

# BAPTISTE AGLAVE

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<https://balglave.github.io/b-aglave/>

## RESEARCH INTEREST

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I am an applied statistician with a specific interest in statistical modeling for ecology. I am currently assistant professor in statistics at University Bretagne Sud and Lab-STICC (UMR 6285 - DECIDE team).

I develop spatio-temporal statistical methods for ecological and environmental applications that (1) combine heterogeneous and massive spatio-temporal data sources (*hierarchical integrated modelling*), (2) account for non-homogeneous sampling of the datasets (*preferential sampling*), (3) integrate differences in spatial resolution between these distinct data sources (*change of scale/support*), and (4) synthesize the spatio-temporal information available from these data sources (*spatio-temporal dimension reduction*).

Since my PhD, I have developed statistical methods to investigate the spatio-temporal dynamics of ecological species and assess the impact of climate change on species distributions (with a specific emphasis on fish spatio-temporal distribution). As an associate professor in the geography group of the Lab-STICC, I broaden my research scope to environmental topics, particularly the interactions between climate and urban spatial planning.

## CURSUS

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**Associate professor in statistics** (CNU 26)

Since September 2023

Research laboratory in information and communication science and technology (Lab-STICC, CNRS UMR 6285), DECIDE team.

Université Bretagne Sud (UBS), IUT Vannes, Data Science department.

**Postdoc**

January - June 2023

University of Washington / NOAA

*Subjects:*

1/ Dimension reduction methods for spatio-temporal ecological data.

2/ Spatio-temporal population dynamics modeling under climate change.

*Supervisors:* Jim Thorson, André Punt, Cody Szuwalski.

**PhD:** Ifremer Nantes and Institut Agro (Rennes) - UMR DECOD

2019 - 2022

*Subject:* Inferring fish spatio-temporal distribution and identifying essential habitats: tackling the challenge of preferential sampling and change of support to integrate heterogeneous data sources. [link](#)

*Supervisors:* Marie-Pierre Etienne, Youen Vermard, Mathieu Woillez, Etienne Rivot (HDR).

## SCIENTIFIC PUBLICATIONS

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### Peer-reviewed

Aglave Baptiste, Olmos, M., Casemajor, J., Etienne, M. P., Rivot, E., Woillez, M., Vermard, Y. (2024). *Investigating fish reproduction phenology and essential habitats by identifying the main spatio-seasonal patterns of fish distribution*. ICES Journal of Marine Science. <https://doi.org/10.1093/icesjms/fsae099>

Rovellini A., Punt A.E., Bryan M.D., Kaplan I.C., Dorn M.W., Aydin K., Fulton E.A., Aglave B., Baker M.R., Carroll G., Ferriss B.E., Haltuch M.A., Hayes A.L., Hermann A.J., Hernvann P.Y., Holsman K.K., Liu O.R., McHuron E., Morzaria-Luna H.N., Moss J., Surma S., Weise M.T. (2024). *Linking climate stressors to ecological processes in ecosystem models, with a case study from the Gulf of Alaska*. ICES Journal of Marine Science. <https://doi.org/10.1093/icesjms/fsae002>

Olmos M., Cao J., Thorson J.T., Punt A.E., Monnahan C.C., Aglave B., Szuwalski C. (2023). *A step towards the integration of spatial dynamics in population dynamics models: Eastern Bering Sea snow crab as a case study*. Ecological Modeling. <https://doi.org/10.1016/j.ecolmodel.2023.110484>

Alglave B., Vermard Y., Rivot E., Etienne M.P., Woillez M. (2023). *Identifying mature fish aggregation areas during spawning season by combining catch declarations and scientific survey data*. Canadian Journal of Fisheries and Aquatic Sciences. <http://dx.doi.org/10.1139/cjfas-2022-0110>

Alglave B., Rivot E., Etienne M.P., Woillez M., Thorson J.T., Vermard Y. (2022). *Combining scientific survey and commercial catch data to map fish distribution*. ICES Journal of Marine Science. <https://doi.org/10.1093/icesjms/fsac032>

### **Under review**

Alglave B., Mourguiart B., Vermard Y., Rivot E., Woillez M., Kristensen K., Etienne M.P. (*minor revisions*). *Change of support for heavy-tailed zero inflated data: application to spatially aggregated ecological data for fine-scale species distribution inference*. Under review in the Journal of the Royal Statistical Society Series C: Applied Statistics. [link](#)

Alglave B., Dufée B., Obakrim S., Thorson J. T. (*under review*). *Empirical Orthogonal Functions for ecology*. [link](#)  
Under review in Ecology (ESA) as Statistical Report.

