



Facundo Muñoz

Curriculum Vitae

Biostatistician at the French agricultural research and international cooperation organization (Cirad). My interests include Bayesian methods and Spatial(-temporal) statistics applied to the interplay between life sciences and the environment.

Education

- Feb. 2013 **PhD in Statistics and Optimization**, *University of Valencia, cum laude*
Geostatistics in heterogeneous regions with cost-based distances
- Jul. 2012 **Diploma in Academic Research, Administration and Education**, *University of Valencia*
150hs
- Jul. 2009 **Degree in Mathematics**, *University of Valencia*
5-years *Licenciatura*
- Jul. 2007 **Degree in Statistics**, *University of Valencia*, Extraordinary Degree Award by the University of Valencia; Second National Degree Award by the Ministry of Education
5-years *Licenciatura*

Languages

| | | |
|---------|------------------------------------------|------------|
| Spanish | mother tongue | |
| English | professional working proficiency | B2/C1 CEFR |
| French | professional working proficiency | B2/C1 CEFR |
| Catalan | limited professional working proficiency | B2 CEFR |

Computer skills

| | | | |
|-------------|----------------------------------------------------|--------------|--------------------------------------------|
| OS | GNU/Linux | Applications | Networking, relational databases |
| Mathematics | MatLab/Octave, Mathematica/Maxima, LINGO, \LaTeX | Programming | SQL, C(++), R, Literate prog., Git, Docker |
| Statistics | R, INLA, BUGS, Stan, NIMBLE | GIS | gvSIG, QGis, GRASS |
| Web design | HTML, Jekyll | Graphics | GIMP, Inkscape, yEd |

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Additional education

- Jun. 2021 **Simulation of spatial dynamic systems with Ocelet**, *Cirad*, Online, France
30 hs. Profs. P. Degenne, D Lo Seen
- Oct. 2020 **Mechanistic modelling in epidemiology**, *Cirad*, Online, France
28 hs. Prof. P. Ezanno
- Nov. 2019 – **Basics in Animal Disease Epidemiology**, *Plateforme mixte Cirad-FVI*, FUN
Jan. 2020 MOOC (<https://www.fun-mooc.fr/>), France
40 hs. Profs. E. Cardinale, C. Squarzoni Diaw, B. Dufour, P. Hendrikx, E. Etter, S. Molia, D. Chavernac, F. Goutard, M. Paul
- 6–11 Oct. 2019 **Network Analysis, Inference, and Modeling**, *European Courses in Advanced Statistics (ECAS) - Société Française de Statistique*, Fréjus, France
28 hs. Profs. ML Martin-Magniette, Stéphane Robin, Charles Bouveyron, Pierre Latouche
- 24–25 Jul. 2019 **Applied Bayesian Computation: The NIMBLE Platform For Hierarchical Modeling and MCMC**, *València International Bayesian Summer School (VIBASS3)*, Valencia, Spain
2 days. Prof. Daniel Turek
- 18–19 Jul. 2018 **Geoadditive Distributional Regression with BayesX**, *València International Bayesian Summer School (VIBASS2)*, Valencia, Spain
2 days. Profs. Nadja Klein, Nikolaus Umlauf
- 19–20 Jun. 2018 **R interactif : programmer une application web avec Shiny**, *Plateforme mixte Cirad-FVI*, Montpellier, France
14 hs. Prof. Sylvain Falala
- 12 Jun. 2018 **An introduction to geostatistical analysis of spatio-temporal data with R**, *METMA IX workshop*, Montpellier, France
6 hs.
- 8 Feb.–15 Mar. 2018 **Formation de formateurs**, *Cirad*, Montpellier, France
35 hs.
- 16–20 Jul. 2017 **Bayesian modeling with Stan, predictive model assessment and comparison, and variable selection in large p , small n case**, *València International Bayesian Summer School (VIBASS1)*, Valencia, Spain
2 days. Prof. Aki Vehtari
- 11–13 Mar. 2015 **Spatio-temporal sampling for Natural Resource Monitoring**, *Institut National de la Recherche Agronomique (INRA)*, Orléans, France
15 hs. Prof. Dick Brus (U. Wageningen)
- Sep.–Nov. 2011 **Program on Uncertainty Quantification**, *Statistical and Applied Mathematics Sciences Institute (SAMSI)*, Durham, NC, USA
Three month stay participating in workshops, courses, and working groups
- 10 Jul. 2011 **Bayesian Computation with INLA**, *Statistical Modelling Society*, Valencia, Spain
1 day. Prof. Håvard Rue
- 28 Jun–2 Jul. 2010 **GEOSTAT Summer School**, *University of Extremadura*, Plasencia, Spain
5 days. Spatio-temporal data analysis with R+SAGA+Google Earth

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- 17–18 May 2010 **Advanced R course**, *Centre for Research in Environmental Epidemiology (CREAL)*, Barcelona, Spain
14hs. Profs. Ramón Díaz-Uriarte, Juan R. González.
- 17–21 Mar. 2010 **Advances and Challenges in Space Time Modelling of Natural Events**, *University of Castilla la Mancha and Universitat Göttingen*, Toledo, Spain
40hs. Profs. Denis Allard (INRA, Biometrie, Avignon), Marc Genton (Texas A&M U.), Tilmann Gneiting (U. of Heidelberg), Finn Lindgren (U. of Lund), Werner Müller (U. of Linz), Paulo Ribeiro (U. of Paraná), Maria Dolores Ruiz Medina (U. of Granada), Martin Schlather (U. of Göttingen), Thordis Linda Thorarinsdottir (U. of Heidelberg)
- Jan–Mar. 2009 **e-Workshop: Spatial analysis in R**, *Online course*
6hs. Spatial data management and analysis, spatial epidemiology, disease mapping. Profs.: Rich Harris (Bristol), Nick Taste (Leicester), Roger Bivand (Bergen), Edzer Pebesma (Munster), Chris Brunsdon (Leicester), Virgilio Gómez-Rubio (Castilla-La Mancha).
- 29–30 Sep. 2008 **Gaussian Markov Random Fields: An Introduction**, *Imperial College*, London, UK
2 days. Prof. Håvard Rue.
- 16–18 Jun. 2008 **Hierarchical modeling and analysis of spatial and spatio-temporal data**, *Spanish Societies of Epidemiology and Biometrics*, Valencia, Spain
20hs. Prof. Alan Gelfand
- 18–21 Sep. 2007 **Spatio-temporal analysis of epidemiological and environmental problems**, *Miguel Hernández University*, Elche, Spain
20 hs. Profs. Antonio López Quílez (U. Valencia), David Conesa (U. Valencia), Miguel A. Martínez Beneito (Generalitat Valenciana), Gonzalo García-Donato (U. Castilla La Mancha), Javier Morales Socuélamos (U. Miguel Hernández), M^a Asunción Martínez Mayoral (U. Miguel Hernández)

