

Rafael Avila-Terkenlis

formerly Rafael Cottom

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Ph.D. Student

Rm. 340, Wright-Rieman Laboratories, Busch Campus, Rutgers University–New Brunswick

INTERESTS

RESEARCH | Thermophysical evolution of ice-rich planetary surfaces and interiors; cryovolcanism; habitability.

SERVICE | Earth and space science outreach; mentoring students: research and career development.

EDUCATION

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| 2030 | Rutgers University , New Brunswick, NJ
Ph.D., Earth and Planetary Sciences
Advisor: Lujendra Ojha |
| 2025 | University of California, Santa Cruz , Santa Cruz, CA
B.S., Earth Sciences (Planetary Science) |
| 2023 | Santa Barbara City College , Santa Barbara, CA
A.S., Astronomy [transfer w/o degree] |

ADDITIONAL TRAINING

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| 2026 | International Heat Flow Commission (IHFC) Summer School <i>İzmir, Türkiye</i> |
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STUDENT RESEARCH POSITIONS

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| 2024-2025 | Undergraduate Researcher · Advisors: Benjamin Idini & Jonathan Fortney
Solar System Physics (S ² P) Group, Department of Astronomy & Astrophysics, UCSC |
| 2023 | Cosmology Research Intern · Advisor: Adrian Liu
McGill Cosmic Dawn and Hydrogen Cosmology Group, Trottier Space Institute, Université McGill |
| 2022 | Astrophysics Research Intern · Advisor: Erika Holmbeck
Carnegie Observatories |

PUBLICATIONS

Conference Abstracts

Cottom, R. & Ojha, L. (2026). Dike-Mediated Water Transport in the European Ice Shell: Implications for the Feasibility of Ice-Ocean Exchange. *57th LPSC 3160* (#1881).

Cottom, R. & Holmbeck, E. (2023). Deriving the First Stellar Mass Function from the Light-Element Abundances of Metal-poor Stars. *Bulletin of the American Astronomical Society*, 55(2).

In Preparation

Avila-Terkenlis, R. & Ojha, L. (2027). Liquid Water Ascent in the European Ice Shell: Plausible Dike-Like Conduit Geometries.

Avila-Terkenlis, R. & Holmbeck, E. (202X). Deriving the First Stellar Mass Function from the Light-Element Abundances of Metal-poor Stars.

HONORS & GRANTS

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| 2026 | Research Lead Award · <i>Governor's STEM Scholars, Research & Development Council of New Jersey</i> (1000 USD)
IHFC Travel Grant · <i>International Heat Flow Commission</i> (300 USD) |
| 2025 | Dean's Honors List (Spring Quarter) · <i>University of California, Santa Cruz</i>
Excellence Fellowship · <i>Earth & Planetary Sciences, Rutgers University</i> (40,000 USD)
Eli Silver Earth & Planetary Science Opportunities Fund · <i>Earth & Planetary Sciences, UCSC</i> (2,000 USD) |
| 2023 | Marschak Astronomy SBCC Foundation Scholarship · <i>Earth & Planetary Sciences, SBCC</i> (1,000 USD) |
| 2022 | Neil Currie Award: Outstanding Planetary Petrologist · <i>Earth & Planetary Sciences, SBCC</i> (500 USD) |
| <u>TOTAL:</u> | 44,800 USD |

PROFESSIONAL EXPERIENCE

- 2019-2023 Lead Astronomy Programs Presenter, Coordinator
 Astronomy Department & School and Teacher Services, Santa Barbara Natural History Museum (SBMNH)
- 2023 Tutor
 Field Course: Death Valley Petrology (5 Days and 4 Nights), Earth and Planetary Sciences, SBCC

CONFERENCE PRESENTATIONS

Posters

- 2026 **Cottom, R.** & Ojha, L. (2026). Dike-mediated water transport in the European ice shell: Implications for the feasibility of ice-ocean exchange. *57th Lunar and Planetary Science Conference*, #1881.
- 2023 **Cottom, R.** & Holmbeck, E. (2023). Deriving the First Stellar Mass Function from the Light-Element Abundances of Metal-poor Stars. *Bulletin of the American Astronomical Society*, 55(2).

TEACHING ASSISTANTSHIPS

- FALL 2026 01:460:201 *Earthquakes and Volcanoes*, Dept. of Earth and Planetary Sciences, Rutgers University

OTHER PRESENTATIONS

- 2026 *Ice and Cryovolcanism: Mars and Beyond* · **Guest Lecturer**, 01:460:222 Planet Mars, Rutgers
 Jupiter and the Galilean Satellites · **Guest Lecturer**, 01:460:224 Geology of Moons & Planets, Rutgers
- 2025 *Ocean Worlds and Planetary Science* · **Invited Speaker**, SBCC Astronomy Club
- 2023 *Algal Members of the Crystal Springs Formation* · **Tutor Talk**, Death Valley Petrology Field Course, SBCC
 Galactic Archaeology · **Invited Speaker**, Santa Barbara Astronomical Unit: First Friday of the Month Speaker Event
 Astronomy 101 · **Speaker**, Docent Training, Santa Barbara Museum of Natural History
- 2022 *Galactic Archaeology* · **Invited Speaker**, Science Pub at Dargan's, Santa Barbara Museum of Natural History
 Galactic Archaeology · **Invited Speaker**, SBCC Astronomy Club

LEADERSHIP & OUTREACH

- 2025 Committee Lead · *Commencement A/V Committee*, Earth & Planetary Sciences, UCSC
- 2023 - 2025 Member · *Astrobiology Reading Group*, Earth & Planetary Sciences, UCSC
 Member · *Cosmochemistry Reading Group*, UCSC
- 2023 - 2024 Events Coordinator · *Women in Physics and Astronomy*, UCSC
- 2021 - 2023 President, Officer · *Astronomy Club*, Earth & Planetary Sciences, SBCC
- 2019 - 2023 Organizer and observatory operator · *Montly Star Party*, SBMNH, Santa Barbara, CA
- 2021 - 2023 Organizer and communicator · *Astronomy Club Star Parties*, Earth & Planetary Sciences, SBCC
- 2022 - 2023 Organizer and communicator · *STEM Day*, Earth & Planetary Sciences, SBCC
- 2023 Communicator · *Science Discovery Day (STEM Transfer Program)*, Earth & Planetary Sciences, SBCC
- 2022 Communicator · *Ask an Astronomer Table*, Carnegie Observatories, Pasadena, CA
 Communicator · *AstroFest 22 (Carnegie Observatories)*, Pasadena, CA
 Communicator · *La Cumbre Junior High School Science Night (SBCC Astronomy Club)*, Santa Barbara, CA

MENTORING

- 2026-2027 Research Lead, Governor's STEM Scholars · *High School Students*, Research & Development Council of New Jersey
- 2026 Research Mentor, 01:750:155 Intro. to Research and Research Communities in Physics · *Undergraduates*, Rutgers
- 2023-2026 Evan Grant · *Undergraduate*, University of California, Berkeley
- 2023-2026 CASSI Mentorship Program · *Undergraduates*, Carnegie Observatories Summer Student Internship

SKILLS

- LEADERSHIP Event organizing and hosting; leading educational programs; coordinating outreach; mentoring
- CODING Python, L^AT_EX, R, DigiStar
- SOFTWARE ArcGIS Pro (+ QGIS and ArcMap), COMSOL Multiphysics, iSALE, Jupyter Notebook, Microsoft Suite, Open Broadcast Software, Moog, Spectroscopy Made Hard(er), [STARFIT](#)
- LANGUAGES Greek (native), English (native), French (elementary)