Simon Bouriat

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Education

PhD - Astrophysics & Data Science 2020 – 2023

Université Grenoble-Alpes, IPAG, Gipsa-Lab – *Grenoble, France*

- Forecast low-energy particle fluxes in LEO (DMSP) using Solar Wind data (ACE, DSCOVR)
- Performed Fully-Connected NN, RNN, LSTM and TCN

MRes - Astrophysics, Space Sciences & Planetology 2018 - 2019

Université Toulouse III Paul Sabatier – *Toulouse, France*

- **Coursework:** Instrumentation; Data Processing; Space Dynamics; Radiation Transfer Processes; General Relativity; Fluid dynamics; Space Plasma & Stellar Physics; Planetary Systems; Extragalactic Astrophysics and Cosmology

MSc - Aeronautics & Aerospace Engineering 2015 - 2019

ISAE-SUPAERO – *Toulouse, France*

- **Specialised in:** Sciences of the Universe; Design and Operation of Space Systems;

MSc - Philosophy of Science 2017 - 2018

London School of Economics and Political Science – *London, UK*

- **Specialised in:** Philosophy of Physics; Philosophy of Social Science; Rationality, Choices & Decision Theory

Experience

Simulator Flight Dynamics Engineer, AIKO – *Toulouse, France* 2025 - present

- Designed, developed, and tested an on-board Station Keeping (SK) algorithm for LEO|VLEO
- In collaboration with SaCLaB at ISAE-SUPAERO

Space Weather Analyst & Data Scientist, SpaceAble – *Paris, France* 2019 - 2024

- Worked on Space Weather phenomena, hazards and impacts on space systems.
- Specialised in Solar Wind and Magnetosphere coupling.
- Created and led the project "WISDM" (Space Weather Impacts & Spacecraft Damages Module)
- Coordinated the development of the ML division specialised in space data analysis
- Represented SpaceAble in the Bureau de Normalisation de l'Aéronautique et de l'Espace, Commission Missiles et Espace

Research Assistant, NASA Goddard Space Flight Center – *Greenbelt, MD, US* 2019

- Led the development of a Bayesian-based model validation framework for complex, large-scale systems, using James Webb Space Telescope as a case study at the Observational Cosmology Lab

Publications

Effects of the May 2024 Superstorm at High and Middle Latitudes in the South American Sector and the Antarctic Peninsula – Earth, Planets and Space Unpublished

Perez Macho, E.; Urbář, J.; Anoruo, C.; Melendi, Y.; Castillo-Rivera, C.; Dutta, R.; ***Bouriat, S.***; Saini, S. S.; Canales Riquelme, M. R.; Duran, T.; Correia, E.; Chisham, G.; Bergeot, N.; Alfonsi, L.; Miloch, W. 10.1051/swsc/2023028

Reconstruction of electron precipitation spectra at the top of the upper atmosphere using 427.8 nm auroral images – J. Space Weather Space Clim., 13 Dec. 2023

Robert, E.; Barthelemy, M.; Cessateur, G.; Woelfflé, A.; Lamy, H.; ***Bouriat, S.***; Johnsen, M. G.; Brändström, U.; Biree, L. 10.1051/swsc/2023028

Electron Aurora and Polar Rain Dependencies on Solar Wind Parameters – Frontiers in Astronomy and Space Sciences — Aug. 2023
Bouriat, S., Wing, S., Barthélémy, M. – 10.1029/2023JA031598

Towards an AI-based understanding of the solar wind: A critical data analysis of ACE data – SPACE: SCIENCE & TECHNOLOGY — Nov. 2022
Bouriat, S., Vandame, P., Barthélémy M., Chanussot, J. – 10.1051/swsc/2023028

Overview of Activities: ARES-III and LEARN Analog Missions in the LunAres Hab — Aug. 2022
Bouriat, S., Poliacek, M., Smith, J. – 10.34133/2022/9763959

Physiological and inventory data of crews of ARES-III and LEARN analog missions in the LunAres habitat — Jun. 2021
Bouriat, S., Poliacek, M., Smith, J. – GLEX 2021 conference

Projects

Mars Analog Mission, *LunAres Station*, Space is More – *Piła, Poland* — 2018
- Conducted research on the impact of isolation on stress when performing a complex task.
- Research paper on quantitative aspects of the mission

Mars Analog Mission, *Mars Desert Research Station*, Mars Society – *Utah, US* — 2017
- Worked on using analog missions to develop effective team composition strategies for long duration space exploration

Certifications

Cybersecurity, MOOC of the ANSSI (French Agence Nationale de la Sécurité des Systèmes d'Information) — 2023

Machine Learning, MOOC hosted by Stanford University & DeepLearning.AI, Andrew Ng — 2020

Space Systems Engineering Training Course hosted by ESA Academy — 2018

Space Development: Theory & Practice, Annual International Space Workshop hosted by *Bauman Moscow State University*. Worked in the ballistic team and conducted the orbital perturbation analysis. — 2017

Languages

French: Mother tongue
English: C1 - Fluent – TOEFL: 107/120
Spanish: B2 - Good
Japanese: A1 - Basics

Technologies

Languages: C/C++, Python, TEX, Bash (shell Linux), MATLAB
Machine Learning: Python libraries (pandas, NumPy, scikit-learn, TensorFlow, PyTorch, Pytorch Lightning, Keras)
Tools: Office Suite/Google Workspace, Data visualization (Matplotlib, Seaborn), Git/GitHub/GitLab