Professional Experience

Past positions

- 2017– **Biostatistician**, *Agricultural Research Centre for International Development (Cirad)*, Montpellier, France
Research Unit *Animals, Health, Territories, Risks and Ecosystems (ASTRE)*
- 2013–2017 **Postdoctoral Researcher**, *French National Institute for Agricultural Research (INRA)*, Orléans, France
European Project *Trees4Future: Designing Trees for the Future*; WP6: *Integrated statistical platform for analyzing forest genetic resources*. Group leader: Leopoldo Sánchez
○ Development of the R-package *breedR* (<http://famuvie.github.io/breedR/>)
- 2013–2013 **Data Analyst**, *Center for Public Health Research (FISABIO)*, Valencia, Spain
European Joint Action *PARENT: cross-border PATient REgistries iNiTiative*. Director: Oscar Zurriaga.
- 2012–2012 **Researcher**, *University of Valencia*, Spain
National Project *INMOBIKE: Intermodal planning platform for public transportation with bicycle*. Director: Ramón Álvarez-Valdés.
- 2009–2009 **Researcher**, *University of Valencia*, Spain
European Project *EUROHEIS2: A European Health and Environment Information System for Risk Assessment and Disease Mapping*. Director: Antonio López-Quílez.

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- 2007–2012 **Graduate student**, *University of Valencia, Spain*
National Project GUENMAP: *Applying geostatistical prediction techniques to the evaluation of environmental noise in urban areas by using acoustic maps*. Director: Antonio López-Quílez.
- 2006–2007 **Statistical internship**, *National Registry of Child Cancer, Valencia, Spain*
Database management; Annual statistical report
- 2005–2006 **Teacher**, *Area Universitaria SL, Valencia, Spain*
Mathematics and Statistics teacher for Engineering students
- Teaching Activity**
- May. 24 2023 **Crash Course on Bayesian Regression Modelling**, *CEFE (CNRS), Montpellier, France*
.5 day course.
- Jan. 18 2022 **Méthodes collaboratives et reproductibles dans la recherche**, *UMR ASTRE (Cirad), Montpellier, France*
3 days course.
- Dec. 6 2021 **Training Course on Management and Statistical Analysis of Data Collected from a Mark-Release-Recapture studies of Aedes Mosquitoes in preparation of SIT pilot trials**, *International Atomic Energy Agency (IAEA), On line, International*
3 days course.
- Jan. 18 2021 **Notions de base en statistiques**, *Cirad, On line, France*
2 days course.
- Jul. 23 2019 **Introduction to Bayesian Inference**, *València International Bayesian Summer School (VIBASS 3), Valencia, Spain*
2 days course, with C. Armero, M. Brewer, D. Conesa, A. Forte, V. Gómez-Rubio.
- Apr. 8 2019 **Qualitative Risk Assessment and Risk Mapping**, *European commission for the control of foot-and-mouth disease (FAO), Montpellier, France*
2 days course, with C. Squarzoni, E. Arsevska, S. Villaudy, D. Chavernac. Production of epidemiological risk maps by combination of multiple risk factors using the R-package mapMCDA.
- Dec. 4 2018 **Biostatistics for Epidemiology**, *UMR ASTRE (Cirad), Montpellier, France*
3 days course, with V. Grosbois. Introduction to statistical modelling. Manipulating and modelling spatial data in R. Generalised Linear Models. Mixed Models. Compartmental Epidemiological Models.
- Sep. 18 2018 **Exploiter breedR pour l'évaluation génétique d'un dispositif forestier expérimental**, *National Institute of Agricultural Research (INRA), Orléans, France*
1 day course. Analysis of simple progeny tests. Accounting for environmental effects. Non-additive genetic effects. Simultaneous analysis of multiple traits. Genotype-Environment interaction. Parallel computation.
- Dec. 6–8 2016 **Advanced R course**, *National Institute of Agricultural Research (INRA), Orléans, France*
3 days course. Interactive data manipulation. Graphics with ggplot2. Functional Programming. Object Oriented Programming. Parallelization and code optimization. Debugging. Automatic reporting and documentation. Package creation. Unit testing. Version control with git. Reproducible workflow.

