

Diego Bengochea Paz

Personal Information

Date of birth	01/12/1993	Spanish	Native speaker
Place of birth	Montevideo, Uruguay	French	Native-like speaker
Nationality	uruguayan and spanish	English	Fluent
E-Mail	diego.bengocheapaz@bc3research.org	Portuguese	Can talk and read
GitHub	diegomvd		

Languages

Research positions

- 04/2022-ongoing **PostDoc researcher** Basque Center for Climate Change (BC3), Leioa
 - *Subject:* Integrated modelling of social-ecological systems, machine learning for ecosystem services modelling.
- 11/2018-11/2021 **PhD candidate** Theoretical and Experimental Ecology Station (SETE, CNRS), Moulis
 - *Subject:* Computational modelling of land-use change in social-ecological systems.
 - *Keywords:* land-use change, spatial modelling of ecosystem services, stochastic modelling, land-use management, coupled human-nature simulation models.
 - *Advisors:* Michel Loreau and Kirsten Henderson
- 03/2018-10/2018 **Pre-doctoral internship** Mathematics Laboratory J.A. Dieudonné (LJAD), Nice
 - *Subject:* Stochastic modelling of collective behaviour in excitable media.
 - *Keywords:* active matter, collective movement, Vicsek model, SIRS model.
 - *Advisor:* Fernando Peruani
- 02/2017-08/2017 **Msc internship** Research Institute on Out-of-Equilibrium Phenomena (IRPHE), Marseille
 - *Subject:* Modelling the morphogenesis of branching networks: applications to red coral and tree growth.
 - *Keywords:* software development, game theory on networks, stochastic processes.
 - *Advisor:* Christophe Eloy
- 02/2015-05/2015 **BSc internship** Aerology Laboratory (LA), Toulouse
 - *Subject:* Estimation of the atmospheric humidity profile using a wind-profiler radar in the UHF band. Development of a data analysis algorithm.
 - *Keywords:* data analysis, atmospherical physics.
 - *Advisor:* Frédérique Saïd

Education

- 2018-2021 **PhD in Computational Modelling of Social-Ecological Systems**, Paul Sabatier University, Toulouse, France and Theoretical and Experimental Ecology Station of the CNRS, Moulis, France.
Title: Modelling the effect of land-use management strategies on the sustainability of social-ecological systems.
Advisors: Michel Loreau and Kirsten Henderson
Keywords: land-use change, spatial modelling of ecosystem services, stochastic modelling, land-use management, coupled human-nature simulation models.
- 2015-2017 **MSc in Fundamental Physics, Physics of Life**, Paul Sabatier University, Toulouse, France
Highest Honours (>16/20). Rank: 1/7
- 2012-2015 **BSc in Fundamental Physics**, Paul Sabatier University, Toulouse, France
High Honours (>14/20). Rank: 6/47

Grants and Awards

2012	French government's excellency grant for international students (<i>Bourse Excellence-Major AEFÉ</i>). Five year financing for university studies in France (2012-2017).
2018	Doctoral grant from the "Engineering Sciences" doctoral school of Aix-Marseille University (Refused).
2018	Doctoral grant from the "Fundamental and Applied Sciences" doctoral school of Côte d'Azur University (Refused).

Computational skills

OS	Skill level	Languages	Skill level	Tools & Platforms	Skill level
GNU/Linux	Advanced	C/C++	Advanced	OpenMole	Advanced
		Python	Advanced	GitHub	Advanced
		Cython	Advanced	GitKraken	Advanced
		LaTeX	Advanced	Jupyter Notebook	Advanced
		Scala	Intermediate	Atom text editor	Advanced
		Matlab	Intermediate	SLURM Clusters for HPC	Intermediate
		Bash	Intermediate		

Technical Skills

Stochastic simulation techniques (Monte Carlo)
 Spatial simulation techniques
 Dynamical systems simulation techniques
 Data analysis and visualization
 Multi-criteria Optimization with evolutionary algorithms
 Model calibration techniques
 Sensitivity analysis techniques

Skill level

Advanced
 Advanced
 Advanced
 Advanced
 Intermediate
 Intermediate
 Intermediate

Machine Learning

Python scikit-learn library
 Hierarchical clustering
 Evolutionary algorithms
 Reinforcement learning

Skill level

Intermediate
 Intermediate
 Intermediate
 Basic

Publications

D. Bengochea Paz, K. Henderson, M. Loreau (2021) **Habitat percolation transition undermines sustainability in social-ecological systems**. *Ecology Letters*, <https://doi.org/10.1111/ele.13914>.

D. Bengochea Paz, K. Henderson, M. Loreau (2020) **Agricultural land use and the sustainability of social-ecological systems**. *Ecological Modelling* 437, 109312, <https://doi.org/10.1016/j.ecolmodel.2020.109312>.

In preparation

D. Bengochea Paz, K. Henderson, M. Loreau **The interplay between land-use management strategy and scale determines sustainability in social-ecological systems**.

Contributed talks

Event: Theoretical and Experimental Ecology Station monthly seminar, May 13 2021.

Habitat percolation transition undermines sustainability in social-ecological systems, **D.Bengochea**, K.Henderson, M.Loreau. **Role: Speaker**

Event: Annual meeting Ecological Society of America, August 3-6 2020, Virtual Meeting

Feedbacks between population growth and land use management: Modelling agricultural extensification and intensification and its impact on sustainability, **D.Bengochea**, K.Henderson, M.Loreau. **Role: Speaker**

Event: Labex MEC seminar on Mechanics and Complexity, June 22 2017, Marseille

Numerical platform to simulate the growth of branching structures, **D.Bengochea**, C.Eloy. **Role: Speaker**

Event: 9th HyMeX workshop, September 21-25 2015, Mykonos

Continuous humidity profiling using a wind-profiler radar in the UHF band (continued), F.Saïd, B.Campistron, **D.Bengochea**, O.Bock, P. de Girolamo, D.Legain. **Role: Collaborator**

Summer Schools

ex Modelo Summer School on numerical techniques for the exploration of simulation models using OpenMole platform, May 30 - June 4 2021, Chatenay-sur-Seine, France.

BIGSSS Computational Social Science Summer School on Migration, June 10-21 2019, Pula, Sardinia.