

# ALEJANDRA M. ROJAS GONZALEZ

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## EDUCATION

- 2010 • Ph.D. Environmental and Water Resources Engineering, University of Puerto Rico, Mayagüez. Graduation Date: May 2010.
- 2004 • M.Sc. Water Resources and Environmental Engineering, University of Puerto Rico, Mayagüez, 2004.
- 2000 • B.S. Agricultural Engineering, University of Costa Rica, San José, 2000.

## PREVIOUS RESEARCH EXPERIENCE

- 2006 to Present • **CASA Project, CLiMATE Center, Electrical and Computer Engineering, UPRM. Responsibilities:** Develop a Flood Alarm System for Western Puerto Rico using a Distributed Hydrological Model.
- 2007 • **Natural Hazard and Disaster Research Center, National Weather Center, University of Oklahoma.** Summer internship with Dr. Baxter Vieux. **Responsibilities:** To set up and calibrate a distributed hydrological model with radar rainfall for Western Puerto Rico.
- 2006, 2004 y 2002 • **Puerto Rico Water Resources and Environmental Research Institute. UPRM.** Course of Hydrologic-Hydraulic and Geographic Information Systems (GIS) applications in Hydrologic-Hydrologic Studies in Puerto Rico. Professional Qualification Program, University of Puerto Rico, Summer 2006. Course Assistant of River Hydraulic and Hydrologic Modeling using HEC-RAS, Fluvial Geomorphology and Erosion Control by Walter Silva Araya, PhD. Centro de Capacitación Técnica en Recursos de Agua. June 2002. Course Assistant in Modelaje Hidrológico e Hidráulico y Control de Erosión en Ríos. Speaker of GEO-HMS and GEO-HECRAS conferences. Walter Silva, Ph.D., Instituto de Investigaciones en Ingeniería, Universidad de Costa Rica, Costa Rica, Junio, 2004.
- 2006, 2005 y 2003 • **General Engineering Department, University of Puerto Rico- Mayagüez Campus.** Instructor of Fluid Mechanics Laboratory.
- 2001-2004 • **Flood Hazard Mitigation for “Grande de Añasco” River. University of Puerto Rico-Mayagüez Campus, P.R.** Funded by the Federal Mannagent Agency through the Puerto Rico Water Resources and Environmental Research Institute. **Responsibilities:** To develop two dimensional and one dimensional hydraulic model and to analyze flood patterns in Alluvial Fans and flood hazard mitigation for floodplain and gathering cross-section data in the main channel using GPS, GIS techniques.

## PUBLICATIONS AND PRESENTATIONS

- 2010 • Rojas-González, A.M., Harmsen, E.W., Cruz-Pol, S., 2010. “Performance and Evaluation of Multi-sensor Precipitation Estimation Algorithm using a High Density Rain Gauge Network and Hydrologic Simulations”. **21<sup>st</sup> Century Watershed Technology: Improving Water Quality and the Environment**, Earth University, Costa Rica, February 21-24, 2010 Costa Rica, Feb 20, 2010.
- 2009 • Rojas-González, A.M., 2009. “Development of Real Time Flood Prediction Capabilities in Puerto Rico to evaluate uncertainties”. Cuarta Reunión Nacional de Percepción Remota y Sistemas de Información Geográfica de Puerto Rico. University of Puerto Rico at Mayagüez, Puerto Rico, Dec 11<sup>th</sup>, 2009.
- 2009 • Rojas-González, A.M., Harmsen, E.W., 2009. “[Evaluation of MPE Radar Estimation Using a High Density Rain Gauge Network within a Hydro- Estimator Pixel and Small Sub-Watershed](#)”. **Proceeding per review 8th WSEAS International Conference on Instrumentation, measurement, circuits and systems**, Hangzhou, China, May 20<sup>th</sup> – 22<sup>th</sup>, 2009, pag 73-78, SBN ISSN:1790-5117 , 978-960-474-076-5