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- Dec. 10–11 **Workshop on the statistical package breedR**, *Forest Research Institute (IBL)*,
2015 Warsaw, Poland
2 days course, with L. Sánchez
- Jun. 30–Jul. 3 **breedR: a R-package implementing statistical models specifically suited for forest genetic resources analysts**, *Summer School University of Zaragoza*, Spain
3.5 days course, with L. Varona, E. Cappa, E. Notivol, L. Sánchez, J. Climent and A. Legarra
- 17th to 19th jun. 2013 **Basic Nonparametric Statistics**, *Cathedra of international finances of Bank of Santander, University of Valencia*, Valencia, Spain
6 hs course, with David Conesa
- 17th apr. to 15 may 2013 **Basic Biostatistics with SPSS**, *Continuous training facility, University of Valencia*, Valencia, Spain
8 hs course, with David Conesa and Carmen Armero
- Course **Design and Statistical Analysis of Experiments**, *Degree on Biology, University of Valencia*, Valencia, Spain
2011-2012 3 credits course, practical group
- Feb. 2012 **Introductory Seminar on L^AT_EX and Beamer**, *Master on Biostatistics, University of Valencia*, Valencia, Spain
4 hs course
- Mar. 2011 **Productivity tools for Research**, *Center for Public Health Research, CSISP*, Valencia, Spain
Talk
- Feb. 2011 **Advanced course on Beamer**, *University Jaume I*, Castellón, Spain
6 hs Course
- Apr. 2011 **R course**, *Hematology Service at La Fe Hospital*, Valencia, Spain
5 day course with David Conesa
- 2005–2006 **Undergraduate courses in Engineering**, *Area Universitaria SL*, Valencia, Spain
Calculus, Algebra, Statistics, Numerical Methods

Publications

Refereed Research papers

- [1] Liane Dupon, Bastien Trabucco, Facundo Muñoz, François Casabianca, François Charrier, Morgane Laval and Ferran Jori. "A Combined Methodological Approach to Characterize Pig Farming and Its Influence on the Occurrence of Interactions between Wild Boars and Domestic Pigs in Corsican Micro-Regions". In: *Frontiers in Veterinary Science* 11 (2024).
- [2] Mamadou Ciss, Alessandra Giacomini, Mame Nahé Diouf, Alexis Delabouglise, Asma Mesdour, Katherin Garcia Garcia, Facundo Muñoz, Eric Cardinale, Mbaragou Lo, Adji Marème Gaye, Mathioro Fall, Khady Ndiaye, Assane Gueye Fall, Catherine Cetre-Sossah and Andrea Apolloni. "Description of the Cattle and Small Ruminants Trade Network in Senegal and Implication for the Surveillance of Animal Diseases". In: *Transboundary and Emerging Diseases* 2023 (2023), e1880493.
- [3] Mariline Poupaud, Flavie Luce Goutard, Vannaphone Phouthana, Facundo Muñoz Viera, Domingo Caro, Alessandro Patriarchi and Mathilde C. Paul. "Different Kettles of Fish: Varying Patterns of Antibiotic Use on Pig, Chicken and Fish Farms in Lao PDR and Implications for Antimicrobial Resistance Strategies". In: *Transboundary and Emerging Diseases* (2022), tbed.14766.
- [4] Pauline Ezanno, Sébastien Picault, Servane Bareille, Gaël Beaunée, Gert Jan Boender, Emmanuelle A. Dankwa, François Deslandes, Christl A. Donnelly, Thomas J. Hagenaars, Sarah Hayes, Ferran Jori, Sébastien Lambert, Matthieu Mancini, Facundo Munoz, David R.J. Pleydell, Robin N. Thompson, Elisabeta Vergu, Matthieu Vignes and Timothée Vergne. "The African Swine Fever Modelling Challenge: Model Comparison and Lessons Learnt". In: *Epidemics* 40 (2022), p. 100615.
- [5] Facundo Muñoz, David R.J. Pleydell and Ferrán Jori. "A Combination of Probabilistic and Mechanistic Approaches for Predicting the Spread of African Swine Fever on Merry Island". In: *Epidemics* 40 (2022), p. 100596.
- [6] Thierno Madiou Bah, Vladimir Grosbois, Frédéric Stachurski, Facundo Muñoz, Maxime Duhayon, Ignace Rakotoarivony, Anaïs Appelgren, Clément Calloix, Liz Noguera, Théo Mouillaud, Charlotte Andary, Renaud Lancelot, Karine Huber, Claire Garros, Agnès Leblond and Laurence Vial. "The Crimean-Congo Haemorrhagic Fever Tick Vector *Hyalomma Marginatum* in the South of France: Modelling Its Distribution and Determination of Factors Influencing Its Establishment in a Newly Invaded Area". In: *Transboundary and Emerging Diseases* 69.5 (2022), e2351–e2365.
- [7] Caudou Inago Trebissou, Mathias Gnion Tahi, Facundo Munoz, Leopoldo Sanchez, Simon-Pierre Assanvo N'Guetta, Christian Cilas and Fabienne Ribeyre. "Cocoa Breeding Must Take into Account the Competitive Value of Cocoa Trees". In: *European Journal of Agronomy* 128 (2021), p. 126288.
- [8] Oumaima Mtaallah, Cécile Squarzoni-Diaw, Sana Kalthoum, Rachid Bouguedour, Facundo Muñoz, Annelise Tran and Caroline Coste. "Implementation of Zoning to Guide Management of Foot and Mouth Disease in Tunisia". In: *Transboundary and Emerging Diseases* (2021), tbed.14101.

