TOMÁS L. CHOR

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EDUCATION

Ph.D. Atmospheric and Oceanic Sciences
University of California, Los Angeles — September 2020

M.Sc. Atmospheric and Oceanic Sciences
University of California, Los Angeles — December 2018

M.Sc. Environmental Engineering
Federal University of Paraná, Curitiba — March 2014

B.Sc. Environmental Engineering
Federal University of Paraná, Curitiba — January 2012

RESEARCH EXPERIENCE

Submesoscale dynamics in the ocean bottom boundary layer — October 2020 — Present
University of Maryland, Dept of Atmospheric and Oceanic Science

· Numerically investigating the energetics and mixing implications of submesoscale instabilities in the ocean bottom boundary layer.

Mixing of passive materials in the upper ocean — September 2016 — September 2020
UCLA, Dept of Atmospheric and Oceanic Sciences

· Numerically investigated vertical mixing and horizontal transport of passive scalars in ocean surface boundary layers. Focus was given to wave effects, and new frameworks to model these conditions in global models were developed.

Turbulent fluxes in the Amazon forest — August 2015 — August 2016
Federal University of Paraná, Dept of Environmental Engineering

· Worked with data from the Amazonian Tall Tower Observatory (ATTO) project to better understand how the dense canopy impacts turbulent fluxes in parts of the Amazon forest.

Mathematical methods to model groundwater flow — March 2012 — March 2014
Federal University of Paraná, Dept of Environmental Engineering

· Developed novel solutions to a well-known equation that models groundwater flow (Boussinesq equation). These new solutions can be used as analytical models for water in porous aquifers.

Turbulent fluxes over grasslands and lakes — December 2010 — April 2014
Federal University of Paraná, Dept of Environmental Engineering

· Performed meteorological and micrometeorological field measurements as well as data processing with the main goal of better understanding the nature of turbulent fluxes over some grassland and lake locations in Brazil.

TEACHING EXPERIENCE

Teaching assistant Winter 2018, Fall 2018 and Winter 2020
UCLA, Dept of Atmospheric and Oceanic Sciences

· Course: "Introduction to the Atmospheric Environment", Undergraduate level
· Helped prepare and led discussion sessions for up to 90 students of diverse background. Also helped prepare course structure, exams and lab activities, as well as graded homeworks and exams.

Special reader Fall 2019
UCLA, Dept of Atmospheric and Oceanic Sciences

· Course: "Introduction to Atmospheric and Oceanic Fluid", Graduate level
· Graded homeworks and papers that cover a range of topics in dynamics and thermodynamics of the atmosphere and ocean.

AWARDS AND SCHOLARSHIPS

National Science Foundation grant Start date: October 2020

· For postdoctoral research on submesoscale dynamics in the ocean bottom boundary layer

Richard P. Turco exceptional research award November 2019

· Awarded by UCLA's department of Atmospheric and Oceanic Sciences

Gulf of Mexico Research Initiative grant January 2017 — September 2020

· For research into oil dispersion in the upper ocean

National Institute for Amazonian Research grant August 2015 — August 2016

· Awarded jointly with the Max Planck Institute for Chemistry to work on the Amazonian Tall Tower Observatory project

Odelar Leite Linhares award October 2014

· Awarded by the Brazilian Society for Applied and Computational Mathematics for best Masters thesis in Applied mathematics in Brazil.

CAPES scholarship March 2012 — March 2014

· Awarded by the Brazilian institution CAPES (Coordination for the Improvement of Higher Education Personnel) for research into mathematical models of groundwater flow

PUBLICATIONS

Journal publications

[1] **Tomas Chor**, James C. McWilliams, and Marcelo Chamecki. "Diffusive–Nondiffusive Flux Decompositions in Atmospheric Boundary Layers". In: *Journal of the Atmospheric Sciences* 77.10 (Sept. 2020), pp. 3479–3494. ISSN: 0022-4928. DOI: 10.1175/JAS-D-20-0093.1.

[2] **Chor, Tomas**, James McWilliams, and Marcelo Chamecki. "On modifications to the K-Profile Parameterization for wave effects". In: *Journal of Physical Oceanography* (2020), In preparation.

[3] Marcelo Chamecki, **Tomas Chor**, Di Yang, and Charles Meneveau. "Material transport in the ocean mixed layer: recent developments enabled by large eddy simulations". In: *Reviews of Geophysics* (2019). DOI: 10.1029/2019RG000655.

[4] **Chor, Tomas**, Ailín Ruiz de Zárate, and Nelson L. Dias. "A generalized series solution for the Boussinesq equation with constant boundary conditions". In: *Water Resources Research* 55.4 (2019), pp. 3567–3575. DOI: 10.1029/2018WR024154.

[5] Cléo Quaresma Dias-Júnior, ..., **Tomas Chor**, and Antonio Manzi. "Is There a Classical Inertial Sublayer Over the Amazon Forest?" In: *Geophysical Research Letters* 46.10 (2019), pp. 5614–5622. DOI: 10.1029/2019GL083237.

[6] **Chor, Tomas**, Di Yang, Charles Meneveau, and Marcelo Chamecki. "A Turbulence Velocity Scale for Predicting the Fate of Buoyant Materials in the Oceanic Mixed Layer". In: *Geophysical Research Letters* 45.21 (2018), pp. 11, 817–11, 826. DOI: 10.1029/2018GL080296.

[7] **Chor, Tomás**, Di Yang, Charles Meneveau, and Marcelo Chamecki. "Preferential concentration of noninertial buoyant particles in the ocean mixed layer under free convection". In: *Phys. Rev. Fluids* 3 (2018), p. 064501. DOI: 10.1103/PhysRevFluids.3.064501.

