

# Maikel Méndez M

## WORK ADDRESS:

Instituto Tecnológico de Costa Rica. ([www.tec.cr](http://www.tec.cr))  
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## PERSONAL DATA:

Date of birth: May 5, 1975  
Place of birth: San Jose, Costa Rica

## EDUCATION:

### **Postgraduate Degree in Geo-Information Science & Earth Observation.**

*July 2010.* Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Enschede, Netherlands. ([www.itc.nl](http://www.itc.nl)).

### **Master of Science in Civil and Environmental Engineering.**

*May 2003.* Ira A. Fulton School of Engineering, Arizona State University (ASU), Tempe, United States of America. ([www.asu.edu](http://www.asu.edu)).

### **Bachelor of Science in Agricultural Engineering.**

*February 1993 - February 1998.* Instituto Tecnológico de Costa Rica (ITCR). Cartago, Costa Rica. ([www.tec.cr](http://www.tec.cr)).

## EMPLOYMENT:

### **Instituto Tecnológico de Costa Rica ([www.tec.cr](http://www.tec.cr))**

#### **Cartago, Costa Rica. Escuela de Ingeniería en Construcción Academic Specialist, Water Resources. July 2005 to present**

- Development of the research project "Application of the terrain stability model SINMAP using GIS and Remote Sensing", intended to produce high resolution landslide hazard zonation for the Reventado river watershed, Costa Rica. Financed by ITCR/CIVCO and Universidad de Costa Rica. (*project in progress*)
- Development of the research project "Automated calibration of HBV-EC hydrological model using GIS and PEST", which objective is to develop a fully calibrated hydrological model to be used in optimal dam operation. Applied to the upper Toro River in Costa Rica. Financed by Instituto Costarricense de Electricidad ([www.grupoice.com](http://www.grupoice.com)) and ITCR/CIVCO (*project concluded, publication in progress*)
- Development of the research project "Automated calibration of a water distribution system using EPANET and PEST", which aim is to develop a fully calibrated extended period simulation model for the City of Sirena's water distribution system (WDS), Cali, Colombia. Financed by ITCR/CIVCO (*project concluded, publication under review*).
- Development of the research project "Automated calibration of the USEPA-SWMM model for an urban catchment: A case study in Costa Rica", oriented to characterize, analyze and evaluate the routing capacity of the city's natural drainage system, in order

- to establish areas under risk of flooding and undertake corrective actions. Financed by Municipalidad de Cartago and ITCR/CIVCO (*project concluded, publication in progress*).
- Development of the research/outreach project "Advanced GIS Water Distribution Modeling (MASDA)" oriented to enhance performance of the various municipal water distribution systems in the province of Cartago, Costa Rica. Financed by Plan Nacional de Desarrollo Urbano ([www.prugam.go.cr](http://www.prugam.go.cr)) and ITCR/CIVCO (*project concluded*).
  - Design, construction and operation of the hydraulics and hydrogeology laboratory at the ITCR's School of Construction Engineering. Financed by ITCR/CIVCO (*project concluded*).
  - Strategic framework, specifications and terms of reference for urban water systems characterization studies along with Plan Nacional de Desarrollo Urbano ([www.prugam.go.cr](http://www.prugam.go.cr)) and ITCR/CIVCO (*project concluded*).

**Instituto Costarricense de Acueductos y Alcantarillados ([www.aya.go.cr](http://www.aya.go.cr))**

**San José, Costa Rica. Unidad de Aguas Residuales**

**Water & Wastewater Engineer. January 2000 to June 2005**

- Designated engineer for the design of the new "DPMC Wastewater Treatment Plant" for the city of San Isidro de Perez Zeledón, Costa Rica.
- Designated engineer for the initial operation of the "Submarine-outfall primary wastewater treatment plant" for the Caribbean city of Limón, Costa Rica.
- Active participation in the project "Wastewater characterization at Industries and special sources", for the metropolitan area of San José, Costa Rica.
- Performance of the coagulation and flocculation processes optimization, for the 100 LPS rapid water treatment plant of city of Liberia, Guanacaste, Costa Rica.
- Design and construction of a 5 Km, Cast Iron-PVC water conveyance system, controlled by telemetry and conceived to join the water distribution systems of Nicoya and Nambí, Guanacaste, Costa Rica.
- Evaluation and optimization of the water conveyance system and SCADA controls, for the water distribution system Caimital-Hojancha, Guanacaste, Costa Rica.
- Preparation of the maintenance and operation program for the facultative-lagoons system of the city of Nicoya, Guanacaste, Costa Rica.

