

# ANDREW X. WILCOSKI

SETI Institute  
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## EDUCATION

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### University of Colorado, Boulder

- 2022 *Ph.D.*, Astrophysical & Planetary Sciences (Advisor: Paul O. Hayne)  
Dissertation: *Ice on the Moon and Mars: A Key to Past and Present Planetary Climates*  
2019 *M.S.*, Astrophysical & Planetary Sciences

### University of California, Santa Cruz

- 2016 *B.S.*, Physics, *Magna Cum Laude*, Minor in Earth & Planetary Science

## RESEARCH INTERESTS

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Planetary Science, Lunar Science, Mars Science, Antarctic Science, Polar Processes, Ices, Atmospheres, Surfaces, Volcanism, Thermal Modeling, Radiative Transfer, Remote Sensing

## RESEARCH EXPERIENCE

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| 2025-PRESENT            | <b>Frank Drake Postdoctoral Fellow</b><br>Carl Sagan Center<br>SETI Institute  |
| 2023-2025               | <b>NASA Postdoctoral Program Fellow</b><br>Planetary Interiors & Geophysics Group<br>NASA Jet Propulsion Laboratory  |
| 2023<br>(OCT-DEC)       | <b>Antarctic Infrared Camera Field Team Lead</b><br>Southwest Research Institute   |
| 2018-2022               | <b>Graduate Research Assistant</b><br>Astrophysical & Planetary Sciences Department<br>Laboratory for Atmospheric and Space Physics<br>University of Colorado, Boulder |
| 2014-2016               | <b>Undergraduate Research Assistant</b><br>Physics Department<br>University of California, Santa Cruz  |
| 2014, 2015<br>(SUMMERS) | <b>Integration Engineering Intern</b><br>Intel Corporation, Santa Clara, California  |
| 2013                    | <b>Undergraduate Research Assistant</b><br>Physics Department<br>California State Polytechnic University, Pomona   |

## MISSION INVOLVEMENT

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- NASA Lunar Reconnaissance Orbiter**  
Diviner Lunar Radiometer Experiment  
*Co-Investigator*
- NASA Mars Reconnaissance Orbiter**  
Mars Climate Sounder  
*Graduate Student Affiliate (2018-2022)*

## HONORS & AWARDS

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2023	United States Antarctica Service Medal
2021	Ray Mace Smith Graduate Fellowship
2016	Highest Honors in Physics, University of California, Santa Cruz
2014-2016	Dean's Honors, University of California, Santa Cruz
2011-2013	Dean's List, California State Polytechnic University, Pomona

## PEER-REVIEWED PUBLICATIONS

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**Wilcoski, A. X.**, Elder, C. M., Landis, M. E., & Hayne, P. O. (2025). Volatile Composition of Volcanically Sourced Lunar Ice Deposits. [Manuscript in prep.]

**Wilcoski, A. X.**, Hayne, P. O., & Elder, C. M. (2023). Thermal Environments and Volatile Stability within Lunar Pits and Caves. *Journal of Geophysical Research: Planets*, 128(7), e2023JE007758.

**Wilcoski, A. X.**, Hayne, P. O., & Landis, M. E. (2022). Polar Ice Accumulation from Volcanically Induced Transient Atmospheres on the Moon. *The Planetary Science Journal*, 3(5), 99.

**Wilcoski, A. X.** & Hayne, P. O. (2020). Surface roughness evolution and implications for the age of the north polar residual cap of Mars. *Journal of Geophysical Research: Planets*, 125(12), e2020JE006570.

## CONFERENCE ABSTRACTS

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**Wilcoski, A. X.**, Landis, M. E., Shore, G. K., Hayne, P. O., & Byrne, S. (2024, July). 3D Thermal and Vapor Diffusion Modeling at the Poles of Mars. *Mars Polar Science Conference* (No. 3064, p. 6068).

Hoover, R. H., Kowalewski, D. E., Stillman, D. E., **Wilcoski, A. X.**, Grimm, R. E., & Levy, J. S. (2024, July). Characterization of Beacon Valley Polygon Morphology and Applications to Mars. *Mars Polar Science Conference* (No. 3064, p. 6062).

Stillman, D. E., Kowalewski, D. E., Hoover, R. H., **Wilcoski, A. X.**, Grimm, R. E., & Levy, J. S. (2024, July). Geophysical Survey of Polygonal Terrain in Beacon Valley, Antarctica: Implications for Subsurface Ice on Mars. *Tenth International Conference on Mars* (No. 3007, p. 3444).

**Wilcoski, A. X.**, Elder, C. M., Landis, M. E., & Hayne, P. O. (2024, March). Volatile Composition of Volcanically Sourced Lunar Ice Deposits. *Lunar and Planetary Science Conference* (No. 3040, p. 2373).

Horvath, T., **Wilcoski, A. X.**, Hayne, P. O., & Paige, D. A. (2023, March). Thermal Environment of Lunar Pits and Caves: Implication for Future Lunar Missions and Volatiles. *Lunar and Planetary Science Conference* (No. 2697, p. 1078).

**Wilcoski, A. X.**, Hayne, P. O., & Elder, C. M. (2022, November). Volatile Stability Modeling of Lunar Pits and Caves. *Lunar Polar Volatiles Conference* (No. 2703, p. 5037).

**Wilcoski, A. X.**, Hayne, P. O., & Elder, C. M. (2022, March). Lunar Pits and Caves: Thermal Environment and Volatile-Trapping Potential. *Lunar and Planetary Science Conference* (No. 2678, p. 2598).

Hayne, P. O., & **Wilcoski, A. X.** (2022, March). Topographic Roughness and Physical Models of Texture Formation on the North Polar Residual Cap of Mars. *Lunar and Planetary Science Conference* (No. 2678, p. 2497).

