

INGA MASLOVA
Department of Data Sciences and Operations
University of Southern California,
Los Angeles, CA 90089-0809
Phone: (213) 740-0177
E-mail: imaslova@marshall.usc.edu

RESEARCH INTERESTS

Time series analysis; Functional data analysis; Wavelet methods; Machine learning; Big data; and their applications to economics, finance, business analytics, geophysics, hydrology, remote sensing, and precision agriculture.

APPOINTMENTS

Assistant Professor of Clinical, University of Southern California	Aug 2016 – present
Assistant Professor, American University	Aug 2009 – Aug 2016
Consultant, Poverty - GP., World Bank	Oct 2014 – Jun 2015
Consultant, Econ. Policy and Debt Department, World Bank	Oct 2012 – Jun 2013
Visiting Researcher, Utah Water Research Laboratory	Mar 2012 – Aug 2012
Graduate Research Assistant, Utah State University	2005 – 2009
Teaching Instructor, Utah State University	2003 – 2005

PROFESSIONAL PREPARATION

Utah State University, Statistics	PhD, 2009
Utah State University, Statistics	M.S., 2005
Vilnius University, Mathematical Science	B.S., 2003

SELECTED HONORS AND AWARDS

- Most downloaded article from International Journal of Applied Earth Observation and Geoinformation in the last 90 days, 2016
- U.S. Bureau of Reclamation Research Grant, 2011
- Mellon Fund Research Award, American University 2011
- NIST, User!-2010 conference award, 2010
- Industrial Mathematics and Statistical Modeling Workshop Award, 2006
- "Lithuanian strategic plan 2005 - 2010", 3rd place winner (no 1st place awarded), 2003

TEACHING

Graduate Courses

Regression, American University

Applied Multivariate Analysis, American University

Data Analysis, American University

Time Series, American University

Statistical Methods, American University

Undergraduate Courses

Data Analysis for Decision Making, University of Southern California

Basic Statistics Business/Economics, General sections, American University

Business Statistics, Utah State University

Statistical Methods , Utah State University

Introduction to Statistics, Utah State University

Intermediate Algebra, Utah State University

Independent Studies

Develop an R package for space physics applications, Wen Xiao (Fall 2015)

Computational Analysis of Hydrologic Data, Aaron Zelmanow (Spring 2013)

Applied Functional Data Analysis, Janine Bonner (Fall 2011), Nacola Alexander (Fall 2011), Merlin Mpoudeu (Fall 2011), Aaron Zelmanov (Fall 2011)

Development of an R package: user-friendly interface, Xinyi Deng (Spring 2011)

Data Analysis, Parisa Meisami (Spring 2010), Thomas Nassif (Spring 2010)

Internship supervision, Alexander Zeymo (Fall 2014), Sean Warlick (Summer 2013), Nazanin Dameshghi (Spring 2013)

Curriculum Development

Introduction to Applied Functional Data Analysis, Fall 2011. Developed a new elective graduate course

Data Analysis, Spring 2016. Completely change the content and structure of an existing course

Theses/Dissertations or Substantial Research Projects Supervised

GRADUATE PROJECTS

iWISA: an R package, Wen Xiao, MS, Statistics, American University, Spring 2015 – Spring 2016

Functional Data Analysis of Hydrologic Data, Aaron Zelmanow, MS, Statistics, American University, Spring 2013 – Fall 2013

Economic Modeling: A Time Series Approach, Eric Valentine, MS, Statistics, American University, Fall 2012 – Spring 2013

Policy-making for commercial motor vehicle drivers, Janine Bonner, MS, Statistics, American University, Spring 2013

Wavelet-based Evapotranspiration Forecasts, Roula Bachour, PhD, Civil Engineering, Utah State University, Spring 2012

Applied Functional Data Analysis, Gurudev Gadwale, MS, Statistics, American University, 2011

DIRECTED READING

Wavelet methods for hydrologic time series analysis, Roula Bachour, PhD, Civil Engineering, Utah State University, Spring 2012

Introduction to Functional Data Analysis, Jiao Yu, MS, Statistics, American University, Fall 2011

Applied Functional Data Analysis, Anahi Rebatta sun han, MS, Statistics, American University, Fall 2011

THESES/DISSERTATION COMMITTEE

Stress, distress, meditation, and mindfulness, David Neale-Lorello, PhD, Clinical Psychology, American University 2011 – 2013

Spatial mapping of colon cancer mortality rates, Clementine Aubry-Blanchard, MS, Statistics, American University, 2011

A comparison of hierarchical and partitioning methods in creating clusters using warping functions, Anne Elguindi, MS, Statistics, American University, 2010

Tutor / Grader

Business Statistics, Introduction to Statistics, Introduction to Social Statistics, Statistical Methods, Introduction to Probability, Trigonometry, Calculus (I, II)

SERVICE

University of Southern California

- Analytics Networking Trips for MSBA program support, Fall 2016.

