

## **José L. Hernández, Ph.D.**

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### **EDUCATION**

- Ph.D. Marine Science/Physical Oceanographer, University of Puerto Rico, Mayagüez Campus, June 2000
- M.S. Physics, University of Puerto Rico, Mayagüez Campus, June 1996
- B.S. Physics, National University of Colombia, Bogotá, December 1986

### **EMPLOYMENT**

Jan 2004 – present      Research specialist, Oak Ridge National Laboratory - CSM Division, and Joint Institute of Computational Science-UT. Research in climate; global and regional modeling data analysis and visualization.

Jan 2001 – Dec 2003      Postdoctoral, Oak Ridge National Laboratory, Computer Science and Mathematics Division. Research in climate at global and regional scales on ocean-atmosphere biogeochemical processes. Data analysis and visualization.

Nov 1999 – Nov 2000      Postdoctoral, USRA/NASA Goddard Space Flight Center, Laboratory for Atmospheres and Mesoscale Atmospheric Processes Branch. Research involving satellite oceanic data, programming, and data analysis.

Aug 1992 – Oct 1999      Research and teaching assistantships in Marine Science and Physics departments at University of Puerto Rico - Mayagüez, during MS and PhD studies.

Mar 1990 – Aug 1992      Marine Research Institute of Punta Betin, Santa Marta, Colombia. Physical oceanography and electronic instrumentation laboratory.

Jan 1989 - Mar 1990      University of Los Andes, Bogotá, Colombia. Physics and Math Department Physics Lecturer.

Jan 1987 - June 1989 University Antonio Nariño, Bogotá, Colombia, Physics and Math Department.  
Physics Lecturer.

## **SPECIAL ABILITIES**

### Programming Skills:

- High performance computer systems at ORNL: Cheetah, Eagle
- Operating systems: Unix, Linux, Windows
- Programming in fortran
- Proficiency using Matlab, GRADS, for programming, data analysis and visualization
- Analysis of large data set like GCM's outputs, in high performance computers.
- Microsoft software Word, Excel, Power Point, among many others Windows packages.
- Statistical spectral analysis for time series and GCM's output data (PCA, Wavelets).

### Technical Skills:

- Meteorological and Oceanographic instrumentation maintenance.

### Languages Skills:

- Fluent in English and Spanish

## **PEER JOURNAL REVIEWER**

- Journal of Geophysical Research (Space Physics)
- Journal of Environmental Management

## **PROFESIONAL INTERESTS:**

I am highly interested in multidisciplinary research and climate modeling studies in land, atmosphere and ocean. I perform model evaluation using measurements from different platforms (satellite, stations in land, ocean buoys, etc) and applying special statistical analysis and other analytical tools. From model evaluation we can gain experience to adjust and set the biogeophysical parameterizations that better describe the climate behavior in any particular region.

Human induced changes in regional climate are also a field of my interest. For Central America I am studying the effects of land use changes (LUC) from human activities on regional climate and compare them to naturally occurring events. This project also pursues to assess regional carbon stocks from new satellite (MODIS, Landsat) derived land cover maps and to carry out future simulations under standard IPCC scenarios. I evaluate the MM5 mesoscale model to gain confidence before apply it into decadal future simulations. State of the art Ocean biogeochemistry Los Alamos model and its evaluation is also part of my current research activities. An extensive set of parameterizations are set in this ocean model to describe complex interactions among physical, biological and chemical components.

## **PROFESIONAL SOCIETY MEMBERSHIPS**

- American Geophysical Union

## PEER-REVIEWED PUBLICATIONS

A regional climate study of Central America using the MM5 modeling system: Results and comparison to observations, J. Hernandez, J. Srikishen, D. Erickson, R. Oglesby, D. Irwin, *International Journal of Climatology*. Accepted for publication February, 2006.

Ecodynamic and Eddy Admitting Dimethyl Sulfide Simulations in a Global Ocean Biogeochemistry/Circulation Model, S. Elliott, Chu, S., M. Maltrud, J. Hernandez and D. J. Erickson III, *Earth Interactions*, vol. 8, 11, 2004.

Atmospheric iron delivery and surface ocean biological activity in the Southern Ocean and Patagonian region, D. Erickson, J. Hernandez, P. Ginoux, W. W. Gregg, C. Mc. Clain, J. Christian, *Geophys. Res. Let.*, Vol. 30, No. 12, 1609, doi:10.1029/2003GL017241, 2003.