**Wilcoski, A. X.**, Hayne, P. O., & Landis, M. E. (2021, March). Polar Ice Accumulation on the Moon Due to Volcanically Induced Transient Atmospheres. *Lunar and Planetary Science Conference* (No. 2548, p. 2344).

Landis, M. E., Byrne, S., Hayne, P. O., Piqueux, S., & **Wilcoski, A. X.** (2021, March). Interannual variability of ice within north polar layered deposits craters on Mars. *Lunar and Planetary Science Conference* (No. 2548, p. 1653).

**Wilcoski, A. X.**, & Hayne, P. O. (2020). Modeling North Polar Residual Cap Surface Texture and Recent Resurfacing. *LPI Contributions*, 2099, 6058.

**Wilcoski, A. X.**, & Hayne, P. O. (2019, July). Modeling surface texture formation of the Martian north polar residual cap. *Ninth international conference on Mars* (Vol. 2089, p. 6129).

Wilcoski, A. X., & Hayne, P. O. (2019, March). Mass Balance and Surface Texture of the Martian North Polar Residual Cap. *Lunar and Planetary Science Conference* (No. 2132, p. 2210).

## RESEARCH SKILLS & EXPERIENCE

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**Numerical modeling & simulation**  
**Thermal & radiative transfer modeling**  
**Synthesis of remote sensing observations and modeling**  
**Parallel computing**

**Programming Languages:**

Fluent: Python  
Familiar: C++, MATLAB

## FIELD SKILLS & EXPERIENCE

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Beacon Valley, Antarctica Expedition (2023)  
Graduate Planetary Field Geology (HI, 2018; WY, 2018; NM & AZ, 2019)  
Wilderness Travel, Backcountry Safety, Multi-day Backcountry Logistics & Planning,  
Wilderness First Aid Certification (March 2022), Winter Camping & Travel  
Glacier Travel & Crevasse Rescue, Climbing Rope & Anchor Systems, Rock & Ice Climbing  
Backcountry Ski Mountaineering, AIARE 1 Avalanche Training Certification

## TEACHING EXPERIENCE

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FALL 2017	<b>Graduate Teaching Assistant</b>
SPRING 2018	<i>University of Colorado, Boulder</i> ASTR 1010: Introductory Astronomy Laboratory

## PROFESSIONAL & DEPARTMENTAL SERVICE

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**NASA Review Panel Executive Secretary**  
Solar System Workings

**Graduate Admissions Committee Member**  
*University of Colorado, Boulder* (2020-2021)

## INVITED TALKS

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2022	NASA Jet Propulsion Laboratory Colloquium
2022	Southwest Research Institute Colloquium

## PROFESSIONAL AFFILIATIONS

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American Astronomical Society, Division of Planetary Sciences  
American Geophysical Union

## OUTREACH & MEDIA

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2022	"Ancient volcanoes may have created a rare resource for lunar explorers" <i>CNN</i> , <a href="https://tinyurl.com/2na7hs53">https://tinyurl.com/2na7hs53</a>
2022	"Astronauts may one day drink water from ancient moon volcanoes" <i>CU Boulder Today</i> , <a href="https://tinyurl.com/5yr67xrc">https://tinyurl.com/5yr67xrc</a>
2021	"Spelunking on the moon: New study explores lunar pits and caves" <i>CU Boulder Today</i> , <a href="https://tinyurl.com/yc5m35p8">https://tinyurl.com/yc5m35p8</a>
2021	"Decoding the Age of the Ice at Mars's North Pole" <i>Eos Research Spotlight</i> , <a href="https://tinyurl.com/pt4em7ts">https://tinyurl.com/pt4em7ts</a>
2020	"Episode 2 - It's A Mars, Mars, Mars, Mars World" <i>A View From Earth, Fiske Planetarium Podcast</i> , <a href="https://tinyurl.com/3ew498uu">https://tinyurl.com/3ew498uu</a>

## CONFERENCE ACTIVITY

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2025	<b>Lunar and Planetary Science Conference</b>
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- 2024 *Oral Presentation*, The Woodlands, TX  
**Mars Polar Science Conference**  
*Oral Presentation*, Whitehorse, Yukon, Canada  
 2024 **AOGS Annual Meeting**  
*Poster Presentation*, Pyeongchang, Gangwon-do, South Korea  
 2024 **Lunar and Planetary Science Conference**  
*Poster Presentation*, The Woodlands, TX  
 2023 **EGU General Assembly**  
*Oral Presentation*, Vienna, Austria  
 2023 **4th Workshop on Thermal Models for Planetary Science**  
*Oral Presentation*, Noordwijk, The Netherlands  
 2022 **Lunar Polar Volatiles Conference**  
*Oral Presentation*, Boulder, CO  
 2022 **NASA Exploration Science Forum**  
*Oral Presentation*, Boulder, CO  
 2022 **Lunar and Planetary Science Conference**  
*Oral Presentation*, The Woodlands, TX  
 2021 **AGU Fall Meeting**  
*Oral Presentation*, New Orleans, LA  
*Session Chair*  
 2021 **NASA Exploration Science Forum & European Lunar Symposium**  
*Poster Presentation*, Virtual  
 2021 **Lunar and Planetary Science Conference**  
*Oral Presentation*, Virtual  
 2020 **AGU Fall Meeting**  
*Poster Presentation*, Virtual  
 2020 **Seventh International Conference on Mars Polar Science and Exploration**  
*Oral Presentation*, Ushuaia, Argentina  
 2019 **Ninth International Conference on Mars**  
*Poster Presentation*, Pasadena, CA  
 2019 **Lunar and Planetary Science Conference**  
*Oral Presentation*, The Woodlands, TX