Szuwalski C., Alglave B., Olmos M., Punt A.E., Veron M. (*under review*). *Density dependence can modulate climate change impacts on populations*. Under review in Nature Climate Change.

Michel M., Alglave B., Olmos M., Torterotot M., Virgili A., Martin-Marin S., Royer J.Y., Samaran F. (*under review*). *Modelling the influence of environmental factors on the acoustic presence of blue whale populations in the Southern Indian Ocean*. Under review in Scientific Reports (Nature).

### **In preparation**

Alglave B., Husson F. (*in prep*). *Analysing multivariate spatio-temporal ecological data through tensor decomposition*.

Alglave B., Besnard P., Bernard J., Gousseff M., Le Saux E., Bocher E. (*in prep*). *Identifying urban profiles with regard to overheating factors. Application to French municipalities*.

## **CONFERENCE PRESENTATIONS**

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### **International conferences**

Alglave B., Obakrim S., Dufée B., Thorson J. T. (2024). *How best to ordinate spatio-temporal data?* International Statistical Ecology Conference. Swansea, United Kingdom, July 15-19 2024. [link](#)

Alglave B., Etienne M.P., Vermard Y., Woillez M., Rivot E. (2024). *Integrating massive and heterogeneous spatio-temporal data in environmental science and ecology. Fisheries as case of application*. Fifteenth International Conference on Geostatistics for Environmental Applications. Chania, Greece, June 19-21, 2024. [link](#)

Alglave B., Dufée B., Obakrim S., Thorson J.T. (2024). *Empirical Orthogonal Functions and their latest developments. Dealing with orthogonality and sparse data*. Fifteenth International Meeting on Statistical Climatology (IMSC). Centre National de Recherche Météorologique, Toulouse, France, June 24-28, 2024. [link](#)

Bocher E., Gousseff M., Bernard J., Le Saux E., Alglave B., and Kerjouan E. (2024). *Comparison of different methods to produce local climate zone maps using the LczExplore tool*. EGU General Assembly 2024, Vienna, Austria, 14-19 Apr 2024, EGU24-15984. [link](#)

Szuwalski C., Alglave B., Olmos M., Punt A.E., Veron M. (2023). *Population feedback can modulate climate change impacts*. PICES-2023 Annual Meeting. November 2023, Seattle, USA.

Alglave B., Vermard Y., Etienne M.P., Woillez M., Rivot E. (2022). *Can we use catch declarations data to map fish spatial distribution?* International Statistical Ecology Conference (ISEC). June 2022, Cape Town, South Africa. [link](#)

Alglave B., Vermard Y., Etienne M.P., Woillez M., Rivot E. (2021). *Can we trust commercial landings data to identify essential habitats of harvested fish? Application to several demersal species in the Bay of Biscay*. ISOBAY 17 - XVII International Symposium on Oceanography of the Bay of Biscay. June 2021, virtual event. [link](#)

### **National conferences**

Alglave B., Thorson J. T., Obakrim S., Dufée B. (2024). *How to best represent spatio-temporal data?* Annual meeting of the GdR 'Ecology and statistics'. April 2024, Montpellier, France. [link](#)

Alglave B., Punt A.E., Rivot E., Szuwalski C., Etienne M.P. (2023). *Integrating massive and heterogeneous spatio-temporal data to infer spatial processes. Marine ecology as a field of application*. French Society of Statistics. July 2023, Brussel, Belgium.

Alglave B., Kristensen K., Vermard Y., Rivot E., Woillez M., Etienne M.P. (2022). *Downscaling coarse observations to predict continuous species spatio-temporal distribution*. Meeting of the RESSTE network (Risks, extremes and spatio-temporal statistics). May 2022, Paris, France. [link](#)

Alglave B., Kristensen K., Vermard Y., Rivot E., Woillez M., Etienne M.-P. (2022). *Going from coarse landings data to fine scale species distribution*. Annual meeting of the GdR 'Ecology and statistics'. April 2022, Montpellier, France. [link](#)

### Seminars

Alglave B. (2025). *Statistical integration for spatio-temporal modeling of species distribution in ecology*. Journées de STATistique de Rennes (JSTAR) 2025.