A Global, High Resolution, Satellite-based global model of Air-Sea trace Gas Flux, D. Erickson, J. Hernandez, *Gas Transfer at Water Surfaces*, Geophysical Monograph 127, American Geophysical Union, 2002.

## MEETINGS AND SELECTED PRESENTATIONS

High Resolution Regional Modeling and Land Use in Central America, J. L. Hernandez, C. Perez, D. J. Erickson, R. Oglesby, D. Irwin. Paper presented in the Caribbean Climate Symposium, Mayaguez, Puerto Rico, April-2006.

Development in Geoscience and Social Benefits: Caribbean and Central American Region, J. L. Hernandez, invited presentation in the *Social and Scientific Thinking in the Naval School* series of lectures and inauguration of the Master program in Physical Oceanography. Naval School Almirante Padilla, Cartagena, Colombia, March, 2006.

2005 Training Workshop: Regional Climate Modeling in Central America, SERVIR Project: USAID-NASA-ORNL, R. Oglesby, D. Erickson, J.L. Hernandez, J. Srikishen D. Irwin; Water Center for the Humid Tropics of Latin America and the Caribbean, October 18-20, 2005, Panama, Republic of Panama. (Organizer and instructor in this workshop)

Assessment of PCM Results for Predictions of Climate Changes in the Caribbean, Moises Angeles, J. E. Gonzalez, P. Mulerro, D. J. Erickson, III, and J. Hernandez, 16th Conference on Climate Variability and Change, The 85th AMS Annual Meeting, San Diego, CA. Jan-2005 (Presentation)

2004 Training Workshop: Regional Climate Modeling, SERVIR Project: USAID-NASA-ORNL, R. Oglesby, D. Erickson, J.L. Hernandez, J. Srikishen D. Irwin; Water Center for the Humid Tropics of Latin America and the Caribbean, August 16-19, 2004, Panama, Republic of Panama. (Organizer and instructor in this workshop)

- Air-Sea gases exchange and Upwelling in the Caribbean Sea, J. Hernandez, S. Lonin, First Workshop on NODC in Colombia, Centro de Investigaciones Oceanográficas e Hidrográficas, 21-23 Julio-2004, Cartagena de Indias, Colombia. (Presentation)
- Future U.S. Energy Use for 2000-2025 as Computed with Temperatures from a Global Prediction Model and Energy Demand Model, S. Hadley, D. Erickson, J. Hernandez, 24th USAEE/IAEE North American Conference, Washington, DC, USA. 2004 (Presentation)
- Atmospheric Iron Flux and Surface Chlorophyll at South Atlantic Ocean: A case study Near Patagonia, J. Hernandez, D. Erickson, P. Ginoux, W. Gregg, C. McClain, J. Christian, 2002 American Geophysical Union Fall Meeting, San Francisco, Cal. (Poster).
- Sea Surface Heat Flux in the North Tropical Atlantic and Aerosol Deposition, J. Hernandez; D. Erickson III., 2001 American Geophysical Union Fall Meeting, San Francisco, Cal. (Poster)
- Atmospheric Iron Flux and Surface Chlorophyll in the North-Western Tropical Atlantic, J. Hernandez, D. Erickson III, P. Ginoux, IX COLACMAR Congress, September/16/2001, San Andres, Colombia (Paper in memories of the Seminar)
- CO2 and Biogeochemical Simulations Inside GCMs, J. Hernandez, ORNL-NASA Workshop, June/4/2001, Oak Ridge National Laboratory, Oak Ridge, TN (Presentation).
- The Correlation between Atmospheric dust deposition to the Surface Ocean and SeaWiFS ocean color: A Global Satellite-based analysis, D. Erickson, J. Hernandez, P. Ginoux, W. Gregg, R. Kawa, M. Behrenfeld, W. Essaias, C. McClain, J. Christian 2000 American Geophysical Union Fall Meeting, San Francisco, Cal. (Presentation)
- Atmosphere-Ocean Energy and Gases Exchange at the Caribbean Sea and neighboring Atlantic Ocean, J. Hernandez, NASA-Goddard Space Flight Center - Mesoscale Atmospheric Process Branch, July 1999, Greenbelt, MD (Seminar).
- Ocean Mixed Layer Depth and Thermal Inertia in the Eastern Caribbean Sea: A Simple Model, J. Hernandez, Capella, J., 1999 American Geophysical Union Spring Meeting, Boston, MA (Poster)