



Alban PLANCHAT

PhD

Modeling
Biogeochemistry

Oceanography
Climatology

EDUCATION

- 2016-2020 Paris, FR **Engineer graduated from ESPCI Paris - PSL** : École Supérieure de Physique et de Chimie Industrielles de la ville de Paris: **Graduate research and engineering school of Physics, Chemistry and Biology**, and a founding member of a top French graduate network, the research-focused Paris Sciences et Lettres (PSL)
- 2019-2020 Paris, FR **Master 2 WAPE (Water, Air, Pollution & Energy)** between **Sorbonne Université** and **Polytechnique**: Research training in Oceanography, Atmospheric Sciences and Climatology
- 2014-2016 Paris, FR **Preparatory class**: high level university-level preparation in Mathematics, Physics, Chemistry and Technology for the nationwide competitive entrance exams to Grandes Écoles at Lycée Pasteur in Neuilly-sur-Seine
2014 **Baccalauréat S** (equivalent to High School Diploma) awarded with first class honors
Main subjects: Physics, Chemistry, Mathematics, Biology and Earth Sciences

EXPERIENCE

- 2020-2023 3 yr 3 mo Paris, FR **Phd in Marine Biogeochemistry, LMD (ENS - PSL) and LOCEAN (Sorbonne Univ.)** - Laurent Bopp et Lester Kwiatkowski *Alkalinity and calcium carbonate in Earth system models and implications for the ocean carbon cycle*
- Organizing team seminars with invitations to external researchers
- Organizing a team retreat at the Villefranche-sur-Mer oceanographic station
- 2020 (4 mo) Grenoble, FR **Research internship in Oceanography, CryoDyn group (IGE)** - Nicolas C. Jourdain
- Analyzing NEMO simulations (ocean-sea ice coupling) in the Amundsen Sea (Antarctica) from 1980 to 2018
- 2019 (3 mo) Zurich, CH **Research internship in Glaciology, HIMAL group (WSL)** - Francesca Pellicciotti and Evan Miles
- Analyzing the surface of debris-covered glaciers in the Himalayas through thermal data
- 2018 (6 mo) Rotterdam, NL **Computational Modeling Intern at The Ocean Cleanup** - Bruno Sainte-Rose
- Analyzing the system behavior and its interaction with plastic debris, including the creation of autonomous scripts for data collection and processing from all used sensors

TEACHING EXPERIENCE

- 2021-2023 3 x (4 mo) Paris, FR **Teaching assistant at Sciences Po Paris** for the course **Ocean and the Earth Climate**, Pr.: Sabrina Speich and Laurent Bopp
- Developing quizzes and exams, as well as leading tutorials (3x 16 h yr⁻¹)
- Course organization and student support (ranging from 125 to 210)
- 2023 Paris, FR **Lecturer at ESPCI Paris - PSL** for a 'PSL week' (2-h lecture): *Ocean-based geoengineering options to mitigate climate change*
- 2017 **Private tuition**: Mathematics, Physics and Chemistry for high school students

SUPERVISION

- 2024 (4 mo) Paris, FR **First-year graduate student, LMD (ENS - PSL)** - Marc Pyolle (with Lester Kwiatkowski and Laurent Bopp)
The evolution of coral reef CaCO₃ accumulation and its impact on the carbon cycle
- 2023 (4 mo) Paris, FR **Third-year undergraduate student, LMD (ENS - PSL)** - Léonard Djavad-Nia (with Laurent Bopp and Lester Kwiatkowski)
Predictive model of global coral reef distribution based on environmental parameters

SKILLS

Languages **French**: Mother tongue **English**: Fluent **Spanish**: Intermediate **Italian**: Elementary
Computing Pack Office - **Latex** - Programming in **Python, Fortran** and **Linux**

EXTRACURRICULAR ACTIVITIES

- Sports **Running, swimming, cycling**, climbing, skiing, cross-country skiing, stand-up paddleboarding; practiced for enjoyment and during training, with regular **(ultra-)endurance races**.
Volley-ball (from 2007 to 2013): **French champion** in 2009 (category under 13), **captain** - Club of Levallois
Volley-ball coach of a youth team (2011-2013) - Club of Levallois
- Travels **Sporty**: Itinerant hikes by bicycle, by foot or by kayak (e.g., Alps, Pyrenees, Corsica, Eastern Canada)
Discovery: Europe, America, Asia, Africa
- Writing **Poetry**