- [9] Ector C. Belaber, María E. Gauchat, Cristian D. Schoffen, Facundo Muñoz, Nuno M. Borralho, Leopoldo Sanchez and Eduardo P. Cappa. “Accounting for Competition in Multi-Environment Tree Genetic Evaluations: A Case Study with Hybrid Pines”. In: *Annals of Forest Science* 78.1 (2021), p. 2.
- [10] Pauline Ezanno, Sébastien Picault, Gaël Beaunée, Xavier Bailly, Facundo Muñoz, Raphaël Duboz, Hervé Monod and Jean-François Guégan. “Research Perspectives on Animal Health in the Era of Artificial Intelligence”. In: *Veterinary Research* 52.1 (2021), p. 40.
- [11] Cécile Squarzoni-Diaw, Elena Arsevska, Sana Kalthoum, Pachka Hammami, Jamel Cherni, Asia Daoudi, Mohamed Karim Laoufi, Yassir Lezaar, Rachid Kechna, Ismaila Seck, Bezeidould elmamy, Barry Yahya, Barbara Dufour, Pascal Hendrikx, Eric Cardinale, Facundo Muñoz, Renaud Lancelot and Caroline Coste. “Using a Participatory Qualitative Risk Assessment to Estimate the Risk of Introduction and Spread of Transboundary Animal Diseases in Scarce-data Environments”. In: *Transboundary and Emerging Diseases* (2020).
- [12] Marie Pégard, Vincent Segura, Facundo Muñoz, Catherine Bastien, Véronique Jorge and Leopoldo Sanchez. “Favorable Conditions for Genomic Evaluation to Outperform Classical Pedigree Evaluation Highlighted by a Proof-of-Concept Study in Poplar”. In: *Frontiers in Plant Science* 11 (2020).
- [13] Arada Izzedine Abdel-Aziz, Aurore Romey, Anthony Relmy, Kamila Gorna, Eve Laloy, Raphaëlle Métras, Facundo Muñoz, Sandra Blaise-Boisseau, Stephan Zientara, Renaud Lancelot and Labib Bakkali Kassimi. “Seroprevalence and Molecular Characterization of Foot-and-mouth Disease Virus in Chad”. In: *Veterinary Medicine and Science* 6.1 (2020), pp. 114–121.
- [14] Margot Galière, Marisa Peyre, Facundo Muñoz, Mariline Poupaud, Alain Dehove, François Roger and Isabelle Dieuzy-Labaye. “Typological Analysis of Public-Private Partnerships in the Veterinary Domain”. In: *PLOS ONE* 14.10 (2019), e0224079.
- [15] Pierre Villard, Facundo Muñoz, Thomas Balenghien, Thierry Baldet, Renaud Lancelot and Viviane Hénaux. “Modeling Culicoides Abundance in Mainland France: Implications for Surveillance”. In: *Parasites & Vectors* 12.1 (2019).
- [16] Eduardo Pablo Cappa, Facundo Muñoz and Leopoldo Sanchez. “Performance of Alternative Spatial Models in Empirical Douglas-fir and Simulated Datasets”. In: *Annals of Forest Science* 76.53 (2019).
- [17] Claire Garros, Karien Labuschagne, Laure Dommergues, M’sa Ben, Thomas Balenghien, Facundo Muñoz, Mame Thierno Bakhoum, Eric Cardinale and Héléne Guis. “Culicoides Latreille in the Sun: Faunistic Inventory of Culicoides Species (Diptera: Ceratopogonidae) in Mayotte (Comoros Archipelago, Indian Ocean)”. In: *Parasites & Vectors* 12.1 (2019).
- [18] Alexandre Marchal, Carl D. Schlichting, Rémy Gobin, Philippe Balandier, Frédéric Millier, Facundo Muñoz, Luc E. Pâques and Leopoldo Sánchez. “Deciphering Hybrid Larch Reaction Norms Using Random Regression”. In: *G3: Genes, Genomes, Genetics* 9.1 (2019), pp. 21–32. PMID: 30333192.
- [19] Maria G. Pennino, Iosu Paradinas, Janine B. Illian, Facundo Muñoz, José M. Bellido, Antonio López-Quílez and David Conesa. “Accounting for Preferential Sampling in Species Distribution Models”. In: *Ecology and Evolution* (2018).

- [20] Caterina Villari, Arnaud Dowkiw, Rasmus Enderle, Marjan Ghasemkhani, Thomas Kirisits, Erik D. Kjær, Diana Marčiulyrienė, Lea V. McKinney, Berthold Metzler, Facundo Muñoz, Lene R. Nielsen, Alfas Pliūra, Lars-Göran Stener, Vytautas Suchockas, Luis Rodriguez-Saona, Pierluigi Bonello and Michelle Cleary. “Advanced Spectroscopy-Based Phenotyping Offers a Potential Solution to the Ash Dieback Epidemic”. In: *Scientific Reports* 8.1 (2018).
- [21] Joan Negre, Facundo Muñoz and Juan A. Barceló. “A Cost-Based Ripley’s K Function to Assess Social Strategies in Settlement Patterning”. In: *Journal of Archaeological Method and Theory* 25.3 (2018), pp. 777–794.
- [22] Eduardo P. Cappa, Yousry A. El-Kassaby, Facundo Muñoz, Martín N. Garcia, Pamela V. Villalba, Jaroslav Klápště and Susana N. Marcucci Poltri. “Genomic-Based Multiple-Trait Evaluation in Eucalyptus Grandis Using Dominant DArT Markers”. In: *Plant Science* 271 (2018), pp. 27–33.
- [23] Bassem Dimassi, Bertrand Guenet, Nicolas P. A. Saby, Facundo Muñoz, Marion Bardy, Florent Millet and Manuel P. Martin. “The Impacts of CENTURY Model Initialization Scenarios on Soil Organic Carbon Dynamics Simulation in French Long-Term Experiments”. In: *Geoderma* 311 (2018), pp. 25–36.
- [24] Eduardo P. Cappa, Yousry A. El-Kassaby, Facundo Muñoz, Martín N. Garcia, Pamela V. Villalba, Jaroslav Klápště and Susana N. Marcucci Poltri. “Improving Accuracy of Breeding Values by Incorporating Genomic Information in Spatial-Competition Mixed Models”. In: *Molecular Breeding* 37.125 (2017).
- [25] Alexandre Marchal, Facundo Muñoz, Frédéric Millier, Leopoldo Sánchez and Luc E. Pâques. “Hybrid Larch Heterosis: For Which Traits and under Which Genetic Control?”. In: *Tree Genetics & Genomes* 13.92 (2017).
- [26] Facundo Muñoz, Benoit Marçais, Jean Dufour and Arnaud Dowkiw. “Rising Out of the Ashes: Additive Genetic Variation for Crown and Collar Resistance to *Hymenoscyphus Fraxineus* in *Fraxinus Excelsior*”. In: *Phytopathology* 106.12 (2016), pp. 1535–1543.
- [27] Ramon Alvarez-Valdes, Jose M. Belenguer, Enrique Benavent, Jose D. Bermudez, Facundo Muñoz, Enriqueta Vercher and Francisco Verdejo. “Optimizing the Level of Service Quality of a Bike-Sharing System”. In: *Omega* 62 (2016), pp. 163–175.
- [28] Joan Negre, Facundo Muñoz and Carla Lancelotti. “Geostatistical Modelling of Chemical Residues on Archaeological Floors in the Presence of Barriers”. In: *Journal of Archaeological Science* 70 (2016), pp. 91–101.
- [29] Maria G. Pennino, David Conesa, Antonio López-Quílez, Facundo Muñoz, Angel Fernández and Jose M. Bellido. “Fishery-Dependent and -Independent Data Lead to Consistent Estimations of Essential Habitats”. In: *ICES Journal of Marine Science* 73.9 (2016), pp. 2302–2310.
- [30] Eduardo P. Cappa, Facundo Muñoz, Leopoldo Sanchez and Rodolfo J. C. Cantet. “A Novel Individual-Tree Mixed Model to Account for Competition and Environmental Heterogeneity: A Bayesian Approach”. In: *Tree Genetics & Genomes* 11.6 (2015), pp. 1–15.
- [31] Iosu Paradinas, David Conesa, María G. Pennino, Facundo Muñoz, Angel M. Fernández, Antonio López-Quílez and José M. Bellido. “Bayesian Spatio-Temporal Approach to Identifying Fish Nurseries by Validating Persistence Areas”. In: *Marine Ecology Progress Series* 528 (2015), pp. 245–255.

