STELLA BOURDIN

Climate Scientist – Postdoctoral researcher

stella.bourdin@lsce.ipsl.fr

+33 6.62.01.14.43

9 Rue Eric Tabarly,
91300 Massy, France

RESEARCH EXPERIENCE & ASSOCIATED KEY TECHNICAL SKILLS

Postdoc
Ongoing
March 2024 – March 2026

University of Oxford – Huracan project

Tropical cyclone risk in the mid-latitudes

PhD
Feb. 2021 – Jan. 2024
(3 years)

Laboratoire des Sciences du Climat et de l'Environnement (LSCE/IPSL)
– Supervised by **Sébastien Fromang**, funded by **CEA**

Tropical Cyclones simulation in high-resolution global climate models

- Analysis of large simulation output ($\propto 100TB$) using bash, cdo, nco, python and TempestExtremes

Master thesis
Apr. to Sept. 2020 (6 months)

Max Planck Institute for Meteorology
– Supervised by **Bjorn Stevens**

Climate Sensitivity in a one-dimensional radiative-convective equilibrium framework

- Simulations with the konrad 1D-RCE model and python analysis

Internship
Feb. To July 2019 (6 months)

Electricité de France (EDF)
– Supervised by **Laurent Dubus and Hiba Omrani**

Climate services for the energy sector

- Development of R package and notebooks

Internship
Aug. to Jan. 2019 (6 months)

Laboratoire des Science du Climat et de l'Environnement (LSCE)
– Supervised by **Sébastien Fromang and Masa Kageyama**

Validation of a new dynamical core for the IPSL model (Dynamico)

- Simulations with the IPSL model and python analysis

FUNDINGS OBTAINED

ICOCYCLONES 2
8500€

Principal Investigator, Research project funded by the **IPSL**
Funding travels and material for my PhD thesis

TROPICANA
~100.000€

Co-organiser, funded and hosted by **Institut Pascal**, Université Paris-Saclay.
4-weeks program on "Tropical Cyclones, Medicanes and Climate Change"

- Meeting report: Faranda, D., et al. (2024). Understanding Tropical Cyclones in the Anthropocene: Physics, Simulations, and Attribution. *Bulletin of the American Meteorological Society*. *[Link]*

FIRST-AUTHOR PUBLICATIONS

1. Bourdin, S., Kluft, L., & Stevens, B. (2021). Dependence of climate sensitivity on the given distribution of relative humidity. *Geophysical Research Letters*. *[Link]*
2. Bourdin, S., Fromang, S., Dulac, W., Cattiaux, J., & Chauvin, F. (2022). Intercomparison of four algorithms for detecting tropical cyclones using ERA5. *Geoscientific Model Development*. *[Link]*
3. Bourdin, S., Fromang, S., et al., Tropical Cyclones in Global High-Resolution Simulations using the IPSL Model. *Climate Dynamics. [Link]*
4. [Under review] Bourdin, S., et al., Improving Analogues-Based Detection & Attribution Approaches for Hurricanes, submitted to *Environmental Research Letters*.

CO-AUTHOR PUBLICATIONS

Published in peer-reviewed journals (in chronological order)

5. Faranda, D., Bourdin, S., Ginesta, M., Krouma, M., Noyelle, R., Pons, F., Yiou P. & Messori, G. (2022). A climate-change attribution retrospective of some impactful weather extremes of 2021. *Weather and Climate Dynamics*, *3*(4), 1311-1340. *[Link]*
6. Sainsbury, E. M., Schiemann, R. K., Hodges, K. I., Baker, A. J., Shaffrey, L. C., Bhatia, K. T., & Bourdin, S. (2022). Can low-resolution CMIP6 ScenarioMIP models provide insight into future European post-tropical-cyclone risk?. *Weather and Climate Dynamics*, *3*(4), 1359-1379. *[Link]*
7. Faranda, D., Messori, G., Bourdin, S., Vrac, M., Thao, S., Riboldi, J., Fromang, S. & Yiou, P. (2022). Correcting biases in tropical cyclone intensities in low-resolution datasets using dynamical systems metrics. *Climate Dynamics*. *[Link]*
8. Dulac, W., Cattiaux, J., Chauvin, F., Bourdin, S., & Fromang, S. (2023). Assessing the representation of tropical cyclones in ERA5 with the CNRM tracker. *Climate Dynamics*, 1-16. *[Link]*
9. Legrain, E., Blard, P.-H., Kageyama, M., Charreau, J., Leduc, G., Bourdin, S., Bekaert, D. V. (2023). Moisture amplification of the high-altitude deglacial warming. Submitted to Earth and Planetary Science Letters. *Quaternary Science Reviews*. *[Link]*
10. Faranda, D., Bourdin, S., Camargo, S. J., Lee, C. Y., & Fromang, S. (2024). Understanding Tropical Cyclones in the Anthropocene: Physics, Simulations, and Attribution. *Bulletin of the American Meteorological Society*. *[Link]*