American University

- Graduate Program Director, Department of Mathematics and Statistics, Dec 2012 – Spring 2016
- Colloquium committee head, Department of Mathematics and Statistics, Sept 2011 – Dec 2011
- Educational Policy Committee member of the College of Arts and Sciences, Jan 2011 – May 2011
- Graduate Studies Committee member, Department of Mathematics and Statistics, Sept 2009 – Spring 2016

Utah State University

- President and co-founder of the Association for Women in Mathematics Student Chapter at Utah State University, 2007 – 2008
- Organizer of Graduate student summer seminar, Utah State University, 2008
- Graduate Student Senate Department Representative, Utah State 2006 – 2008

National

- NSF review panel, Statistics Program, 2015
- Judge for the American Geophysical Union Outstanding Student Paper Awards, AGU 2014, AGU 2012, AGU 2011
- Reviewer for: Computers and Geosciences (Oct 2013), Water Resources Research (Aug 2013), Advances in Space Research (Apr 2013), Computational Statistics and Data Analysis (Sept 2012, Aug 2013), Journal of Atmospheric and Solar-Terrestrial Physics (Aug 2011, Sept 2012), Computational Statistics (May 2011), Journal of Statistical Planning and Inference (Sept 2010)
- Session chair, Bayesian Methods (1), The 31st Annual International Symposium on Forecasting, 2011

Consulting

- A. M. Ticlavilca, Utah Water Research Laboratory, Machine learning models for hydrologic forecasting (MODELOS DE APLICACION PARA PREDICCIONES HIDROLOGICAS (MACHINE LEARNING)). Stochastic Hydrology. Doctoral Program in Water Resources. Universidad Nacional Agraria La Molina, Lima, Peru, 2015
- Consultant for World Bank, 2012 – 2015
- A. M. Ticlavilca, Department of Civil Engineering and Utah Water Research Lab, Utah State University, Multivariate Relevance Vector Machine for Multiple Reservoir System Operation, collaboration with Professor Mac McKee, 2009

FUNDING

Awarded

- Utah Water Research Laboratory. “A Robust Monthly Streamflow Forecasting Model Using a Multivariate Bayesian Regression Model Coupled with Wavelet Decomposition Approach”. Conference funding. Funded 2012
- U.S. Bureau of Reclamation. “Robust long-term streamflow forecasting”. Submitted 2011; Awarded 2011
- American University, College of Arts and Sciences, Mellon Fund Research Award. Project: “Wavelet analysis of the agricultural commodity prices”, Funded 2011
- American University, International Travel Award for The 31st Annual International Symposium on Forecasting. Talk given: “Commodity price modeling and forecasting using wavelet and Bayesian machine learning regression approach”, Funded 2011
- National Institute of Standards and Technology, Award for conference UseR!-2010 attendance. Funded 2010
- Utah State University, School of Graduate Studies Dissertation Fellowship, Funded 2008
- Utah State University, Department of Mathematics and Statistics, Summer Graduate Research Grant, Funded 2008
- Industrial Mathematics and Statistical Modeling Workshop, Travel Award, Funded 2006

Submitted

- USDA, NIFA, “Adapting to Climate Variability and Change in Western US Agroecosystems: Economic Impacts of Improved Water Supply Forecasts”. Letter of intent approved. AU Principal Investigator: I. Maslova. In collaboration with Utah State University. (Letter of intent accepted; Under revision)

- Spencer foundation, “Testing and estimation of financial data using wavelet-based change point detection and machine learning”. Principal Investigator: I. Maslova.(Submitted 2/2011; Not funded; Under revision)

RESEARCH

Publications

JOURNALS (PEER-REVIEWED)