[8] **Tomás L. Chor**, Nelson L. Dias, Alessandro Araújo, and ... "Flux-variance and flux-gradient relationships in the roughness sublayer over the Amazon forest". In: *Agricultural and Forest Meteorology* 239 (2017), pp. 213–222. ISSN: 0168-1923. DOI: http://dx.doi.org/10.1016/j.agrformet.2017.03.009.

[9] Einara Zahn, **Tomas L. Chor**, and N. L. Dias. "A Simple Methodology for Quality Control of Micrometeorological Datasets". In: *American Journal of Environmental Engineering* 6.4A (2016), pp. 135–142. DOI: 10.5923/s.ajee.201601.20.

[10] **Chor, Tomas L.** and N. L. Dias. "Technical Note: A simple generalization of the Brutsaert and Nieber analysis". In: *Hydrology and Earth System Sciences* 19.6 (2015), pp. 2755–2761. DOI: 10.5194/hess-19-2755-2015.

[11] Nelson L. Dias, **Chor, Tomás L.**, and Ailín Ruiz de Zárate. "A semianalytical solution for the Boussinesq equation with nonhomogeneous constant boundary conditions". In: *Water Resources Research* 50.8 (2014), pp. 6549–6556. ISSN: 1944-7973. DOI: 10.1002/2014WR015437.

[12] **Chor, Tomas**, N. L. Dias, and Ailín Ruiz de Zárate. "An exact series and improved numerical and approximate solutions for the Boussinesq equation". In: *Water Resources Research* 49.11 (2013), pp. 7380–7387. DOI: 10.1002/wrcr.20543.

[13] B. L. Crivellaro, N. L. Dias, and **Chor, Tomas**. "Spectral Effects on Scalar Correlations and Fluxes". In: *American Journal of Environmental Engineering* 3.1 (2013), pp. 13–17. DOI: 10.5923/j.ajee.20130301.03.

Book chapters

[1] N. L. Dias, Cynara Cunha, Dornelles Vissotto Junior, Maurício F Gobbi, Fernando A S Armani, Lucas E B Hoeltgebaum, **Tomás L Chor**, and Bianca L Crivellaro. *BALCAR project: Greenhouse gas emissions from hydroelectric dam reservoirs (in Portuguese)*. Chapter 5: Modelling. CEPEL, 2014.

SUPPLEMENTAL TRAINING

The Burgers Program's Research School on Fluid Dynamics June 2018
University of Maryland

· Attended talks and workshops on several aspects of turbulence.

The San Diego Supercomputing Center Summer Institute August 2019
University of California, San Diego

· Attended Workshops on how to apply high-performance computing in scientific research.

SELECTED TALKS AND CONFERENCE PARTICIPATIONS

Invited talks

[1] T. Chor. "Pymicra, the Python tool for Micrometeorological Analyses". In: *Programa de Pós-graduação em engenharia ambiental, UFPR, Curitiba.* (Invited speaker). 2016.

[2] T. Chor. "New analytic solutions to the nonlinear Boussinesq equation for underground water". In: *Seminários Contínuos do Departamento de Matemática, UFPR, Curitiba.* (Invited speaker). 2014.

[3] T. Chor. "New analytic solutions to the nonlinear Boussinesq equation for underground water". In: *CNMAC – National Conference on Applied and Computational Mathematics.* (Invited speaker). 2014.

Conference participations

[1] **T Chor**, J C McWilliams, and M Chamecki. "Diffusive-nondiffusive turbulent flux decompositions in oceanic mixed layers". In: *American Geophysical Union's Ocean Sciences Meeting.* Poster. 2020.

[2] **T Chor**, J C McWilliams, and M Chamecki. "Mixing in oceanic boundary layers: a method to guide KPP development". In: *CalGFD.* Talk. 2020.

[3] **T Chor**, J C McWilliams, and M Chamecki. "Revisiting Eddy-diffusivity models in atmospheric boundary layers". In: *72nd Annual Meeting of the APS Division of Fluid Dynamics.* Talk. 2019.

[4] **Chor, T**, J C McWilliams, and M Chamecki. "Dust-devil-like vortices in the oceanic mixed layer". In: *22nd Conference on Atmospheric and Oceanic Fluid Dynamics.* Poster. 2019.

OTHER RELEVANT SKILLS

Software developer

· Creator and developer of Pymicra, the Python tool for Micrometeorological Analyses, among other python packages.

Languages

· Portuguese as native language
· Fluent English and Spanish
· Basic French

Programming languages

· Python, Fortran, Julia, Bash

RELEVANT OUTREACH AND MENTORSHIP

Author of TED-Ed video on Turbulence April 2019

· Conceived and wrote script for TED-Ed video with the goal or popularizing the topic of Turbulence.

Research mentor Fall 2018
UCLA

· Mentored an undergraduate student on a small project collecting high-frequency atmospheric data at the top of a building.

Volunteer in the Exploring Your Universe (EYU) event April 2018
UCLA

· Performed experiments and interacted with attendees of EYU, which is a large outreach event focusing on popularizing science to children.

Student Recruitment Chair Fall 2017 to Fall 2018
XEP, UCLA

· Organized recruitment efforts and events for incoming graduate students.

RELEVANT PROFESSIONAL EXPERIENCE

Climatempo June 2014 — July 2015
Researcher *São Paulo, Brazil*

· Ran dispersion models and forecasted wind power supply for the wind energy industry