



# Felipe Osorio

## Research Interests

- Applied statistics, Statistical modelling, Influence diagnostics, Inference functions.

## Education

- 2006 **D. Sc. in Statistics**, *Universidade de São Paulo*, Brazil.  
Thesis topic: *Diagnóstico de Influência em Modelos Elípticos com Efeitos Mistos*.  
Advisor: Professor Gilberto A. Paula.
- 2001 **Engineer in Statistics**, *Universidad de Valparaíso*, Chile.  
Topic: *Detección de Puntos de Cambio en Modelos de Regresión Lineal t-independiente*.  
Advisor: Professor Manuel Galea.

## Book

Vallejos, R., **Osorio, F.**, Bevilacqua, M. (2018+). *Spatial Relationships Between Two Georeferenced Variables: With Applications in R*. Springer, New York (In preparation).

## Publications

- 4 citations Acosta, J., **Osorio, F.**, Vallejos, R. (2016). Effective sample size for line transect sampling models with an application to marine macroalgae. *Journal of Agricultural, Biological, and Environmental Statistics* **21** (3), 407-425.
- Acevedo, C.A., Tomic, G., Santander, R. Creixell, W., **Osorio, F.**, Sánchez, E. (2016). A Chemometrics approach to analysis volatile molecules released by post-mortem bovine fast-twitch muscles. *CyTA - Journal of Food* **14** (3), 399-404.
- 2 citations **Osorio, F.** (2016). Influence diagnostics for robust P-splines using scale mixture of normal distributions. *Annals of the Institute of Statistical Mathematics* **68** (3), 589-619.
- 5 citations Vallejos, R., **Osorio, F.**, Mancilla, D. (2015). The codispersion map: a graphical tool to visualize the association between two spatial variables. *Statistica Neerlandica* **69** (3), 298-314.
- 8 citations Vallejos, R., **Osorio, F.** (2014). Effective sample size of spatial process models. *Spatial Statistics* **9**, 66-92.
- 32 citations Meza, C., **Osorio, F.**, De la Cruz, R. (2012). Estimation in nonlinear mixed-effects models using heavy-tailed distributions. *Statistics and Computing* **22** (1), 121-139.
- 21 citations **Osorio, F.**, Paula, G.A., Galea, M. (2009). On estimation and influence diagnostics for the Grubbs' model under heavy-tailed distributions. *Computational Statistics & Data Analysis* **53** (4), 1249-1263.

Cademartori, D., Navia, R., Galea, M., **Osorio, F.** (2008). Prediction of the economic activity from the short and long-term interest rate differential: New evidences in Chile and the United States of America cases. *Applied Economics Letters* **15** (9), 707-712.

63 citations **Osorio, F.**, Paula, G.A., Galea, M. (2007). Assessment of local influence in elliptical linear models with longitudinal structure. *Computational Statistics & Data Analysis* **51** (9), 4354-4368.

14 citations **Osorio, F.**, Galea, M. (2006). Detection of a change-point in Student-*t* linear regression models. *Statistical Papers* **47** (1), 31-38.

### Work in Progress

Leal, C., Galea, M., **Osorio, F.** (2018). Local influence for the concordance correlation coefficient. *Under review*.

**Osorio, F.**, Vallejos, R., Barraza, W., Ojeda, S., Landi, M.A. (2018). Estimation of the structural similarity index for remote-sensing data. *Submitted*.

Barra, L., **Osorio, F.** Assessment of movement difficulties in Chilean preschoolers. *In preparation*.

González, E., Martínez, I., Martínez, F., Garrido, J.M., Guerrero, F., **Osorio, F.** Active learning in biochemical engineering by means of virtual laboratory for fermentation processes. *In preparation*.

**Osorio, F.**, Galea, M. Gradient test for variance homogeneity of correlated variables. *In preparation*.

**Osorio, F.**, Russo, C.M. The gradient statistic for inference functions and its application to influence diagnostics. *In preparation*.

### Preprint

1 citation Vallejos, R., **Osorio, F.**, Cuevas, F. (2016). SpatialPack: Computing the association between two spatial processes. [arXiv:1611.05289](https://arxiv.org/abs/1611.05289)

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## Conference Proceedings

**Osorio, F.** (2011). Smoothing parameter selection and outliers accommodation for smoothing splines. In: *Proceedings of the 58th World Statistics Congress of the International Statistical Institute*, Dublin, Ireland. Session CPS008, 6037-6042.

De la Cruz, R., Eyheramendy, S., Meza, C., **Osorio, F.** (2010). Exact estimation procedures in a spatial mixed-effects probit model with binary outcomes. In: *Joint Statistical Meetings Proceedings*, Statistical Computing Section. Alexandria, VA: American Statistical Association. 3629-3637.