- [32] María G. Pennino, Facundo Muñoz, David Conesa, Antonio López-Quílez and José M. Bellido. "Bayesian Spatio-Temporal Discard Model in a Demersal Trawl Fishery". In: *Journal of Sea Research* 90 (2014), pp. 44–53.
- [33] M. Grazia Pennino, Facundo Muñoz, David Conesa, Antonio Lopez-Quilez and Jose M. Bellido. "Modeling Sensitive Elasmobranch Habitats". In: *Journal of Sea Research* 83 (2013), pp. 209–218.
- [34] Marta González-Warleta, Silvia Lladosa, José A. Castro-Hermida, Ana M. Martínez-Ibeas, David Conesa, Facundo Muñoz, Antonio López-Quílez, Yolanda Manga-González and Mercedes Mezo. "Bovine Paramphistomosis in Galicia (Spain): Prevalence, Intensity, Aetiology and Geospatial Distribution of the Infection". In: *Veterinary Parasitology* 191.3-4 (2013), pp. 252–263.
- [35] Facundo Muñoz, María G. Pennino, David Conesa, Antonio López-Quílez and José M. Bellido. "Estimation and Prediction of the Spatial Occurrence of Fish Species Using Bayesian Latent Gaussian Models". In: *Stochastic Environmental Research and Risk Assessment* (2012).
- [36] Antonio López-Quílez and Facundo Muñoz. "Geostatistical Computing of Acoustic Maps in the Presence of Barriers". In: *Mathematical and Computer Modelling* 50.5-6 (2009), pp. 929–938.

Papers in Conference Proceedings

- [1] María G. Pennino, Facundo Muñoz, David Conesa, Antonio López-Quílez and José M. Bellido. "Modelling Sensitive Elasmobranchs Habitat". In: *XVII Iberian Symposium on Marine Biology Studies*. Ed. by Ángel Borja. Vol. 19. AZTI-Tecnalia, 2012, pp. 519–523.

Technical Reports

- [1] Madiou Thierno Bah, Vladimir Grobois, Frédéric Stachurski, facundo munoz, Maxime Duhayon, Ignace rakotoarivony, Anaïs Appelgren, Clément Calloix, Liz Noguera Zayas, Théo Mouillaud, Charlotte Andary, Renaud Lancelot, Karine Huber, Claire Garros, Agnes Leblond and laurence vial. *The Crimean-Congo Haemorrhagic Fever Tick Vector Hyalomma Marginatum in South of France: Modelling Its Distribution and Determination of Factors Influencing Its Establishment in a Newly Invaded Area*. preprint. Preprints, 2021.
- [2] Alexandre Marchal, Carl Schlichting, Remy Gobin, Philippe Balandier, Frederic Millier, Facundo Muñoz, Luc Paques and Leopoldo Sanchez. *Deciphering Hybrid Larch Reaction Norms Using Random Regression*. 2018.
- [3] Eduardo P. Cappa, Facundo Muñoz and Leopoldo Sanchez. *Spatial Models for Different Spatial Patterns in Empirical Douglas-fir and Simulated Datasets*. 2017.
- [4] Joan Negre, Facundo Muñoz and Juan A. Barceló. *A Cost-Based Ripley's K Function to Assess Settlement Patterning*. 2017.
- [5] Maria G. Pennino, Iosu Paradinas, Janine B. Illian, Facundo Muñoz, José M. Bellido, Antonio López-Quílez and David Conesa. *Accounting for Preferential Sampling in Species Distribution Models*. 2017.
- [6] Eduardo P. Cappa, Yousry A. El-Kassaby, Facundo Muñoz, Martín N. Garcia, Pamela V. Villalba, Jaroslav Klápště and Susana N. Marcucci Poltri. *Improving Accuracy of Breeding Values by Incorporating Genomic Information in Spatial-Competition Mixed Models*. 2017.

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- [7] Alexandre Marchal, Facundo Muñoz, Frédéric Millier, Leopoldo Sánchez and Luc E. Pâques. *Hybrid Larch Heterosis: For Which Traits and under Which Genetic Control?* 2017.
- [8] Facundo Muñoz, Benoit Marçais, Jean Dufour and Arnaud Dowkiw. *Rising out of the Ashes: Additive Genetic Variation for Susceptibility to *Hymenoscyphus Fraxineus* in *Fraxinus Excelsior**. bioRxiv preprint <http://dx.doi.org/10.1101/031393>, 2016.
- [9] Facundo Muñoz and Antonio López-Quílez. *Pseudo-Euclidean Representation of Dissimilarities*. 2011, p. 9.
- [10] Facundo Muñoz, Miguel A. Martínez-Beneito, Antonio López-Quílez and Rubén Amorós. *Fast Spatio-Temporal Models for Disease Mapping*. Universitat de València, 2010, p. 22.
- [11] Antonio López-Quílez and Facundo Muñoz. *Review of Spatio-Temporal Models for Disease Mapping*. Zenodo. <http://dx.doi.org/10.5281/zenodo.46231>: Euroheis 2 project, 2009.

