

Andrea Zorzi

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Earth and Planetary Sciences Department

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Education

2020 – Present	Stanford University PhD Candidate in Earth and Planetary Sciences Mentor: Prof. Laura Schaefer	Stanford, CA, USA
2017 – 2019	Delft University of Technology MSc in Aerospace Engineering Mentors: Prof. Imke de Pater and Prof. Daphne Stam	Delft, The Netherlands
2014 – 2017	Università degli Studi di Padova BSc in Aerospace Engineering Mentor: Prof. Carlo Bettanini Fecia di Cossato	Padova, Italy

Research Experience

Oct 2019 – Jun 2020	Max Planck Institute for Solar System Research Graduate Assistant Mentors: Dr. Ladislav Rezac and Dr. Paul Hartogh Modeling of neural network for automated recognition of sub-millimeter rotational transitions of water isotopes and application on Rosetta's MIRO data.	Göttingen, Germany
Sep 2018 – Feb 2019	University of California, Berkeley Visiting Student Researcher Mentor: Prof. Imke de Pater Radiative transfer modeling of Neptune's atmosphere HST visible data between 1994 and 2018. Published in TU Delft Repository as MSc Thesis.	Berkeley, CA, USA

Honors and Scholarships

Sep 2022 – Sep 2025	NASA FINESST Fellow Fellowship for doctoral project "Impact-Induced Formation of Prebiotic Molecules on Terrestrial Planets".	
Sep 2019	Early Career Scientist bursary (EPSC-DPS) Europlanet Society sponsorship to support participants from under-represented states and early career researchers at the EPSC-DPS Meeting.	
Aug 2018	Justus and Louise Van Effen Research Grant (TU Delft) Funding for short-term research stay (6 months) at one of the top 20 engineering and technology universities.	

Publications

- Chaverot, G., Zorzi, A., Ding, X., Itcovitz, J., Fan, B., Bhatnagar, S., et al. (2024). Resilience of snowball Earth to stochastic events. *Geophys. Res. Letters* 51, e2024GL109512.
- Chavez, E., de Pater, I., Redwing, E., Molter, E. M., Roman, M. T., Zorzi, A., Alvarez, C., Campbell, R., de Kleer, K., Hueso, R., Wong, M. H., Gates, E., Lynam, P. D., Davies, A. G., Aycok, J., McIlroy, J., Pelletier, J., Ridenour, A., and Stickel, T. (2023). Evolution of Neptune at near-infrared wavelengths from 1994 through 2022. *Icarus* 404, 115667.
- Zorzi, A., Tikoo, S. M., Beroza, G. C., & Sleep, N. H. (2022). Reevaluating links between meteorite impacts and early Cenozoic global warming. *Geophys. Res. Letters*, 49, e2022GL099313.
- Rezac, L., Zorzi, A., Hartogh, P., Pinzón-Rodríguez, O., Marshall, D., Biver, N., Bockelée-Morvan, D., Crovisier, J., Ip, W. H., Gulkis, S., and the MIRO team (2021). Gas terminal velocity from MIRO/Rosetta data using neural network approach, *A&A* 648, A21.
- Zorzi, A., Tikoo, S. M., Sori, M. M., and Bramson, A. M. Lifetime of Impact-Induced Subglacial Hydrothermal Systems on Mars. *In review*.
- Miyayama, R., Schaefer, L. K., Kobayashi, H., Zorzi, A. Modeling Atmospheric Alteration on Titan – Hydrodynamics and Shock-Induced Chemistry of Meteoroid Entry. *In review*.
- Zorzi, A., and Schaefer, L. K. Impact Induced Formation of Prebiotic Species on Terrestrial Planets. *In prep*.
- Zorzi, A., and Schaefer, L. K. Thermal Evolution of Non-synchronous Lava Worlds. *In prep*.
- Zorzi, A., Molter, E., de Pater, I., Luszcz-Cook, S. H., Tollefson, J., and Wong, M. H. Evolution of Neptune’s troposphere in 1994-2023 based on HST observations. *In prep*.

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Keywords: Planetary science(1255) — Planetary atmospheres(1244) — Impact phenomena(779)

Conference/Seminars Presentations

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| Oct 2024 | Lifetime of Impact-Induced Subglacial Hydrothermal Systems on Mars
<u>Zorzi, A.</u> , Tikoo, S. M., Sori, M. M., and Bramson, A. M.
Oral presentation for the 2024 DPS Meeting. |
| Oct 2024 | Modeling the Formation of Impact Craters on Titan: Implications for Astrobiology
Nehring, K., <u>Zorzi, A.</u> and Schaefer, L.
Poster presentation for the 2024 DPS Meeting. |
| Mar 2024 | Thermal Evolution of Rotating Lava Worlds
<u>Zorzi, A.</u> , Schaefer, L.
Poster for the Extreme Solar Systems V Meeting. |
| Oct 2023 | Prebiotic species formation during terrestrial planets late accretion using a neural network approach |

- Zorzi, A., Schaefer, L.
Oral presentation for the 2023 DPS-EPSC Joint Meeting.
- Sept 2023 **Impact-Induced Formation of Prebiotic Molecules on Terrestrial Planets**
Zorzi, A., Schaefer, L.
Poster for 2022 AGU Fall Meeting (Dec 2022) and 2023 Planet ESLAB (Mar 2023). Talk for UCSC PLUNCH Seminar (Jan 2023) and BAPS (Sept 2023).
- Dec 2022 **Termination of Snowball States: Constraining the Climate Forcing of Stochastic Events**
Ding, X., Chaverot G., Fan, B., Graham, R.J., Itcovitz, J., Ji, A., Macdonald, F., Mittal, T., Pierrehumbert, R. and Zorzi, A.
Oral presentation for the 2022 AGU Fall Meeting.
- Dec 2021 **Could Cenozoic Impacts Have Triggered Rapid Global Warming?**
Zorzi, A., Tikoo, S. M., Beroza, G. C., and Sleep, N. H.
Poster for the 2021 AGU Fall Meeting.
- Sep 2019 **Long-term evolution of Neptune's atmosphere**
Zorzi, A., Molter, E., de Pater, I., Luszcz-Cook, S.H., Tollefson, J., and Wong, M.H.
Poster for the 2019 ESPC-DPS Joint Meeting.

Teaching and Mentoring Experience

- Jun 2024 – **SURGE Mentor**
Aug 2024 Supervised Kristen Nehring for project "Modeling the Formation of Impact Craters on Titan: Implications for Astrobiology".
- Jul 2024 **Instructor for Clubes de Ciencia Mexico**
Volunteered for 1-week undergraduate level course: "It IS Rocket Science: How to Design a Real Space Mission".
- Sep 2022 **Teaching Assistant for Formation and Dynamics of Planets**
Responsible for office hours and assignment grading, undergraduate and graduate level course.

Professional Development

- May 2024 – **JPL Planetary Science Summer School Scholar**
Aug 2024 Design of New Frontier mission class Titan orbiter (Session 1).
- Aug 2023 **NASA Mars Ideation Factory**
Mission formulation for the search for extant life on Mars.
- Mar 2019 **ESA Academy - Rosetta Science Operations Scheduling Legacy Workshop**
Workshop on Rosetta operations and science execution.

Volunteering

Jan 2025 – Present	Cards4Kids Member Finance and outreach to professional local sports team, weekly sport activities with hospitalized children.
Sept 2015 – Sept 2017	AGESCI Scout Leader in Italy Organizing weekly activities for 7th-10th graders.