

# Mariana Carolina Sastre

## Curriculum Vitae

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### Personal information

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Website <https://planetmariana.github.io>

### Professional profile

I am a PhD candidate in astrophysics specializing in planetary physics, focusing on the geophysical evolution of magma ocean exoplanets, using 1D numerical models that couple interior dynamics and atmospheric processes. Strong experience in scientific programming, numerical modelling and data analysis, with a particular interest in linking planetary geophysics to observational predictions.

### Education

2023- **PhD Student, Astrophysics**, Kapteyn Astronomical Institute – University of Groningen, The Netherlands.  
2021-2023 **MSc. Astrophysics**, Astronomical Observatory of Geneva, Switzerland.  
2016-2020 **BSc. Geosciences**, University of Los Andes, Bogotá, Colombia.  
2014-2019 **BSc. Physics**, University of Los Andes, Bogotá, Colombia.

### Publications (first author)

2026 **Thermal evolution of lava planets across system ages: predictions for the Hell of a Survey**, Submitted to *The Astrophysical Journal*, arXiv:2609.20155.  
2026 **Geophysical and atmospheric implications of  $f\text{O}_2$ -dependent melting on rocky exoplanets**, *Astronomy & Astrophysics*, arXiv:2606.20249.

### Awards

2021 **Colombian Ministry of Science & COLFUTURO scholarship**, Grant of \$50,000 USD for MSc studies abroad.

### Computational skills

|                 |                                                                        |                     |                       |
|-----------------|------------------------------------------------------------------------|---------------------|-----------------------|
| <b>Advanced</b> | Python, JavaScript, HTML, p5.js                                        | <b>Intermediate</b> | C/C++, Fortran        |
| <b>Software</b> | IRAF, ArcGIS, Matlab, L <sup>A</sup> T <sub>E</sub> X, ASPECT, BurnMan | <b>OS</b>           | MacOS, Linux, Windows |
| <b>VCS</b>      | Git, GitHub, GitLab                                                    |                     |                       |

### Selected contributed talks

2026 **Session convener, EPSC Conference**, “Empowering the next generation of planetary scientists”, The Hague, NL.  
2026 **Rocky Worlds IV (LOC member)**, *Poster*, Groningen, NL.  
2025 **EGU Conference**, *Speaker*, Vienna, Austria.  
2024 **Exoplanets V Conference**, *Speaker*, Leiden, NL.

### Teaching & leadership

2023-2025 **Teaching assistant**, Planetary science, Astrophysical hydrodynamics, Physics of Galaxies, Exoplanets, University of Groningen.  
2024- **PhD representative**, Graduate School of Science and Engineering, University of Groningen.  
2021- **Organizing committee**, Mentoring program, RECA (Colombian Astronomy Network of Students).

### Job experience

2020-2021 **Geophysicist Jr**, GPR International Inc, Bogotá, Colombia.

### Languages

Spanish Native  
English Fluent  
French B2 (DELF)