Scientific meetings and workshops

- Jun. 2022 **XXXIX National Conference on Statistics and Operations Research, Spanish Society of Statistics and Operations Research (SEIO)**, Granada, Spain
Invited oral communication: *The Irruption Of The AI*. Authors: **F. Muñoz**
- Nov. 2018 **Workshop: Theory and Practice of SPDE Models and INLA**, Université d'Avignon, Avignon, France
Oral communication: *Accounting for the spatio-temporal spread of a fungal invasion* Authors: **F. Muñoz**, A. Dowkiw
- May. 2018 **International Forum INNOVATION in Health Surveillance (InnovSur 2018)**, Cirad-INRA-ENVT-ANSES-IRD, Montpellier, France
Poster communication: *Use of entomology surveillance data for *Culicoides* abundance modeling in mainland France* Authors: **P. Villard**, F. Muñoz, T. Balenghien, T. Baldet, R. Lancelot, V. Hénaux
- Sep. 2017 **125th Anniversary Congress of IUFRO, International Union of Forest Research Organizations (IUFRO) - NFZ.forestnet**, Freiburg, Germany
Oral communication: *Fourier-transform infrared (FT-IR) spectroscopy can rapidly phenotype European ash resistance levels to *Hymenoscyphus fraxineus** Authors: **C. Villari**, A. Dowkiw, R. Enderle, M. Ghasemkhani, T. Kirisits, E. Kjaer, D. Marčiulynienė, L. McKinney, B. Metzler, F. Muñoz, L. Rostgaard Nielsen, A. Pliūra, L.G. Stener, V. Suchockas, L. Rodriguez-Saona, P. Bonello, M. Cleary.
- Aug. 2017 **2017 APS Meeting, American Phytopathological Society**, San Antonio, TX, USA
Poster communication: *Use of FT-IR for rapid phenotyping of European ash resistance levels to ash dieback* Authors: **C. Villari**, A. Dowkiw, R. Enderle, M. Ghasemkhani, T. Kirisits, E. Kjaer, D. Marčiulynienė, L. McKinney, B. Metzler, F. Muñoz, L. Rostgaard Nielsen, A. Pliūra, L.G. Stener, V. Suchockas, L. Rodriguez-Saona, P. Bonello, M. Cleary.
- Jul. 2017 **1st València International Bayesian Analysis Summer School (VIBASS I)**, University of Valencia, Valencia, Spain
Poster communication: *Spatio-temporal model for the genetic resistance to ash-dieback* Authors: **F. Muñoz**, A. Dowkiw.

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- Jun. 2016 **IUFRO Genomics & Forest Tree Genetics**, *International Union of Forest Research Organizations (IUFRO) - Institut National de Recherche Agronomique (INRA)*, Arcachon, France
 Oral communication: *Spatial and competition effects in tree breeding*. Authors: **F. Muñoz**, L. Sánchez, E. Cappa.
 Poster communication: *Preliminary training of a genomic evaluation in a breeding pedigree of Populus nigra L.* Authors: **M. Pegard**, V. Jorge, P. Faivre-Rampant, F. Muñoz, O. Rogier, V. Segura, C. Bastien, L. Sánchez.
 Poster communication: *breedR: Statistical methods for forest genetic resources analysts*. Authors: **L. Sánchez**, F. Muñoz.
- Avr. 2016 **Trees4Future final conference. Designing Trees for the Future: Data is the cornerstone**, *INRA Transfert*, Brussels, Belgium
 Oral communication: *BreedR: an open statistical tool package to analyse genetic data*. Authors: **F. Muñoz**.
- Aug. 2015 **5th International Workshop on the Genetics of Tree-Parasite Interactions**, *Institut National de Recherche Agronomique (INRA)*, Orléans, France
 Oral communication: *Genetic variability for susceptibility to the invasive ascomycete Hymenoscyphus fraxineus in a common Ash (Fraxinus excelsior) provenance and progeny trial indicates significant potential for breeding*. Authors: **A. Dowkiw**, F. Muñoz, B. Marçais, F. Bonne, V. Rousselet, J. Dufour.
- May 2015 **XXXV National Conference on Statistics and Operations Research**, *Spanish Society of Statistics and Operations Research (SEIO)*, Pamplona, Spain
 Oral communication: *A Bayesian spatio-temporal approach to identify fish nurseries by validating persistence areas*. Authors: **D. Conesa**, I. Paradinas, M. G. Pennino, A. López-Quílez, J. M. Bellido and F. Muñoz.
- Jul. 2014 **International Statistical Ecology Conference (ISEC2014)**, Montpellier, France
 Poster communication: *Do different fishery surveys data lead to same estimations?*. Authors: **J. M. Bellido**, D. Conesa, A. López-Quílez, F. Muñoz, A. Fernández and M. G. Pennino.
- Jul. 2014 **Satellite workshop of the IBC2014 on Spatio-Temporal Statistics**, *International Biometric Society (IBS)*, Valencia, España
 Poster communication: *A Bayesian spatio-temporal approach to identify fish nurseries by validating persistence areas*. Authors: **I. Paradinas**, D. Conesa, F. Muñoz, A. López-Quílez, M. G. Pennino, A. Fernández, J. M. Bellido.
 Poster communication: *Explaining spatial species distributions using different fishery surveys: are results similar?*. Authors: **J. M. Bellido**, D. Conesa, A. López-Quílez, F. Muñoz, A. Fernández and M. G. Pennino.
- Sep. 2013 **Jornada de Divulgació i Aplicació de l'Estadística (JDAE)**, *University of Valencia*, Valencia, Spain
 Poster communication: *Paramfistomosis bovina en Galicia: Prevalencia, intensidad y distribución geoespacial de la infección*. Authors: **S. Lladosa**, D. Conesa, A. López-Quílez, F. Muñoz, M. González-Warleta, M. Mezo.
 Poster communication: *Una aproximación espacio-temporal Bayesiana para la identificación de zonas de cría pesqueras*. Authors: **A. López-Quílez**, I. Paradinas, M. G. Pennino, F. Muñoz, D. Conesa, J. M. Bellido.
- Jun. 2013 **IX Conference of the International Biometric Society**, *Italian Region (SIB)*, Bressanone, Italy
 Oral communication: *Assessing the spatio-temporal distribution of species*. Authors: **D. Conesa**, A. López-Quílez, S. Lladosa, F. Muñoz, M. G. Pennino, J. M. Bellido, J. B. Illian, M. González-Warleta, M. Mezo.

