Emma Vellard

Planetary Scientist & Space System Engineer

Planetary scientist with expertise in planetary science, data analysis, and spacecraft mission design. Experience at NASA JPL, ESA, and Tohoku University.

Toulouse, France
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Feel free to visit my portfolio:
emmavellard.com

EDUCATION

TAS Astro Advanced Master
ISAE Supaero | 2025 - 2026

Space Studies Program (SSP)
International Space University | 2025

MSc Planetary Sciences and Space Exploration
Paris Saclay University | 2022 - 2023

MSc Space Science and Technology
Paris Observatory | 2021 - 2022

Bachelor's degree Fundamental Physics
Clermont Auvergne University | 2019 - 2021

Preparatory class for engineering school (CPGE)
Blaise Pascal Highschool | 2018 - 2019

Scientific degree, Engineering Science
Louis Rascol Highschool | 2015 - 2018

CERTIFICATES

Machine Learning Specialization
Stanford University | 2024

Mathematics for Machine Learning
Imperial College of London | 2024

Deep Learning and Machine Learning
Kaggle | 2024

LANGUAGES

French (Native)
English (C1 - 98 TOEFL iBT)
Japanese (Beginner)
Spanish (Intermediate)

HOBBIES AND INTERESTS

Space observations
Volleyball, Bouldering, Karate
Photography
Scuba Diving - PADI Open Water Diver

EXPERIENCE

2026 | NASA Jet Propulsion Laboratory (JPL)

- **Planetary Science Research Intern | United States (6 months)**
  - Model interior and ocean structures of Ganymede and Europa to assess subsurface chemistry and potential habitability. Integrate new laboratory data and geochemical models into the open-source PlanetProfile framework to interpret Europa Clipper and JUICE mission data.

2022-2025 | European Space Agency (ESA)

- **Young Graduate Trainee: Juice & BepiColombo missions | Netherlands (2 years)**
  - **Juice:** Development of a comprehensive data environment in view of the arrival of new data.
  - **BepiColombo:** Development of a Python library to analyze solar event opportunities using data from various spacecrafts.
- **Embedded Software Engineer: YPSat ESA mission | Netherlands (1 year)**
  - Part of the software development team of the Wake-Up Subsystem which is tasked with autonomously identifying the initiation of the Ariane 6 launch sequence and initiating the remainder of the YPSat system.
- **Intern: BepiColombo ESA mission | Spain (5 months)**
  - Prepare upcoming Mercury observations using the MeSS database based on MESSENGER mission data and perform data processing to support BepiColombo science operations.

2023 | Tohoku University

- **Planetary Science Research Intern: Phobos composition analysis for the MMX JAXA mission | Japan (4 months)**
  - Investigate the origin hypothesis of Phobos and the Martian moons through spectral analysis and analogue rock sample studies to support the MMX mission's compositional objectives.

2022 | Atmospheres and Space Observations Laboratory (LATMOS)

- **Research Scientist: Design of a space mission to study Ceres | France (1 year)**
  - Study of the geomorphology of Ceres and the cryovolcanism at the surface.
  - Dimensioning of a sounder radar in a 3U cubsat.

SKILLS

Scientific skills
Planetary sciences, Physics and chemistry of small primitive bodies, Climate systems and global surface evolution, Plasma Physics, Physiography and geological evolution of planets, Radiation physics and associated observation methods, Spectroscopy

Computational skills
Python, C, SQL, Unix, ArcGIS, NumPy, Pandas, TensorFlow, Machine learning, Deep learning, Embedded software programming

Communication skills
Outreach communication, Oral and written skills to present and synthesize scientific work, Knowledge management

Behavioral competencies
Willingness to learn, Forward thinking, Continuous Improvement, Flexibility, Accuracy