**United Nations ([www.un.org](http://www.un.org))**

**Department of Economic and Social Affairs**

**New York, USA. Statistics Division. Environment Statistics Section**

**Research Fellow. June 2003 to December 2003**

- Design and development of the accounting framework for water use in agriculture according to the System of National Accounts (SNA), to be included in the Handbook of National Accounting-Integrated Environmental and Economic Accounting (SEEA).
- Development of an accounting framework intended to include key social aspects of water and sanitation according to the relevant MGD's. This covered issues dealing with access to sanitation and safe drinking water and a review of the various financing systems for infrastructure.

**Ball Horticultural Company-Linda Vista ([www.ballhort.com](http://www.ballhort.com))**

**Cartago, Costa Rica. Mantenimiento y Desarrollo**

**Irrigation and Drainage Engineer. February 1998 to October 1999**

- Design and construction of a 35,000 m<sup>3</sup> artificial water storage basin, based on HEC-1/DOS hydrological modeling, Tobosi, Cartago, Costa Rica.
- Performance of a hydrological feasibility study for a 5 km water conveyance system from the Tiribí river basin to Llano Grande, Cartago, Costa Rica.
- Design and installation of an automatic hydraulic control-system for a 60 m<sup>3</sup>/hor greenhouse, mister-based irrigation system.

## RESEARCH AND PROFESSIONAL INTERESTS:

- Simulation, validation and calibration of water-distribution and storm-sewer networks including flow regimes, water quality and flooding risk.
- Integration of GIS and remote sensing tools in the evaluation of natural drainage systems, accounting for extreme weather scenarios and climate change.
- Satellite rainfall estimations in tropical areas using combined VIS/IR, radar and MW techniques, accounting for cloud physical properties and severe storms.
- Quantification of regional hydrological budgets by means of remote sensing including various meteorological and ground-based data sources.

## TEACHING EXPERIENCE:

### Instituto Tecnológico de Costa Rica ([www.tec.cr](http://www.tec.cr))

- Lectures on Applied Hydraulics, Hydrology and Geographic Information Systems (GIS) for the Construction Engineering and Agriculture Engineering Schools.

### Universidad de Costa Rica ([www.ucr.ac.cr](http://www.ucr.ac.cr))

- Lectures on Advanced Hydrological Modeling for the School of Geography.

## PARTICIPATION IN INTERNATIONAL COURSES:

- 2008. Simulación Hidrológica Distribuida con GRASS-GIS. AECID, Agencia Española de Cooperación Internacional y Desarrollo. Centro de Estudios Hidrográficos-CEDEX. Cartagena de Indias. Colombia.
- 2005. Diseño de alcantarillado sanitario y pluvial. Amanco, Piura. Colegio Federado de Ingenieros y Arquitectos. San Jose, Costa Rica.
- 2004. Leadership for Sustainable Development. LASPAU & Instituto Centroamericano de Administración de Empresas (INCAE). Centre for Competitiveness and Sustainable Development. Alajuela, Costa Rica.

## PUBLICATIONS:

- Méndez, M. 2008. Introducción a la Modelación Asistida de Sistemas de Distribución de Agua; Caso de Estudio Acueducto Marsella. Revista Tecnología en Marcha. Instituto Tecnológico de Costa Rica. Vol. 21-4. ISSN 0379-3982. Pp 79.
- Méndez, M. 2008. Modelación Asistida de Sistemas de Distribución de Agua (MASDA). Ediciones, Centro de Desarrollo Bibliográfico. ISBN 978-9968-514-08-8.
- Méndez, M, Araya A, 2008. Prácticas de Laboratorio, CO-3501, Laboratorio de Hidráulica y Mecánica de Fluidos. Taller de Publicaciones, Instituto Tecnológico de Costa Rica. Pp 115.
- Méndez, M. 2006. Introducción a la Modelación Asistida de Sistemas de Distribución de Agua; Caso de Estudio Campo Escuela Scout de Costa Rica. Revista Tecnología en Marcha. Instituto Tecnológico de Costa Rica. Vol. 20-1. ISSN 0379-3982. Pp 12.

## COMPUTER SKILLS:

- GIS, Remote Sensing & CAD:
  - AutoCAD, ArcGIS, ERDAS, GRASS, GvSIG, ILWIS, SAGA, QGIS, Surfer, PEST
- Water Resources & Hydraulics:
  - Epanet, Modflow, HBV-EC, HEC-HMS/RAS, MW-SWAT, StormNET, SWMM
- Statistics and Geo-Statistics:
  - Minitab, Tanagra, R, S, Easyfit