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- May 2013 **XIV Spanish Conference on Biometrics (SEB)**, *IBS*, Ciudad Real, Spain
 Poster communication: *Identifying fish nurseries using Bayesian spatio-temporal models*. Authors: **D. Conesa**, I. Paradinas, M. G. Pennino, J. M. Bellido, A. López-Quílez, F. Muñoz.
 Poster communication: *Bovine paramphistomosis in Galicia: prevalence, intensity and geospatial distribution of the infection*. Authors: **S. Lladosa**, D. Conesa, A. López-Quílez, F. Muñoz, M. González-Warleta, M. Mezo.
- Jan. 2013 **Predocctoral seminar of the Mathematics Faculty**, *University of Valencia*, Valencia, Spain
 Oral communication: *Positive definiteness: de los mapas acústicos a la geometría Riemanniana*. Authors: **F. Muñoz**.
- Jan. 2013 **2nd General meeting of the National Network of Biostatistics (BiostatNet)**, Santiago de Compostela, Spain
 Poster communication: *Assessing the spatial distribution of species*. Authors: **A. López-Quílez**, F. Muñoz, S. Lladosa, M. G. Pennino, J. M. Bellido, M. González-Warleta, M. Mezo, J. B. Illian, D. Simpson.
- Dec. 2012 **Bayesian methods in Biostatistics and Bioinformatics (BioMed)**, *Institute for Research in Biomedicine (IRB)*, Barcelona, Spain
 Oral communication: *Assessing the spatial distribution of species*. Authors: **D. Conesa**, A. López-Quílez, S. Lladosa, F. Muñoz, M. G. Pennino, J. M. Bellido, J. B. Illian, D. Simpson, M. González-Warleta, M. Mezo.
- Sep. 2012 **Integrated Population Modelling**, *A joint meeting of the Environmental Statistics Section (ESS) of the Royal Statistical Society (RSS), British and Irish regions of the Biometric Society and the Computational Ecology Special Interest Group of the British Ecological Society (BES)*, London, UK
 Poster communication: *Assessing the spatial distribution of species using Bayesian latent Gaussian models*. Authors: **J. Illian**, D. Conesa, A. López-Quílez, S. Lladosa, F. Muñoz, M. G. Pennino, J. M. Bellido, D. Simpson, M. González-Warleta, M. Mezo.
- Sep. 2012 **VI International Workshop on Spatio-Temporal Modelling (METMAVI)**, Guimarães, Portugal
 Oral communication: *Assessing the spatial distribution of the fish species*. Authors: **D. Conesa**, A. López-Quílez, F. Muñoz, J. B. Illian, D. Simpson, M. G. Pennino, J. M. Bellido.
- Sep. 2012 **XVII Iberian Symposium on Marine Biology Studies (SIEBM)**, Donostia-San Sebastián, Spain
 Oral communication: *Modelling sensitive elasmobranchs habitat*. Authors: **M. G. Pennino**, F. Muñoz, D. Conesa, A. López-Quílez, J. M. Bellido.
- Jul. 2012 **II Conference of Young Researchers in Experiment Design and Biostatistics**, La Laguna, Spain
 Oral communication: *Modelización espacial de la distribución de especies mediante modelos Gaussianos latentes*. Authors: **S. Lladosa**, D. Conesa, A. López-Quílez, F. Muñoz, M. González-Warleta, M. Mezo.
- Jun. 2012 **ISBA2012**, *International Society for Bayesian Statistics*, Kyoto, Japan
 Poster communication: *Assessing the spatial distribution of species using Bayesian latent Gaussian models*. Authors: **D. Conesa**, A. López-Quílez, S. Lladosa, F. Muñoz, M. G. Pennino, J. B. Illian, D. Simpson, M. González-Warleta, M. Mezo.