Alglave B. *EOFs and derived methods*. 'Statistiques au sommet' ([website](#)), Rochebrune. Organizer: MIA Paris Saclay. March 2024. [link](#)

Alglave B. *Integrating massive and heterogeneous spatio-temporal data in environmental science. Marine ecology as field of application*. Seminar of the Mathematics Laboratory of Bretagne Atlantique (LMBA). February 2024. [link](#).

Alglave B. *Statistics, fisheries management and spatial modelling: towards spatio-temporal stock assessment methods*. Eighth meeting of statistics. Data science for sea and coastal systems ([website](#)). Université Bretagne Sud. November 2023. [link](#)

Alglave B. *Integrating heterogeneous and massive spatio-temporal data to infer spatial processes. Fisheries science as field of application*. Quantitative seminars, School of Fisheries and Aquatic Science, University of Washington, Seattle. March 2023.

Alglave B. *Integrating heterogeneous and massive spatio-temporal data to infer spatial processes. Fisheries science as field of application*. MIA, AgroParisTech, Paris Saclay. April, 2023.

Alglave B. *Inferring fish spatio-temporal distribution and identifying essential habitats: tackling the challenge of preferential sampling and change of support to integrate heterogeneous data sources*. [Ecodep seminars](#), Cergy University. January 2023.

### TECHNICAL REPORTS

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Casemajor J., Alglave B., Woillez M. (2024). *Mapping the spawning grounds of fish species in Metropolitan France*. Ref. PDG/RBE/HALGO/LBH-2024-02. Ifremer. [link](#)

Alglave B., Vermard Y. (2022). *Ad-hoc contract for the preparation of STECF EWG 22-01 concerning closure areas to protect juveniles and spawners of all demersal stocks in western Mediterranean Sea*. The report is not public, but key results are available on the [link](#)

### PROJECTS AND WORKING GROUPS

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#### MOUSE project (ANR JCJC / Submitted)

Submitted in October 2024

The MOUSE project (Joint MOdelling of Urban overheating factors across European cities) is a project aiming at developing integrated statistical methods to identify city profiles regarding urban overheating factors to classify European cities regarding their sensitivity to urban overheating.

*Heads of the project:* Baptiste Alglave (Lab-STICC).

*Collaborators:* Francois Leconte (Lermab), Erwan Bocher (Lab-STICC), Lise Bellanger (Lab-STICC), Julien Chiquet (MIA Paris-Saclay).

#### MOBYDIC project

2025 - 2030

The MOBIDYC (Promoting active and sustainable MOBility through InterDisciplinarY Co-construction) project aims to investigate the key human and environmental factors of active and sustainable mobility (here cycling) based on an interdisciplinary approach combining machine learning, sport science and geography.

*Heads of the project:* Léa Gottsmann (ENS Rennes), Marie-Pierre Etienne (ENSAI/CREST).

<b>ACLIM: The Alaska Climate Integrated Modeling Project</b>	2023
The Alaska Climate Integrated Modeling project (ACLIM) is an interdisciplinary collaboration to project and evaluate climate impacts on marine fisheries in the Bering Sea, Alaska. <a href="#">link</a>	
<i>Head of the project:</i> Kirstin Holsman (NOAA).	
<b>MACCO project</b>	2019 - 2024
Identification of the target species and by-catch of the Bay of Biscay mixed fishery and evaluation of alternative management strategies. <a href="#">link</a>	
<i>Head of the project:</i> Stéphanie Mahévas (Ifremer).	
<b>Working group for the West Med closure areas (EWG 22-01)</b>	2022
Working group aiming at identifying and evaluating the potential closure areas for the demersal species of the Western Mediterranean Sea.	
<i>Head of the working group:</i> Cecilia Pinto (University of Genova).	
<b>ProbyFish project</b>	2019-2021
European project to identify measures to protect by-catch species in mixed-fisheries management plans. It provided half of the funds for the PhD.	
<i>Head of the project:</i> Anna Rindorf (DTU-Aqua).	
<b>SMAC project</b>	2019
Project aiming at investigating stock structure of the Eastern English Channel common sole and adapting management to the available knowledge on stock structure.	
<i>Head of the project:</i> Marie Savina-Rolland (Ifremer).	