- 2009 Harmsen, E.W., Mecikalski, J., Cardona-Soto, M., Rojas-González, A.M., 2009. "[Satellite Solar Insolation-Based Daily Evapotranspiration Estimation in Puerto Rico](#)". **Proceedings per review 8th WSEAS International Conference on Instrumentation, measurement, circuits and systems**, Hangzhou, China, May 20<sup>th</sup> – 22<sup>th</sup>, 2009, pag. 67-72, ISBN ~ ISSN:1790-5117 , 978-960-474-076-5
- 2009 Rojas-González, A.M., 2009. Plenary session: "Hydraulic and Hydrologic Models Applications in Flood Predictions and Climatic Change". Available in CD, Spanish version. **II Congreso Nacional de Ingeniería Agrícola**, San José, Costa Rica, May 7<sup>th</sup>-8<sup>th</sup>, 2009.
- 2008 Rojas-González, A.M., Harmsen. E., Cruz-Pol, S., 2008. "Assessment Predictability Limits in Small Watersheds to Enhance the Flash Flood Prediction in Western Puerto Rico". **Proceedings [ASPRS 2008 Annual Conference Bridging the Horizons: New Frontiers in Geospatial Collaboration](#)**, Portland, Oregon, April 28<sup>th</sup> – May 2<sup>nd</sup>, 2008.
- 2008 Rojas-González, A.M., 2008. "Soil Erosion Calculation using remote sensing and GIS in Río Grande de Arecibo Watershed, Puerto Rico". **Proceedings [ASPRS 2008 Annual Conference Bridging the Horizons: New Frontiers in Geospatial Collaboration](#)**, Portland, Oregon, April 28<sup>th</sup> – May 2<sup>nd</sup>, 2008.
- 2008 Rojas-González, A.M., Harmsen. E., 2008. "Development of a Flood Alert System in Western Puerto Rico using New Technologies". 2<sup>nd</sup> best Poster and Presentation Award, [Sixth Annual NOAA-CREST Symposium](#), Feb 20-22. University of Puerto Rico at Mayagüez Campus.
- 2007 Silva-Araya, W.F., Rojas-González, A.M., 2007. "[Numerical Simulation of Stream Channels in Floodplains](#)". **Proceedings Seventh Caribbean Islands Water Resources Congress**. Saint Croix, United States Virgin Islands, October 26-27.
- 2007 Rojas-González, A.M., Harmsen, E.W., 2007. "[Hydrologic studies using Vflo in Western Puerto Rico](#)". **Proceedings Seventh Caribbean Islands Water Resources Congress**, Saint Croix, United States Virgin Islands, October 26-27
- 2007 Harmsen, E. W., García, I. and Rojas, A., 2007. "[Rainfall variation in a 4 km x 4 km area in western Puerto Rico](#)". **Proceedings World Environmental and Water Congress 2007**, Tampa Florida, May 15-19.
- 2007 Santos, J., Miller, J., Rojas-González, A., 2007. "[Vulnerability to Disasters in Puerto Rico: Incorporating the Social, Physical and Built-Environment into Radar Scanning Strategies](#)". **16th Conference on Applied Climatology. American Meteorological Association Annual Meeting**. San Antonio, TX. January 16, 2007.
- 2006 Rojas-González, A.M., 2006. "ArcGIS applications in Water Recourses", Spanish version, [conference](#) and [workshop](#). **Cuarta Reunión Nacional de Percepción Remota y Sistemas de Información Geográfica de Puerto Rico**. University of Puerto Rico at Mayagüez, Puerto Rico, Sep 26<sup>th</sup>, 2006.
- 2006 Rojas-González, A.M., Harmsen. E. 2006. "Flash Flood Prediction in Western Puerto Rico". **Caribbean Climate Studies: NOAA-CREST and NASA EPSCoR End of Summer Research Activity**, University of Puerto Rico at Mayagüez. August, 2006.
- 2006 Rojas-González, A.M., 2006. "[Soil Erosion Calculation using Remote Sensing and GIS in Río Grande de Arecibo Watershed, Puerto Rico](#)". **Conference in 26<sup>th</sup> Puerto Rico Interdisciplinary Scientific Meeting (PRISM)**, Cayey Puerto Rico. Mar 11, 2006.
- 2004 Rojas González, A.M., 2004. "River Hydraulic Study in Alluvial Fans, Thesis". Spanish version, (Estudio Comparativo en Hidráulica de Ríos en valles aluviales). **University of Puerto Rico**, Mayagüez. Puerto Rico.
- 2004 Rojas González, A.M., 2004. "[Modelación Hidráulica en dos dimensiones para el Río Grande de Añasco](#)". **Conference in 24<sup>th</sup> Puerto Rico Interdisciplinary Scientific Meeting (PRISM) and 39<sup>th</sup> ACS Junior Technical Meeting**. University of Puerto Rico, Humacao Campus, March.

- 2004 Rojas González, A.M., First Prize to “Modelo Hidráulico bidimensional en el Río Grande de Añasco”, Spanish version (Bidimensional hydraulic modelling in “Grande de Añasco” River. **3<sup>rd</sup> Annual Student Poster Competition. Puerto Rico Water and Environmental Association.** May, 2004.
- 2003 Presentation of Poster in 2<sup>nd</sup> Annual Student Poster Competition. Puerto Rico Water and Environmental Association. May, 2003.
- 2002 Rojas González, A., 2002. “Development of Two Dimensional Hydraulic Modelling in Río Grande de Añasco.” Presentation of Poster in 1<sup>st</sup> Annual Student Poster Competition. Puerto Rico Water and Environmental Association. May, 2002.
- 2001 Rojas González, A., Solís, H., 2001. “Hydrologic Modeling for Flood Control in Turrialba Watershed”. **Proceedings Sixth Caribbean Islands Water Resources Congress.** Mayagüez, P.R., February.
- 2000 Rojas, A., 2000. “Calibración y Modelación Hidrológica para el Control de Inundaciones en la Cuenca del Río Turrialba, utilizando el programa HEC-HMS”. Proyecto de Graduación. **Universidad de Costa Rica.** San José, Costa Rica.

## ORGANIZATIONS AND EXTRACURRICULAR ACTIVITIES

- 2004-2006 Participating in AGEP program.
- 2006 Participating in TOASTMASTERS program

## SKILLS

- Hydrologic and Hydraulic Modeling Studies, Geographical Information Systems, Remote Sensing and Image Processing.
- Environmental Studies.
- Groundwater modeling.
- Use *Vflo* software. Description: Distributed Hydrologic Model.
- Use Surface Water Modeling System (SMS Software); Groundwater Modeling System (GMS Software) and Watershed Modeling System (WMS Software).
- Use HEC-RAS Software, Modeling River Analysis System.
- Use HEC-HMS. Description. Modeling Hydrologic Analysis System.
- Use HEC 6. Description. Sediment transport in rivers and reservoirs.
- Arc GIS 9.3. Geographical Information Systems package and extensions.
- Arc Hydro Tools, HEC-GeoHMS and HEC-GeoRAS software.
- Use MODFLOW and HYDRUS software.
- ENVI 4.3 Remote Sensing package.
- Using EPANET.
- Matlab and others.

## CURRENT PROFESSIONAL MEMBERSHIPS AND AFFILIATIONS

Member, ASPRS. American Society for Photogrammetry and Remote Sensing.  
Member, ASCE, American Society of Civil Engineering.