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## Software

8 citations **Osorio, F.** (2018). *heavy: Robust estimation using heavy-tailed distributions*. R package version 0.38.19. URL: [CRAN.R-project.org/package=heavy](https://CRAN.R-project.org/package=heavy)

**Osorio, F.**, Wołodźko, T. (2017). *L1pack: Routines for L1 estimation*. R package version 0.38.19. URL: [CRAN.R-project.org/package=L1pack](https://CRAN.R-project.org/package=L1pack)

**Osorio, F.** (2015). *MVT: Estimation and testing for the multivariate t-distribution*. R package version 0.3. URL: [CRAN.R-project.org/package=MVT](https://CRAN.R-project.org/package=MVT)

26 citations **Osorio, F.**, Vallejos, R. (2018). *SpatialPack: Tools for assessment of the association between two spatial processes*. R package version 0.3. URL: [CRAN.R-project.org/package=SpatialPack](https://CRAN.R-project.org/package=SpatialPack)

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## Grants

- 2014,2015 Principal Investigator UTFSM grant 12.14.14.  
*Influencia local y análisis de residuos para funciones de inferencia cuadráticas.*
- 2014-2017 Principal Investigator FONDECYT grant 1140580  
*Influence diagnostics and residual analysis in inference functions with applications to longitudinal data.*
- 2011-2014 Associate Researcher CONICYT grant 791100007.  
*Fortalecimiento del Área Estadística en el Departamento de Matemática de la USM.*  
Coordinator: Dr. Ronny Vallejos (USM).
- 2009-2011 Co-Investigator PROSUL grant 490429/2008-4, CNPq-Brazil  
*Desenvolvimento de métodos de diagnóstico e teoria assintótica em modelos de regressão.*  
with Dr. Francisco Cysneiros (UFPE) and collaborators.
- 2007-2010 Principal Investigator FONDECYT grant 11075071  
*Robust estimation and influence diagnostics in mixed-effect models.*
- 2006-2008 Co-Investigator CNPq-Brazil 471296/2006-6  
*Diagnóstico de influência em modelos de regressão de contornos elípticos.*  
with Dr. Gilberto A. Paula (USP) and collaborators.

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## Students

### Doctoral

- 2017 Jonathan Acosta, Doctor in Mathematics at UTFSM (co-advisor Dr. R. Vallejos).

### Master

- 03/18-today Carlos Schwarzenberg, Master in Mathematics at UTFSM.
- 2017 Paula Guerrero, Master in Statistics at PUCV.
- 2016 Jessenia Cortés, Master in Statistics at PUCV.
- 2013 Francisco Cuevas, Master in Mathematics at UTFSM (co-advisor Dr. R. Vallejos).
- 2012 Francisco Contreras, Master in Statistics at UV (co-advisor Dr. C. Meza).
- 2012 Rubén Miranda, Master in Statistics at UV.
- 2011 Patricio Maturana, Master in Statistics at UV.
- 2011 Marcelo Torres, Master in Statistics at UV (co-advisor Dr. M. Galea).
- 2009 Patricio Videla, Master in Statistics at PUCV.

### Undergraduate

- 08/17-today Marcela Miranda, Mathematical Engineer at UTFSM (co-advisor F. Cuevas).
- 03/17-today Eileen Labalobich, Bachelor of Science in Statistics at PUCV.
- 2018 Alonso Ogueda, Mathematical Engineer at UTFSM.
- 2017 Diego Estay, Bachelor of Science in Statistics at PUCV.
- 2017 Fernando Salazar, Bachelor of Science in Statistics at PUCV.
- 2016 Carlos Schwarzenberg, Mathematical Engineer at UTFSM.
- 2015 Jessica García, Bachelor of Science in Statistics at PUCV.
- 2015 Agustín Uribe, Mathematical Engineer at UTFSM.
- 2014 Claudio Henríquez, Mathematical Engineer at UTFSM.

- 2013 Jonathan Acosta, Mathematical Engineer at UTFSM (co-advisor Dr. R. Vallejos).
- 2012 Denisse Suarez, Engineer in Statistics at UV.
- 2012 Rodrigo Toledo, Engineer in Statistics at UV.
- 2012 Natalia Vargas, Engineer in Statistics at UV.
- 2009 Orlando Cataldo, Engineer in Statistics at UV.
- 2009 Joel Herrera, Engineer in Statistics at UV.

## Awards and Scholarships

- 2003-2006 Doctoral Scholarship, MIDEPLAN-Chile  
Granted by the National Scholarship Program of Chile.
- 2001-2003 Doctoral Scholarship, CNPq-Brazil  
Granted by the National Council of Scientific Research CNPq (process #141926/2001-5) join the Department of Mathematics and Statistics. University of São Paulo, Brazil.
- 2001 Prize "*Universidad de Valparaíso*"  
Best undergraduate student. Engineering program in Statistics. University of Valparaíso, Chile.

## Editorial Service

04/16-present Managing Editor for the Chilean Journal of Statistics.

### Reviewed articles for:

- Brazilian Journal of Probability and Statistics
- Chilean Journal of Statistics
- Colombian Journal of Statistics
- Communications in Statistics: Theor. & Meth.
- Computational Statistics & Data Analysis
- Hacettepe Journal of Mathematics and Statistics
- J. Agricultural, Biological, Environmental Stat.
- Journal of Applied Statistics
- J. Statistical Computation and Simulation
- Pakistan Journal of Statistics
- Statistical Methodology
- Stoch. Environ. Research and Risk Assessment
- TEST

### Funding:

- Chilean National Institute of Science and Technology (CONICYT)
- Research and Development Directorate, Universidad Austral de Chile.

Valparaíso, August 22, 2018