Awards and Fellowships

Beca Josep Comas i Sola Escuela de Astrobiologia — Santander, Spain
July 2023

Bonderman Fellowship Award — Apr 2021
- Selected out of 200 applicants to travel the world for 8 months as part of a cultural experience.
- Dates traveled: September 2023 - May 2024.

Department of Astronomy Teacher of the Year Award — Seattle, WA, USA
Sept 2020

ARCS Foundation Fellowship — Seattle, WA, USA
Aug 2019
- Selected for a 3-year fellowship totaling \$17,500.

GEM Fellow — Seattle, WA, USA
Aug 2019

Exo-Atmoshperes Summer School Scholarship — Chur, Switzerland
June 2019

Hispanic Scholarship Fund Award — Los Angeles, CA, USA

Aug 2018

Talks and Posters

Climates of Gl 514 b — Jan 2025
- American Astronomical Society 245th Winter Meeting, Seattle, WA, USA

Climates of Gl 514 b — Aug 2024
- NASA Goddard: ROCKE-3D Journal Club

Climates of Gl 514 b — Aug 2024
- Simposio en Materiales y Fisicoquimica - Sociedad Dominicana de Fisica

FLUXS - Gas Fluxes for Understanding and Experimenting the Subsurface — July 2023
- Mars Ideation Factory, NASA Goddard

Climates of Gl 514 b — June 2023
- Qualifying Exam, University of Washington

Climates of Gl 514 b — May 2023
- AbGradCon, San Diego, CA, USA

Climates og Gl 514 b (poster) — Jan 2023
- American Astronomical Society 241st Winter Meeting, Seattle, WA, USA

Procurando Exoplanetas Habitables con el Telescopio JWST — Dec 2021
- Spanish talk for the Museum of Flight, Seattle, WA, USA

Searching for Habitable Exoplanets Using the Telescope JWST — Oct 2021
- Museum of Flight, Seattle, WA, USA

Characterizing Exoplanetary Atmospheres with JWST — May 2021
- Town Hall Seattle, WA, USA

Caracterizando Atmosferas de Exoplanetas con JWST — Jan 2021
- Sociedad Dominicana de Fisica, presentacion en linea

Stability of Nitrogen in Planetary Atmospheres in Contact with Liquid Water — Jan 2019
- American Astronomical Society 233rd Winter Meeting, Seattle, WA, USA

Stability of Nitrogen in Planetary Atmospheres in Contact with Liquid Water — Nov 2018
- American Physical Society Bridge Program Conference, Mountain View, CA, USA

Saturn's Stratospheric Oxygen Compounds — Oct 2016
- Division of Planetary Science, Pasadena, CA, USA

Effect of Obesity and Lactic Acid on Muscle's Nociceptors III and IV neurons — Nov 2015
- Annual Biomedical Research Conference for Minority Students, San Antonio, TX, USA

Effect of Obesity and Lactic Acid on Muscle's Nociceptors III and IV — Oct 2015
- Society for the Advancement of Chicanos and Native Americans in Science, Los Angeles, CA, USA

Outreach and Volunteering Experience

Peer Reviewer, Astrophysical Journal Supplement Series — Feb 2025
- Invited to review a manuscript on distance estimates for RR Lyrae Stars

Origins: Life in the Universe — Dec 2024 – present
- Co-founder of the Astrobiology Registered Student Organization at the UW
- Graduate Student Advisor position

UW Astronomy Graduate Senator — Sept 2024 – present
- Member of the Diversity Comittee and Travel Grants Comittee

- Monthly meetings held for the General Senate and weekly meetings for each committee
- Co-writer of approved resolution

NASA Subject Matter Expert Volunteering   Oct 2021 – present

VPLanet Workshop - Tech Support   Aug 2023

UW Astronomy Graduate Senator   Sept 2020 – May 2021

Professional Development

Mars Ideation Factory   Greenbelt, MD, USA
Aug 2023

Astrobiology Summer School   Santander, Spain
July 2023

Carl Sagan Summer Workshop   Pasadena, CA, USA
July 2023

Exo-Atmoshperes Summer School   Chur, Switzerland
June 2019

Research Mentorship

Nathaniel Brown (University of Washington)   2025

Kyler Reynolds (Everett College)   2024-2025

Work Experience

Fusion Academy, High School Science Teacher   Pasadena, CA, USA
June 2022 – Sept 2023
- Taught high school students Science courses: Astronomy, Chemistry, Physics, Biology, Math (Algebra-Calculus), and Earth and Space Science.
- Served as a substitute teacher for Spanish and Economy.

Griffith Observatory, Museum Guide and Online Support   Los Angeles, CA, USA
June 2021 – Sept 2023
- Worked explaining astronomy history, instruments, and science to the general public in English and Spanish.
- Worked as online support for the Griffith Museum Online School Program.

References

- *Dr. Rory Barnes* (UW) - Ph.D. Advisor: rkb9@uw.edu ⎘
- *Dr. Jessica Werk* (UW) - Astronomy Chair: jwerk@uw.edu ⎘
- *Dr. Eric Agol* (UW) - Graduate Advisor: agol@uw.edu ⎘