# Katerina Isabel Benevides

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## EDUCATION

**University of British Columbia,** Department of Earth, Ocean, & Atmospheric Sciences — *Vancouver, BC*
MSc. Physical Oceanography — *Sept 2024 – June 2026*
- Observational analysis of Pan-Arctic stratification over the last few decades
- Judging Canada's role in the degradation of the Pan-Arctic permafrost

**University of Toronto,** Department of Arts & Science — *Toronto, ON*
HBSc. Specializing in Planetary Science. Minor in Archaeology. Minor in Geoscience — *Sept 2020 – June 2024*

## EXPERIENCE

**Local Safety Team (LST), Graduate Representative,** University of British Columbia — *Vancouver, BC*
*Sept 2023 – Present*
- Working with the university as the graduate representative in the Department of Earth, Ocean, and Atmospheric Sciences to mitigate and eliminate injuries in UBC workplaces
- Conducting incident/accident investigations when needed, general inspections often

**Coordinator,** Department of Earth, Ocean, Atmospheric Sciences, University of British Columbia — *Vancouver, BC*
*Sept 2023 – Present*
- Overseeing the wellbeing and tending to the requests of the graduate student cohort in the department, bringing action items to the attention of the department on a larger scale
- Hosting department meetings that span social events, alongside the co-coordinator, secretary, and treasurer. Meetings open to all graduate students for purposes of transparency

**Project Supervisor,** Visions of Science, Dunlap Institute for Astronomy and Astrophysics — *Toronto, ON*
*Jun 2023 – Aug 2023*
- Supervised two projects for four high school students partaking in Visions of Science
- Wrote **Python** to help the students characterize exoplanet habitability via physical properties and characterize galaxy types through the light they emit
- Helped students problem solve and debug their **Python** code

**Campus Organizations Assistant,** Student Life, University of Toronto — *Toronto, ON*
*Sept 2022 – Aug 2023*
- Fostered inclusive environments by hosting EDI meetings, ensuring students felt supported and comfortable in seeking assistance to effectively address their challenges

**President of PhySU & ASX,** University of Toronto — *Toronto, ON*
*May 2022 – May 2023*
- President for both the Physics Student Union and the Astronomy and Space Exploration Association, previously the VP Internal/External and Events Director respectively
- Held financial meetings with the Arts & Science Student Union, UTSU, and UofT staff
- Hosted the annual symposium and gave a platform for prominent physics and astronomy figures

**Information Officer,** Allan I. Carswell Observatory, York University — *Toronto, ON*
*June 2020 – Mar 2022*
- Organized monthly training sessions for volunteers and researchers, leveraging their expertise to conduct engaging educational public tours
- Designed weekly newsletters and managed social media announcements

## RESEARCH

**HII Region Identification for Stellar Clusters**, Astronomy Department, University of Toronto — *Toronto, ON*
*Sept 2023 – Apr 2024*
- Supervised by Laurie Rousseau-Nepton, Professor in the Astronomy and Astrophysics Department at the University of Toronto
- Tailored target selection for studying star forming regions evolution, data analysis techniques, **emission line fitting** and **dust extinction correction** using **Hα/Hβ ratios**
- Innovated methods for assessing the life cycles of **HII regions**, **gas density**, **cluster mass determination**, exploring the spatial correlation, giving insight to the dynamics of star formation

**Sub-surficial Geophysical Imaging of an Artesian Spring,** University of Toronto — *Toronto, ON*
*Sept 2023 – Apr 2024*
- Used **geophysical imaging** techniques like **Resistivity Lines** and **Ground-Penetrating Radar** to analyze sub-surface dynamics of artesian springs found in Laurentian Hills, Ontario
- Wrote **MATLAB** and **Python** scripts to create cross-sections for analysis

**Source Mechanism Analysis of Kahramanmaras Earthquake,** University of Toronto — *Toronto, ON, May 2023 – Nov 2023*

- Supervised by the J. Tuzo Wilson award professor, Qinya Liu
- Applied the **MTUQ** package to examine the earthquake source mechanism and aftershock sequences, as well as its temporal and spatial relationship to the mainshock.
- Explored utilizing a **regional 3D background model** for the source mechanism of the earthquake and built models to examine the events leading up to and beyond the main earthquake.

**Geophysical Field Techniques,** ESS450, University of Toronto — *Deep River, ON, Aug 2023 - Sept 2023*

- Selected to travel to Deep River to perform analyses using various hands-on **geophysical instrumentation devices**
- Applied various data collection techniques and performed data analysis in **gravity**, **magnetic**, **seismic**, **electrical**, **electromagnetic**, and **radar surveys**

## CONFERENCES & PANELS

**Annual Canadian Space Conference,** SEDS Canada — *Montreal, QC, Jan 2023*

- Chosen, along with the other executives of the Astronomy and Space Exploration Association, to take part in this conference
- Presented past symposium events and workshops to hundreds of people
- Participated in interactive discussion with James Webb Space Telescope engineers

**Life (not) As We Know It,** ASX, University of Toronto — *Toronto, ON, Feb 2023*

- Organized accommodations for speakers to present for the symposium event internationally
- Budgeted large sums of money to accommodate our needs, the needs of the speakers, and catering for **400 people**; totaling over **$10,000**

**GAIA Data-Release 3 (DR3) Hike,** Canadian Institute of Theoretical Astrophysics (CITA) — *Vancouver, BC, June 2022*

- Calculated and predicted the paths and trajectories that stars follow in the Milky Way using **Java**, **TOPCAT**, and the **Gala** Astropy package
- Applied physical models and computational methods to **simulate** how these stars move under the influence of gravitational forces
- Studied the dynamics and evolution of these stars in the broader context of galactic structure and formation

**Stellar Spectacles 18th Annual Symposium,** ASX, University of Toronto — *Toronto, ON, Feb 2022*

- Hosted an astrophotography workshop, teaching guests on how to use equipment to take deep-space images
- Introduced **DORADO** and **HoggCam** to interested parties

## PROJECTS

**DORADO**, Allan I. Carswell Observatory — *Toronto, ON, Sept 2019 – Feb 2021*

- Co-founded the Digitizing Observatory Resources for Automated Data Responses, an open-source **Python** package made to replace IRAF in research **data processing/analysis** at the observatory, now accommodating public outreach efforts

**HoggCam**, Allan I. Carswell Observatory — *Toronto, ON, May 2019 – June 2020*

- Co-created a low-cost, versatile space camera using a **Raspberry Pi** HQ camera board
- Supports most thread-mount lenses and attaches to any telescope

## SKILLS

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| **Tools/Equipment** | Python, Java, TopCat, 1m/60cm/40cm/16in/8in Telescopes, Spectrophotometers, CCD Cameras, Seismometers, Radar Surveys, ResiPY, GPRpy, MTUQ |
| **Languages** | English, French, Greek, Spanish, Portuguese |