PUBLICATIONS

- 2024 **Planchat, A.**, Bopp, L., and Kwiatkowski, L.: Constraining the pre-industrial air-sea carbon flux from the alkalinity budget (en préparation).
- 2024 **Planchat, A.**, Bopp, L., Kwiatkowski, L., Torres, O: Carbonate pump feedbacks on alkalinity and the carbon cycle in the 21st century and beyond, in *Earth System Dynamics* (<https://doi.org/10.5194/esd-15-565-2024>).
- 2023 **Planchat, A.**, Kwiatkowski, L., Bopp, L., Torres, O., Christian, J. R., Butenschön, M., ... and Stock, C. (2023): The representation of alkalinity and the carbonate pump from CMIP5 to CMIP6 ESMs and implications for the ocean carbon cycle, in *Biogeosciences* (<https://doi.org/10.5194/bg-20-1195-2023>).
- 2022- **Planchat, A.**, Jourdain, N. C., and Dutrieux, P: Spatio-temporal variability of ocean currents at the Amundsen Sea shelf break and their link to CDW inflow and ice-shelf melt, in *Journal of Geophysical Research: Oceans* (en attente, rejeté 2 fois)
- 2024 Baker, C., Henson, S., Halloran, P., McQuatters-Gallop, A., Painter, S., **Planchat, A.**, and Tagliabue, A.: Future response, uncertainty and drivers of biological ocean carbon storage metrics in CMIP6 models under a high emissions scenario (en préparation).
- 2024 Henson, S., Baker, C., Halloran, P., McQuatters-Gallop, A., Painter, S., **Planchat, A.**, and Tagliabue, A.: Knowledge gaps in quantifying the climate change response of biological storage of carbon in the ocean, in *Earth's Future* (accepted).
- 2020 Sainte-Rose, B., Wrenger, H., Soares, I., Mosneron-Dupin, C., Duval, C., and **Planchat, A.**: Monitoring and Performance Evaluation of Plastic Cleanup Systems: Part II—Results and Analysis, in *International Conference on Offshore Mechanics and Arctic Engineering* (<https://doi.org/10.1115/OMAE2020-18891>).

CONFERENCES, WORKSHOPS & SEMINARS

- 2024 **EGU (orals; Vienna)**
AUT **Planchat, A.**, Bopp, L., Kwiatkowski, L.: Reassessing the pre-industrial air-sea carbon flux considering the ocean alkalinity budget.
Les Sacoques du Climat, Bernard, J., Bierjon, A., Carles, J., Ehret, A., Gaillard, R., Legay, A., **Planchat, A.**, Cassou, C.: 'Les Sacoques du Climat': An outreach cycling initiative for covering the last mile of climate communication in rural France
- 2024 Seminar (EDYTEM, Université Savoie Mont-Blanc)
FR *Évaluation du flux de carbone air-mer pré-industriel : rôle de l'alcalinité océanique et des apports fluviaux*
- 2023 PISCO (oral; Paris)
FR *Reassessing the pre-industrial air-sea carbon flux from the alkalinity budget*
- 2023 Seminar (CEP, Bern University)
CH *Representation of alkalinity and calcifying organisms in Earth System Models, and feedback on the carbon cycle*
- 2023 **EGU (posters; Vienna)**
AUT **Planchat, A.**, Bopp, L., Kwiatkowski, L.: The influence of the carbonate pump on the ocean carbon cycle - natural air-sea carbon fluxes, inter-hemispheric carbon transport and anthropogenic perturbations.
Baker, CA., Painter, S., Tagliabue, A., Halloran, P., **Planchat, A.**, McQuatters-Gollop, A., Henson, S.: Response of ocean biogeochemical cycles to past, present and future climate change
- 2023 **ECCWO-5 (oral; Bergen)**
NO **Planchat, A.**, Bopp, L., Kwiatkowski, L.: Feedbacks between the carbonate pump and future ocean acidification in Earth System and ocean biogeochemical model simulations.
- 2022 Dissolution Day (oral; Paris)
FR *Disentangling the link between the alkalinity representation and the carbonate pump in ESMs*
- 2022 PISCO (oral; Paris)
FR *Inclusion of a coral module, and are there missing elements in the current alkalinity budget, especially when it comes to projections in the Anthropocene Era?*
- 2022 **EGU (oral; Vienna)**
AUT **Planchat, A.**, Bopp, L., Kwiatkowski, L.: The representation of alkalinity and calcium carbonate cycling from CMIP5 to CMIP6 models and the potential influence on carbon cycle projections.
- 2022 GreenOcean workshop (oral; Paris)
FR *From organic to inorganic matter export to understand improvements from CMIP5 to CMIP6*
- 2020 **AGU (poster; virtual)**
Planchat, A., Jourdain, NC. Interannual and decadal variability of the ice-shelf basal melting in the Amundsen region, West Antarctica - Focus on the oceanic factors.
- 2020 FRISP (visitor; virtual)
Conference on ice-shelf processes
- 2018 MICRO2018 (visitor; Lanzarote)
ES Conference on microplastics

