Antonio Aguirre

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Summary

Ph.D. candidate in Statistics building Bayesian forecasting and quantile-modeling methods for environmental and financial time series. I work across model development, R/Python software, diagnostics, and reproducible compute workflows, with industry experience in finance, sensor analytics, and research infrastructure.

Research Software

`exdqlm` CRAN v0.4.0; JSS manuscript submitted

R package for extended dynamic quantile linear models

- Co-author of Bayesian dynamic quantile state-space software supporting MCMC, Laplace–delta variational Bayes, forecasting, diagnostics, and posterior-predictive synthesis.

Education

Ph.D. in Statistics, University of California, Santa Cruz Expected Aug. 2026
Research: Bayesian time series, quantile modeling, forecast correction and synthesis, scalable variational Bayes inference.

M.Sc. in Economics, Instituto Tecnológico Autónomo de México (ITAM) 2018–2020
Mexico City, Mexico

B.Sc. in Applied Mathematics, Instituto Tecnológico Autónomo de México (ITAM) 2014–2018
Mexico City, Mexico

Selected Professional Experience

Delos Financial Technologies, San Rafael, CA (Remote) May 2025–Sep. 2025
Quantitative Researcher (Contract) *Python, Git, Bash, C++, AWS, Stan*

- Built a shared model-evaluation notebook suite for residual checks, goodness-of-fit plots, and cohort summaries used in model review.
- Implemented baseline and extended forecasting variants, standardizing interfaces so parameters, backtests, and plots compared cleanly across experiments.
- Automated AWS experiment runs and backtests with versioned outputs, making model comparisons easier to reproduce and review.

UCSC Statistics Department, Santa Cruz, CA Feb. 2024–Present
Computer Systems Coordinator *Linux, Bash, Python/R, Networking, User Support*

- Administer Linux research servers used by faculty and graduate students, including software stacks, storage, upgrades, and incident response.
- Wrote automation scripts and internal documentation for onboarding, resource usage, and reproducible compute workflows; coordinate with central IT on infrastructure planning.

NeatLeaf Inc., Scotts Valley, CA May 2021–Sep. 2022
Data Analyst *Python, SQL, Git, Bash, Linux, C++, DBeaver*

- Built Python/SQL pipelines for greenhouse robot and sensor telemetry used in monitoring and downstream analytics.
- Modeled spatiotemporal microclimate anomalies and analyzed robot/sensor calibration logs to improve data quality and system reliability.

Banco de México (BANXICO), Mexico City, Mexico Aug. 2018–Dec. 2019
Data Analyst *Python, R, SQL, Git*

- Built Python/R/SQL pipelines for banknote image datasets used in operational monitoring and model development.
- Developed anomaly-classification diagnostics and financial-volume forecasting prototypes for operational planning.

Selected Publications & Presentations

Aguirre, A., Barata, R., Prado, R., & Sansó, B.
exdqlm: An R Package for Estimation and Analysis of Flexible Dynamic Quantile Linear Models.
Manuscript submitted to the *Journal of Statistical Software*; companion R package available on CRAN, version 0.4.0.

Aguirre, A., Prado, R., & Sansó, B.
Bayesian Quantile Readouts for Fixed Deep Echo State Networks.
Working paper in progress; develops Q–DESN methods for Bayesian quantile forecasting with fixed reservoir features, exAL working likelihoods, regularized readouts, MCMC, and VB–LD.

Aguirre, A., Sansó, B., & Prado, R.
Bayesian Quantile-Based Correction and Synthesis of River Flow Forecasts.
Manuscript in revision.

Aguirre, A., & Lobato, I. N.
Evidence of non-fundamentalness in OECD capital stocks.
Empirical Economics 67, 761–772 (2024). doi:10.1007/s00181-024-02564-5

ISBA World Meeting 2026, Nagoya, Japan
Poster presentation accepted: "Bayesian Quantile-Based Correction and Synthesis of River Flow Forecasts."
Scheduled poster session: July 1, 2026.

LACSC-TIES-EnviBayes-EnvrASA 2026, Mexico City, Mexico
Invited-session abstract submitted as a 2026 EnviBayes Student Paper Competition winner.
EnviBayes competition-winners invited session.

Awards, Fellowships & Competitive Funding

- **ISBA 2026 Junior Researcher Travel Award**, International Society for Bayesian Analysis / National Science Foundation, 2026.
- **EnviBayes Student Paper Competition Winner**, International Society for Bayesian Analysis, 2026.
- **UCSC Statistics Department Conference Travel Award**, 2026.
- **UCSC Summer Research Fellowship**, UCSC Statistics, 2024.
- **UC Regents Fellowship**, UCSC Statistics, 2021.
- **TLC Graduate Pedagogy Fellowship Certificate**, Center for Innovations in Teaching and Learning, 2023–2024.
- **Baillères Fellowship**, ITAM B.Sc., 2014–2018.
- **Baillères Fellowship**, ITAM M.Sc., 2018–2020.

Teaching & Mentoring

University of California, Santa Cruz 2021–Present
Teaching Assistant / Graduate Student Instructor *Statistics and Probability*

- Graduate Student Instructor for *Data Visualization (STAT 80B)*, Spring 2025.
- Teaching Assistant for *Probability Theory (STAT 131)*, *Classical and Bayesian Inference (STAT 132)*, *Statistics (STAT 5)*, and related courses; led sections, office hours, worksheets, grading workflows, and student support.

ASA DataFest, Fresno, CA Apr. 2023
Mentor *R, Python*

- Mentored student teams on statistical modeling, visualization, and technical communication.

Technical Skills

Programming	R, Python, SQL, C/C++, Bash, Git, LaTeX
Methods	Bayesian inference, state-space models, time series forecasting, quantile modeling, variational inference, diagnostics, calibration
Tools	Linux, AWS (EC2, EMR, S3), Stan, Rcpp, CRAN, GitHub Actions, Tableau
Training	SISG, SISMID, causal inference with R
Languages	English, Spanish, German