- Jun. 2012 **Second Workshop on Bayesian Inference for Latent Gaussian Models with Applications (LGM2012)**, Trondheim, Norway
 Poster communication: *The spatial distribution of fish species*. Authors: **F. Muñoz**, D. Conesa, J. B. Illian, A. López-Quílez, M. G. Pennino, D. Simpson.
- Apr. 2012 **SIAM Conference on Uncertainty Quantification (UQ12)**, *Statistical and Applied Mathematical Sciences Institute (SAMSI)*, Raleigh, NC, USA
 Oral communication: *Assessing the spatial distribution of fish species using Bayesian latent Gaussian models*. Authors: **F. Muñoz**, M. G. Pennino, J. B. Illian, D. Simpson, D. Conesa, A. López-Quílez, J. M. Bellido. https://www.pathlms.com/siam/courses/2716/sections/3510/video_presentations/28932
- Sep. 2011 **XIII Spanish Conference and III Iberoamerican Meeting on Biometry 2011 (CEIB 2011)**, Barcelona, Spain
 Poster communication: *Bayesian hierarchical spatial modelling for assessment of the blue whiting (*Micromesistius poutassou*) occurrence*. Authors: **D. Conesa**, A. López-Quílez, **F. Muñoz**, J. M. Bellido, M. G. Pennino.
- Sep. 2011 **Methodology of Uncertainty Quantification workshop and Geosciences Applications workshop**, *Statistical and Applied Mathematical Sciences Institute (SAMSI)*, Durham, NC, USA
 Poster communication: *Geostatistical prediction in heterogeneous regions*. Authors: **F. Muñoz**, A. López-Quílez.
- Jul. 2011 **International Workshop on Statistical Modelling**, *Statistical Modelling Society (SMS)*, Valencia, Spain
 Poster communication: *Geostatistical modelling with non-Euclidean distances*. Authors: **F. Muñoz**, A. López-Quílez.
 Poster communication: *A Bayesian spatial approach to modelling fish species occurrence*. Authors: **M. G. Pennino**, J. M. Bellido, D. Conesa, A. López-Quílez, **F. Muñoz**.
- Jun. 2010 **Ninth Valencia International Meeting on Bayesian Statistics**, *International Society for Bayesian Analysis (ISBA)*, Benidorm, Spain
 Poster communication: *Fast Methods of Spatio-Temporal Disease Mapping with INLA*. Authors: **F. Muñoz**, R. Amorós, A. López-Quílez, M. A. Martínez-Beneito.
- Jun. 2009 **First Workshop on Spatio Temporal Disease Mapping**, *A European Health and Environment Information System for Risk Assessment and Disease Mapping project (EUROHEIS2)*, Valencia, Spain
 Oral communication: *Modelling and Implementation of spatio-temporal disease mapping*. Authors: **F. Muñoz**, A. López-Quílez.
- Mar. 2009 **Environmental Health Assessment and Disease Mapping: The Dutch Approach**, *A European Health and Environment Information System for Risk Assessment and Disease Mapping project (EUROHEIS2)*, Utrecht, The Netherlands
 Oral communication: *Assessment of pollutants in heterogeneous regions*. Authors: **F. Muñoz**, A. López-Quílez.
- Feb. 2009 **XXXI National Conference on Statistics and Operations Research**, *Spanish Society of Statistics and Operations Research (SEIO)*, Murcia, Spain
 Oral communication: *Geoestadística con distancias no Euclídeas*. Authors: **F. Muñoz**, A. López-Quílez.

- Jan. 2009 **Third Workshop on Bayesian Spatio-Temporal Models**, *Group on Spatio-Temporal Statistics in Epidemiology and Environment (GeitEma)*, Benimaurell, Spain
 Oral communication: *Theoretical and practical issues on Geostatistics with non Euclidean distances*. Authors: **F. Muñoz**, A. López-Quílez.
- Sep. 2008 **X Workshop of Multidisciplinary Research, Mathematical Models in Medicine & Engineering**, *Institute of Multidisciplinary Mathematics (im^2)*, *Polytechnic University of Valencia (UPV)*, Valencia, Spain
 Oral communication: *Geostatistical Computing of acoustic maps in the presence of barriers*. Authors: **F. Muñoz**, A. López-Quílez.
- Jun. 2008 **GUODOIV**, *Spanish Societies of Epidemiology and Biometrics (SEE, SEB)*, Valencia, Spain
 Poster communication: *Predicción del ruido ambiental en entornos urbanos mediante técnicas geostatísticas*. Authors: **F. Muñoz**, A. López-Quílez.
- Nov. 2007 **Second Workshop on Bayesian Spatio-Temporal Models (SeWoBaSTeM'07)**, *Group on Spatio-temporal Statistics in Epidemiology and Environment (GeitEma)*, Benimaurell, Spain
 Oral communication: *Geostatistical modeling of environmental noise in urban areas*. Authors: **F. Muñoz**, A. López-Quílez.

Other academic activities

- 2023– **Réseau Interdisciplinaire autour de la Statistique (RIS)**, *Member*, France
<https://ris.cnrs.fr/>
- 2021–2023 **European Open Science Cloud (EOSC) Future**, *User Group member*
<https://eoscfuture.eu/>
- 2019– **Société Française de Statistique (SFdS)**, *Fellow member*
<https://www.sfds.asso.fr/>
- 2019– **Société Française de Biométrie (SFB)**, *Fellow member*
<https://sfb.pages.math.cnrs.fr/asso/>
- 2019– **International Biometric Society (IBS)**, *Fellow member*
<https://www.biometricsociety.org/>
- 2018– **València International Bayesian Analysis Summer School (VIBASS)**, *Local Organizer*, Valencia, Spain
 University of Valencia <http://vabar.es/blog/>
- 2016– **Workgroup on Bayesian Inference of the Spanish Society of Statistics and Operations Research (SEIO-Bayes)**, *Member*, Spain
<http://seio-bayes.webnode.es/>
- 2016– **Valencia Bayesian Research group (VaBaR)**, *Member*, Spain
<http://vabar.es/>
- 2015– **Statistical Modeling Ecology Group (SMEG)**, *Fellow member*
<http://statisticalmodelingecologygroup.blogspot.com/>
- 2015– **International Society for Bayesian Analysis (ISBA)**, *Fellow member*
<http://bayesian.org/>

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- 2014– **RESeau Statistiques pour données Spatio-Temporelles (RESSTE)**, *Member*, France
<http://informatique-mia.inra.fr/resste/>
- 2013– **Foundation for Open Access Statistics (FOAS)**, *Member*
<http://foostat.org>
- 2010– **Red Nacional de Bioestadística (BiostatNet)**, *Member*, Spain
<http://eio.usc.es/pub/biostatnet/>
- 2011 **26th International Workshop on Statistical Modelling**, *Local Organizer*, Valencia, Spain
 Statistical Modelling Society (SMS) <http://www.geeitema.org/iwsm2011/>
- 2009–2012 **University of Valencia**, *Member of the senate*, Valencia, Spain
- 2007–2015 **Group on Spatio-Temporal Statistics in Epidemiology and Environment (GeeitEma)**, *Member*, Valencia, Spain
<http://geeitema.org/>