REVIEWING

- 2023 Hinrichs, C., Köhler, P., Völker, C., and Hauck, J.: Alkalinity biases in CMIP6 Earth system models and implications for simulated CO₂ drawdown via artificial alkalinity enhancement, in *Biogeosciences*.
- 2019 Sixth Assessment Report of the IPCC (AR6, WGII) – APECS/PYRN/YESS/PAGES-ECN/MRI group
- Chapter 3 (*Ocean and Coastal Ecosystems and their Services*) & Crossed-chapter (*Polar Regions*)

FIELDWORK EXPERIENCE

- 2024 (4 mo)
EUR **Geochemistry** – Mathieu Dellinger & Pierre Sabatier, EDYTEM, Lake-Switch & Téthys projects – **Alpes, CH, DE, AUT, SI, IT, FR**
- 136 water measurements and samples from peri-Alpine lakes and their main tributaries to assess the anthropogenic impact, including climate change, on erosion in the Alps
- 2022 (3 d)
FR **Oceanography** – **Tara Ocean Foundation** – **Brittany, FR**
- Sailing aboard the scientific schooner Tara
- 2021 (1 wk)
FR **Geodesy** – Andrea Walpersdorf, ISTERre – **Briançonnais, FR**
- GPS measurements to study the geodynamics of the Briançonnais
- 2021 (10 d)
FR **Marine biogeochemistry** – Narimane Dorey, LMD (ENS – PSL) – **Roscoff, FR**
- Measurement of a set of biogeochemical variables (temperature, salinity, pH, alkalinity, oxygen, and nitrates) in natural tidal-pools
- 2019 (1 mo)
NP **Glaciology** – Evan Miles, WSL – **Langtang glacier, NP**
- Data collection using a thermal camera on a debris-covered glacier
- Installation of an autonomous weather station

AWARENESS

- 2024
Loire, FR **Les Sacoches du Climat – Association – Scientific mediation on climate and biodiversity issues in rural areas**
- Tandem bicycle trip from Tours to Nantes with interventions in middle/high schools and for the general public
- Co-founder of the association: <https://sacochesclimat.ipsl.fr>
- 2023-2024
Paris, FR **Organisation of a series of 8 conferences** with the department of **Geosciences** at **ENS – PSL** and **IPSL**
"Share & Act"
- 2022
Paris, FR **Organisation of a series of 6 conferences** with **ESPCI Paris – PSL** and **IPSL**
"Climate & Anthropocene" with Antoine Ehret, Rémi Gaillard, in partnership with the association PC Durable

COMMITMENTS

- 2024 **Eco-adventure – "Téthys, l'épopée d'un retour aux sources"** – Physical commitment reflecting the climate challenge
112 days of crossing the Alps on foot and swimming in semi-autonomy, from Ljubljana to Nice
- Creation of a website: <https://aventure-tethys.fr>, crowdfunding, and various approaches
- Communication in the media and on social networks
- Production of a documentary film, a short video for the academic world, and multiple outreach projects
- 2024 **L'Écho des Horizons – Association – Founder**
Developping creative means of communication at the science-society interface and raise awareness about climate and biodiversity issues
- 2023 **Writing a short story: "Second souffle, mirage ou virage ?"** – Climate writing workshop (ENS – PSL)
https://www.ipsl.fr/wp-content/uploads/2023/07/second-souffle-mirage-virage_alban-planchat.pdf
- 2023 Interview by Amélie Carrier for her PhD: "What the climate problem does to climate sciences and scientists: scientific policy, funding, commitments"
- 2022 Testimony on sufficiency at the IPSL General Assembly
- Labos 1point5:**
- 2023-
2021-2023 - Young researchers' discussion group (article with *Le Monde*, writing an op-ed)
- Working group on publications
- 2021-2022 Commitment with Antoine Ehret and Rémi Gaillard to transform education at ESPCI Paris – PSL in the face of contemporary environmental and social challenges
- 2020-2021 Les grains de sel – Cooperative, participatory, and solidarity supermarket – Member
- 2020- **Writing an essay on society**