Argel **Ramírez Reyes**

Tropical Cyclone Modelling and High Performance Computing Enthusiast - Atmospheric Science PhD Candidate at UC Davis

Hoagland Hall 236, UC Davis, Davis CA, 95616, USA

(+1) 530 979 3013 | aramirezreyes@ucdavis.edu | www.argelramirezreyes.com | aramirezreyes | 0000-0001-7742-9014

Summary

Current graduate student researcher focusing on the physics of hurricanes through simple modeling with the goal of understanding how genesis and intensification will change in future climates. I 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.

Skills

Programming	Julia, C, Fortran 95, Matlab, Python, Parallel Computing, Numerical Methods
Operating Systems	Windows, Linux, Mac OS X
Languages	Spanish, English, French
Research	Problem-solving, literature review, scientific writing, modeling

Work Experience

Atmospheric Science Graduate Group, UC Davis

California, USA

Graduate student researcher — *Sep. 2017 - Current*

- Designed and conduct research on the genesis of tropical cyclones.
- Modify source code,compile, setup and run simulations using the Fortran model SAM (system for atmospheric modeling) on high performance computers with haswell and knl architectures.
- Design and implemented data-analysis software using the Julia language to analyze 80 TB of SAM.
- Implemented a convective parameterization on top of a shallow water model for the Oceananigans.jl package. This convective parameterization operates on CPU and CUDA-capable GPU architectures.
- Communicated the our research by writing and publishing peer-reviewed literature (1 published, 1 submitted and 1 in preparation).
- Communicated the advances of research by public presentation of work in 9 scientific conferences (4 poster presentations and 5 oral presentations).
- Published software in 3 reusable packages for the Julia language.

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

Education

University of California at Davis

Davis, CA, USA

Ph.D. in Atmospheric Science (in progress) — *Sep 2017 - late 2022 (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
- Receipient 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