1. **I. Maslova**, A. M. Ticlavilca, and M. McKee, *Adjusting wavelet-based multiresolution analysis boundary conditions for long-term streamflow forecasting*. Hydrol. Process., 30: 5774. doi: 10.1002/hyp.10564, 2016
2. R. Bachour*, **I. Maslova**, A. M. Ticlavilca, W. Walker, and M. McKee, *Wavelet-Multivariate Relevance Vector Machine Hybrid Model for Forecasting Daily Evapotranspiration*, Stochastic Environmental Research and Risk Assessment, Vol. 30, Issue 1, pp 103-117, doi:10.1007/s00477-015-1039-z, 2016
3. M. Elarab*, A. M. Ticlavilca, A. F. Torres-Rua, **I. Maslova**, M. McKee, *Estimating Chlorophyll with Thermal and Broadband Multispectral High Resolution Imagery from an Unmanned Aerial System Using Relevance Vector Machines for Precision Agriculture*, International Journal of Applied Earth Observation and Geoinformation, Vol. 43, Special Issue on “Advances in remote sensing of vegetation function and traits”, 32 – 42, doi:10.1016/j.jag.2015.03.017, 2015
4. R. Bachour*, W. Walker, A. M. Ticlavilca, M. McKee, and **I. Maslova**, *Estimation of Spatially Distributed Evapotranspiration using Remote Sensing and Relevance Vector Machine*, Journal of Irrigation & Drainage Engineering, Vol. 140, Issue 8, 04014029, 2014
5. **I. Maslova**, P. Kokoszka, J. Sojka, and L. Zhu, *Estimation of Sq Variation by Means of Multiresolution and Principal Component Analyses*, Journal of Atmospheric and Solar-Terrestrial Physics, Vol. 72, pages 625 - 632, doi:10.1016/j.jastp.2010.02.005, 2010
6. **I. Maslova**, P. Kokoszka, J. Sojka, and L. Zhu, *Statistical significance testing for the association of the magnetometer records at high-, mid- and low latitudes during sub-storm days*, Planetary and Space Science, Vol. 58, pages 437 - 445, doi:10.1016/j.pss.2009.11.004, 2010
7. **I. Maslova**, P. Kokoszka, J. Sojka, and L. Zhu, *Removal of nonconstant daily variation by means of wavelet and functional data analysis*, Journal of Geophysical Research, Vol. 114, A03202, doi:10.1029/2008JA013685, 2009

8. P. Kokoszka, **I. Maslova**, J. Sojka, L. Zhu, *Testing for lack of dependence in the functional linear model*, Canadian Journal of Statistics, Vol. 36, No 2, pages 207 - 222, 2008
9. P. Kokoszka, **I. Maslova**, J. Sojka, L. Zhu, *Probability tails of wavelet coefficients of magnetometer records*, Journal of Geophysical Research-Space Physics, Vol. 111, No. A6, A06202, 10.1029/2005JA011486, 2006

TECHNICAL REPORTS

10. **I. Maslova**, H. Onder, and A. Sanghi, *Growth and Volatility Analysis Using Wavelets*, Policy Research Working Paper, No. WPS 6578, Washington D.C. - The Worldbank 2013
11. A. Zelmanow* and **I. Maslova** *Functional Data Analysis of Hydrological Data in the Potomac River Valley*, Technical Report, American University, 2012
12. Assisted with computations and other preparations in various chapters of the *Inference for Functional Data with Applications* by L. Horvath and P. Kokoszka, Springer, Volume 200, 2012
13. Baker, M. Jung, Ch. Lee, **I. Maslova**, M. Morton, J. Wang, *Analysis of biological interaction networks for drug discovery*, CRSC Technical Report (CRSC-TR06-23), 2006

WORK IN PROGRESS

14. A. M. Ticlavilca, I. Maslova, and M. McKee, *Multiresolution cross-correlation analysis of monthly streamflow and global climate patterns*, under review
15. I. Maslova, A. Ticlavilca, D. M. Feuz, and M. McKee, *Commodity price modeling and forecasting using wavelet-based multivariate relevance vector machine*, in progress
16. I. Maslova, H. Onder, A. Sanghi, and H. Carcel *Business Cycle Synchronization in East Africa*, The Worldbank, in preparation
17. W. Xiao, I. Maslova, *iWISA – Improved Wavelet Index of Solar Activity: the Manual*, in progress
18. A. M. Ticlavilca, I. Maslova, M. McKee, and W. R. Walker, *Real-Time Forecasting of Streamflow Loss/Gain in a Reservoir-Regulated River System Using a Robust Data-Driven Regression Model*, in preparation
19. I. Maslova, A. M. Ticlavilca, A. Zelmanow, and M. McKee. *Streamflow Characterization of Potomac River Valley: Functional Data Analysis Approach*, in progress

Statistical Software

I. Maslova and W. Xiao, *iWISA – Wavelet-Based Index of Storm Activity*, available on GitHub and the Comprehensive R Archive, 2016