## SUPERVISORY EXPERIENCE

<b>PhD</b>	Since February 2025
<i>Subject:</i> Modeling spatio-temporal distribution and population dynamics of Holothuria in Newfoundland.	
<i>Student:</i> Aurèle Hebert Burggraeve.	
<i>Co-supervision with:</i> Nicolas Bez (HDR), Laurent Dubroca.	
<b>PhD</b>	Since November 2024
<i>Subject:</i> Analyzing and predicting overheating phenomena on urban territories in the context of climate change.	
<i>Student:</i> Lenaig Le Grogne.	
<i>Co-supervision with:</i> Erwan Bocher (HDR), Jeremy Bernard.	
<b>Master student</b>	May - November 2024
<i>Subject:</i> A typology of French cities based on urban overheating indicators. <a href="#">link</a>	
<i>Student:</i> Pauline Besnard.	
<i>Co-supervision with:</i> Erwan Bocher.	
<b>CDD</b>	January 2023 - June 2024
<i>Subject:</i> Packaging and applying spatio-temporal models to identify fish essential habitats for all French facades. Ifremer.	
<i>CDD employee:</i> Juliette Casemajor.	
<i>Co-supervision with:</i> Mathieu Woillez.	
<b>Master student</b>	May - July 2022
<i>Subject:</i> Contributions of the lognormal Poisson model for multivariate analysis of ecological communities. <a href="#">link</a>	
<i>Student:</i> Théo Fabien.	
<i>Co-supervision with:</i> Marie-Pierre Etienne, Thomas Outrequin and Jean-Louis Marchand.	
<b>Master student</b>	February - August 2021
<i>Subject:</i> Combining commercial and scientific data to infer the space-time distribution of sardine in the Bay of Biscay. <a href="#">link</a>	

*Student:* Florian Quemper.

*Co-supervision with:* Etienne Rivot and Marie-Pierre Etienne.

## TECHNICAL SKILLS AND PACKAGES

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<b>Inference methods</b>	Maximum likelihood inference, Bayesian inference
<b>Languages</b>	R, C++, Java, Python, SQL
<b>Tools</b>	Git, LaTeX, TMB, R-INLA, JAGS, Nimble, PostgreSQL
<b>Packages</b>	<a href="#">FishMap</a>

## SCIENTIFIC ANIMATION

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<b>Workshop on spatio-temporal modelling for ecology</b> with Maxime Olmos (Ifremer). Biannual meeting bringing together ecologists and statisticians to work on spatio-temporal modeling based on ecological applications. <i>Host institution:</i> UMR DECOD.	Since 2023
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<b>Space-time seminars</b> Organization of bimensual seminars with a focus on spatial and spatio-temporal statistics. <i>Host institution:</i> University of Washington.	January - June 2023
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<b>Amédée seminars</b> Organization of semestrial seminars with a focus on methodological development in fisheries science and marine ecology. <a href="#">link</a> <i>Host institution:</i> UMR DECOD.	2020-2021
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## WORKSHOP, COURSEWORK AND OTHERS

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Finist'R workshop Bootcamp of State Of the R group, organized by the MIA. Roscoff. <a href="#">link</a>	2020,2022,2024
Stats aux sommets, MIA Paris, visio Member of the SFDS.	2021, 2024

## TEACHING

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<b>Introduction to spatio-temporal modeling for ecology</b> Institut Agro (Rennes), M2.	2021, 2022, 2024
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<b>Student project in data science</b> Institut Agro (Rennes), M2.	2021, 2024
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<b>Sampling and experimental design</b> IUT Vannes, Data Science department, L2.	2024
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<b>Maximum likelihood estimation</b> IUT Vannes, Data Science department, L3.	2023, 2024
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<b>Introduction to spatial and spatio-temporal statistics</b> IUT Vannes, Data Science department, L3.	2023, 2024
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<b>Descriptive statistics</b> IUT Vannes, Data Science department, L1.	2023, 2024
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<b>Linear model</b> IUT Vannes, Data Science department, L2.	2023
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<b>Practical work in statistics for marine ecology</b> Institut Agro (Rennes), M2.	2020, 2021
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<b>Practical work in basics of probability theory</b> Nantes University, L2.	2019
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