

Argel Ramírez Reyes

Atmospheric modeler interested in climate risks. High Performance Computing Enthusiast.

Atmospheric Science PhD Candidate at UC Davis

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Summary

Current graduate student researcher focusing on the physics of hurricanes through simple modeling. I am highly motivated to apply my training to understand natural risks driven by atmospheric perils and how they will change in the future climate. I look to collaborate with statisticians, climate scientists and stake holders. I enjoy bulding models and designing computer simulations with a tendency to think hard about performance. I am a Julia language enthusiast with a formal education in physics, high performance computing and atmospheric and climate dynamics.

Education

University of California at Davis

Davis, CA, USA

Ph.D. in Atmospheric Science (in progress)

Sep 2017 - Mar 2023 (expected)

- Supervisor: **Dr. Da Yang** @ Lawrence Berkeley National Laboratory
- Research area: Tropical Atmosphere Convection, Dynamics and Climate, Numerical Modeling of the Atmosphere
- Dissertation topic: **Looking for the minimal recipe for the genesis of Tropical Cyclones**
- Tools: Fortran and Julia for modelling, Julia for data analysis, git for version control
- Receiptient of the CONACYT - UCMexus Fellowship for Graduate Studies

Université de Lille 1 - Sciences et Technologies

Villeneuve d'Ascq, France

M.S in High Performance Computing and Simulation, Specialized in Scientific Computing

Sep 2016 - Sep 2017

- Supervisor: **Dr. Pascal Tremblin**
- Masters Project: Development of a 2D Hydrodynamics-Radiative Transfer Model with Adaptive Mesh Refinement using the P4est Library

UNAM (Universidad Nacional Autónoma de México)

Mexico City, Mexico

B.S. in Physics

Mar 2011 - Aug 2016

- Graduation Project: Minimum Action Principle and Noether's Theorem using Central Fractional Derivatives

Work Experience

Atmospheric Science Graduate Group, UC Davis

California, USA

Graduate student researcher

Sep 2017 - Current

- Designed and conducted research and data analysis on the genesis of tropical cyclones.
- Modified, compiled, setup and ran simulations using the Fortran model SAM (system for atmospheric modeling) on supercomputers.
- Analysed 80 TB of SAM data.
- Implemented a GPU/CPU convective parameterization on top of the Oceananigans.jl shallow water model.
- Wrote and published peer-reviewed literature (1 published, 1 in revision and 1 in preparation).
- Presented research results in 9 scientific conferences (4 poster presentations and 5 oral presentations).
- Published research software in 3 publicly available packages.

Maison de la simulation, Commissariat à l'énergie atomique

Saclay, France

Master student intern

Mar 2017 - Sep 2017

- Started development of a hydrodynamics-radiation solver with adaptive mesh refinement in C++ using the p4est library following academic literature.
- Wrote detailed report on implementation and formulation that became a masters thesis.

Ocean-Atmosphere interaction group at Center for Atmospheric Sciences (UNAM)

Mexico City, Mexico

Research Assistant

Jan 2016 - Sep 2016

- Analyzed meteorological simulation data to explain pollution transport between the Mexico City valley and neighboring valleys
- Design and wrote julia code for data analysis of netcdf output

Skills

Programming Julia, C, Fortran 95, Matlab, Python, Parallel Computing, Numerical Methods

Operating Systems Windows, Linux, Mac OS X

Languages Spanish (native), English (fluent), French (basic)

Research Problem solving, literature review, scientific writing, modeling, data analysis, information synthesis, curiosity, presentation