Presentations at Professional Meetings, Invited talks

1. I. Maslova, “Hybrid machine learning and wavelet models in remote sensing”, Invited talk, Probability and Statistics Seminar, University of Southern California, 2016
2. I. Maslova, “Student-oriented teaching”, Invited talk, USC Marshall School of Business Seminar, University of Southern California, 2016
3. I. Maslova, “Machine learning and wavelet techniques in remote sensing and precision agriculture”, Invited talk, University of Maryland, Baltimore County, 2015
4. A. M. Ticolavilca, I. Maslova, M. McKee, “Wavelet-based Cross-correlation Analysis of Pacific Ocean Climate Data and Streamflow for Long-term Streamflow Forecasting”. American Geophysical Union Joint Assembly Meeting, Montreal, Canada, 2015
5. A. M. Ticolavilca, I. Maslova, M. McKee, “Computationally Intelligent Models and Wavelet Decomposition Approaches to Improve Streamflow Forecasting in Utah under Climate Uncertainty”. 2014 UCOWR-NIWR-CUAHSI Conference, Water Systems, Science, and Society Under Global Change, Tufts University, Medford, Massachusetts, 2014
6. I. Maslova, R. Bachour, W. Walker, A. M. Ticolavilca, M. McKee, “Estimation of Spatially Distributed Evapotranspiration Using Remote Sensing and a Relevance Vector Machine”, poster presentation, American Geophysical Union meeting 2014, San Francisco, CA, 2014
7. A. M. Ticolavilca, I. Maslova, M. McKee, “Time-frequency Analysis of Local Climate Data, Soil Moisture and Streamflow in Utah Using a Wavelet Cross-correlation Approach”, oral presentation, Spring Runoff Conference, Logan, UT, 2014
8. M. Elarab, A. M. Ticolavilca, A. F. Torres-Rua, I. Maslova, M. McKee, “Use of High-Resolution Multispectral Imagery to Estimate Chlorophyll and Plant Nitrogen in Oats (*Avena sativa*)”, oral presentation, Fall American Geophysical Union meeting 2013, San Francisco, CA, 2013
9. A. M. Ticolavilca, I. Maslova, M. McKee, “Wavelet-based Cross-correlation Analysis and a Hybrid Wavelet-multivariate Bayesian Model for Short-term Streamflow Forecasting Using Local Climatic Data”, oral presentation, Spring Runoff Conference, Logan, UT, 2013

10. M. Elarab, A. M. Ticlavilca, A. F. Torres-Rua, I. Maslova, M. McKee, “Use of High-Resolution Multispectral Imagery to Estimate Chlorophyll and Plant Nitrogen in Oats (*Avena sativa*)”, poster presentation, American Geophysical Union meeting 2013, San Francisco, CA, 2013
11. A. Zelmanow, I. Maslova, A. M. Ticlavilca, M. McKee, “Streamflow Characterization Using Functional Data Analysis of the Potomac River”, poster presentation, American Geophysical Union meeting 2013, San Francisco, CA, 2013
12. I. Maslova, “Wavelet Transform Boundary Conditions for Improved Forecasting Model”, Invited talk, George Mason University, Fairfax, VA, 2012
13. I. Maslova, “Wavelet Methods for Hydrologic Time Series Analysis”, Invited talk, Utah Water Research Laboratory, Utah State University, Logan, UT, 2012
14. I. Maslova and A. M. Ticlavilca, “Long-term Streamflow Forecasting”, Invited talk, Utah Water Research Laboratory, Utah State University, Logan, UT, 2012
15. I. Maslova, A. M. Ticlavilca, M. McKee, “Adjusting Wavelet-based Multiresolution Analysis Boundary Conditions for Robust Long-term Streamflow Forecasting Model”, poster presentation, American Geophysical Union meeting 2012, San Francisco, CA, 2012
16. A. M. Ticlavilca, I. Maslova, M. McKee, “A Hybrid Wavelet-Machine Learning Approach for Short- and Long-Term Streamflow Forecasting in Western U.S. by Using Local and Global Climate Patterns”, poster presentation, American Geophysical Union meeting 2012, San Francisco, CA, 2012
17. R. Bachour, I. Maslova, A. M. Ticlavilca, M. McKee, W. Walker, “Wavelet-based Evapotranspiration Forecasts”, poster presentation, American Geophysical Union meeting 2012, San Francisco, CA, 2012
18. A. M. Ticlavilca, I. Maslova, M. McKee, “A Robust Monthly Streamflow Forecasting Model Using a Multivariate Bayesian Regression Model Coupled with Wavelet Decomposition Approach”, poster presentation, Spring Runoff Conference, Logan, UT, 2012
19. A. M. Ticlavilca, I. Maslova, M. McKee, “Comparison of Two Machine Learning Regression Approaches (Multivariate Relevance Vector Machine and Artificial Neural Network) Coupled with Wavelet Decomposition to Forecast Monthly Streamflow in Peru”, poster presentation, American Geophysical Union meeting 2011, San Francisco, CA, 2011
20. I. Maslova, A. M. Ticlavilca, D. M. Feuz, and M. McKee, “Commodity price modeling and forecasting using wavelet and Bayesian machine learning regression approach”,