EDUCATION

Ph.D. training

Université Paris-Saclay
Training schools: MODNUMOA (Numerical Modeling), XAIDA (Artificial Intelligence for Detection and Attribution of Climate Extreme), MedCyclones (Mediterranean cyclones: dynamics, processes, forecasting, predictability, and impacts.)

Complementary training: Pedagogy, scientific communication, English academic writing, LateX, thesis redaction.

Pre-doc program
3 months, 2020

IPSL-Climate Graduate school
Courses: Paleoclimatology, climate risks

Engineering degree
Graduated 2020

Ecole Centrale Paris (now CentraleSupélec)
Major in Energy

MSc. in energy physics
Graduated 2020

Université Paris-Saclay
Major in transfer sciences

TEACHING EXPERIENCE

Instructor

CentraleSupélec, Paris-Saclay University

- Atmospheric circulation simulation (2021, 2022 & 2023)
- Climate modelling (2021, 2022 & 2023)

University of Oxford

- Environmental Data Analysis (2024)

Teaching Assistant

CentraleSupélec & ENSTA Paristech

- IT & Programming (2017, 2020 & 2021)
- Fluid Mechanics (2021)
- Climate Change (2021 & 2022)
- Climate Science (2022)

Assessor

University of Oxford

- MPhys projects (2024)
- Atmospheric Science (2024-2025)

Supervision

University of Oxford, MPhys

- Lewis Grant

OUTREACH & PUBLIC ENGAGEMENT

Outreach

Facilitator of the Fresque du Climat (Climate collage) for various publics.

Conference for **Résoquartier**, solidarity association.

Press

TV: M6, France 2, France 24, FranceInfoTV

Print: Reporterre [1, 2]; Libération [3]

Radio: Radio Campus Paris

COMMUNITY ENGAGEMENT

Peer-reviews for WCE, IJCC, ESE, JOSS

Representative of PhD students and non-permanent staff at the LSCE Lab Council

- Implementation of a prevention campaign against sexual harassment.
- Organization of "Career coffees" to discuss academic and industry career perspectives with senior scientists and alumni in the industry.

Post-doc member of the AOPP postgrad society

CONFERENCES & PRESENTATIONS

2024	• TROPICANA, talk & poster • Climat & Impacts, talk
2023	• Huracán General Assembly, **invited talk** • EGU General Assembly, talk • Joint MedCyclones and European Storm Workshop, poster
2022	• Future Risks and Impacts of Intense Mediterranean Cyclones Workshop, **invited talk** • EGU General Assembly, talk • 35th AMS conference on Hurricanes and Tropical Meteorology, Talk • Climat et Impact, talk
2021	• EGU General Assembly, vPICO

LANGUAGES

French: Native
English: Fluent
German: Understanding (intermediate)

CONTACT DETAILS FOR REFERENCES

1. **Dr. Sébastien Fromang**, researcher at Laboratoire des Sciences du Climat et de l'Environnement (LSCE-IPSL) and professor at Ecole Polytechnique : Ph.D. Adivsor.
   → sebastien.fromang@lsce.ipsl.fr

2. **Prof. Dr. Bjorn Stevens**, director of the Max Planck Institute for Meteorology: Master's thesis advisor. → bjorn.stevens@mpimet.mpg.de
   (Assistant: Angela Gruber, angela.gruber@mpimet.mpg.de)

3. **Dr. Antje Weisheimer**, NCAS research fellow: Post-doc supervisor
   → antje.weisheimer@physics.ox.ac.uk

4. **Dr. Suzana J. Camargo**, Marie Tharp Lamont Research Professor, Lamont-Soherty Earth observatory, Columbia University.
   → suzana.camargo@columbia.edu