- oral presentation, The 31st Annual International Symposium on Forecasting, Prague, Czech Republic, 2011
21. A. M. Ticalvilca, I. Maslova, and M. McKee, "Bayesian learning regression and wavelet approach to forecast river volume in Peru by using El Niño-Southern Oscillation (ENSO) Information", oral presentation, 31st Annual International Symposium on Forecasting, Prague, Czech Republic, 2011
 22. A. M. Ticalvilca, I. Maslova, A. F. Torres, and M. McKee, "Application of a Bayesian forecasting model with wavelet decomposition in a real-time river basin monitoring network", oral presentation, 2011 AWRA Spring Specialty Conference, Baltimore, MD, 2011
 23. I. Maslova, "R package wfIMA: Wavelet-Functional Indexes of Magnetic Activity", poster presentation, UseR!-2010, Gaithersburg, MD, 2010
 24. I. Maslova, P. Kokoszka, J. J. Sojka, and L. Zhu, "Removal of Nonconstant Daily Variation by Means of Wavelet and Functional Data Analysis", Invited talk, Syracuse University, Syracuse, NY, 2009
 25. I. Maslova, P. Kokoszka, J. J. Sojka, and L. Zhu, "Functional Wavelet-based of Magnetic Storm Activity", Invited talk, California State University, Fullerton, CA, 2009
 26. I. Maslova, P. Kokoszka, J. J. Sojka, and L. Zhu, "Estimation of Sq Variation by Means of Multiresolution and Principal Component Analyses", poster presentation, American Geophysical Union meeting 2009, San Francisco, CA, 2009
 27. I. Maslova, P. Kokoszka, J. J. Sojka, and L. Zhu, "Removal of Nonconstant Daily Variation by Means of Wavelet and Functional Data Analysis", Graduate Student Seminar, Utah State University, 2008
 28. I. Maslova, P. Kokoszka, J. J. Sojka, and L. Zhu, "Improved Functional Wavelet-Based Index of Magnetic Storm Activity", oral presentation, AGU Joint Assembly Meeting, Fort Lauderdale, 2008
 29. I. Maslova, P. Kokoszka, J. J. Sojka, and L. Zhu, "Study of the Effects of Auroral Substorms on the Low-latitude Currents", poster presentation, American Geophysical Union meeting 2007 Meeting, San Francisco, CA, 2007
 30. I. Maslova and P. Kokoszka, "Testing for lack of dependence in functional linear model", poster presentation, Joint Statistical Meeting, Salt Lake City, UT, 2007
 31. J. J. Sojka, P. Kokoszka, L. Zhu, and I. Maslova, "Wavelet Decomposition of Magnetometer Measurements to Enable Separation of Non-Linear M-I Currents", oral presentation, 20 Years of Nonlinear Dynamics in Geosciences Meeting, Rhodes, Greece, 2006

32. Baker, M. Jung, Ch. Lee, I. Maslova, M. Morton, J. Wang, Report on "Analysis of biological interaction networks for drug discovery", oral presentation, IMSM 2006 workshop, North Carolina State University, 2006
33. I. Maslova, P. Kokoszka, L. Zhu, and J. J. Sojka, "Probability distributions of wavelet coefficients of the ground - based magnetometer data for storm and quiet times", poster presentation, American Geophysical Union meeting 2005 Meeting, San Francisco, CA, 2005
34. I. Maslova and B. Grigelionis, "Asymptotic properties of H-diffusion parameter estimates", Undergraduate Projects Contest (Statistics section), oral presentation, Vilnius University, Vilnius, 2003

SKILLS

- Languages: English (fluent), Russian (fluent), Lithuanian (fluent), German (basic).
- Computer skills: R, S-plus, Matlab, Maple, SAS, SPSS, JMP, Eviews, SQL, Statistica, StatCrunch, Pascal, LaTeX, Excel.