

# Sergio Andrés Redondo Tilano

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## CURRENT ACTIVITY:

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### Doctorat en civil génie à l'Université de Sherbrooke

My research project consists in the determination of damage curves for floods in the Trois Lacs sector of the Nicolet Sud-Ouest river applying methods of machine learning.

## EDUCATION:

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### National University of Colombia

Bogotá, Colombia

Master's in engineering-Hydraulic resources.

August 2011

BSc. Civil engineer.

March 2009

## SKILLS:

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- **Languages:** Spanish (native). English (C1).
- **Specialized software:** ArcGIS, Q-GIS, Qual2k, ModFlow, MatLab, Simulink, HEC-HMS, HEC-RAS, EasyFit, AutoCAD, CivilCAD, EPANET, EPASWMM, HY-8, SMADA.
- **Skills:** Data analysis, coding, debugging, team work, coordination, efficiency, excellent verbal and written communication, project planning, task optimization.

## PROFESSIONAL EXPERIENCE:

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### Hidroconsulta, Bogotá, Colombia.

March 2011 – September 2019

I planned, designed and executed projects related to water resources. Relevant achievements are:

- Designed structures to mitigate debris flow hazards in the town of Mocoa.
- Proposed a solution for controlling water levels at the future Pasto Riverside park through hydraulic infrastructure considering riparian vegetation.
- Integrated bidimensional flow model with the ecosystem and geomorphology components for delimitating the riparian buffer zone of the Magdalena river in 13 locations.
- Proposed a solution for controlling the erosion and scour processes in three bridges in Meta, Colombia, with hydraulic structures.
- Participated in the preparation of master plans of aqueduct, sewer and drainage systems in several municipalities in the Chocó province.
- Designed drainage systems considering climate change for roadways across Colombia.
- Solved the drainage issues at the El Dorado bus terminal by implementing a pumping system.

Other include the design of water intake structures, flood risk assessment and sediment transport.

### GYR Engineers, Bucaramanga, Colombia.

October – November 2014

- I conducted the studies and developed the hydrologic model for the Fonce river.
- Calibrated and validated the model using HEC-HMS and Monte Carlo simulations.

- I estimated the environmental flow regime for the Guatiquía river.
- Executed field measurements of flows in different times of the year.
- Worked with other professionals in the application of a holistic methodology.

## TEACHING EXPERIENCE:

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Nueva Granada Military University, Bogotá, Colombia.

August 2012 – September 2019

- Conducted the courses of Pipes hydraulics, Channels hydraulics, Laboratory, Hydrology and Fluid Mechanics. Tailored each course for the academic interests of the students.

## PUBLICATIONS

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Book chapter:

1. **SA. Redondo**, EA. Rodríguez. "Hydrological uncertainty analysis in environmental flows in the Colombian scope", as part of the "Society and ecosystem services – Perspectives from mining, megaprojects and environmental education". *University of Valle – Editorial program*. 2013.

Journal paper:

2. **SA. Redondo**, LA. Camacho. "Development of a simplified model for pathogen transport in riverbank filtration". *Latin-American hydrogeology magazine*. v.7, p. 11-16. 2010.

Conferences:

3. **SA. Redondo**, CA. Rodríguez, HD. Aristizábal, JA. Millán, J. Rojas, J. López. "Delimitation of the riparian buffer zone and flood zones in the Magdalena river, Colombia, in 13 riverside towns". *VIII Regional symposium about river hydraulics. National University of Córdoba. Argentina*. 2017.
4. **SA. Redondo**, EA. Rodríguez. "Hydrological uncertainty in environmental flow methodologies based on historic records". *HydroEco2011, Vienna, Austria*. 2011.
5. **SA. Redondo**, EA. Rodríguez. "Uncertainty analysis on hydrologic methods for environmental flow estimation". *XIX National seminar of hydraulics and hydrology. Colombian society of engineers*. 2011.
6. **SA. Redondo**, LA. Camacho. "Development of a simplified model for pathogen transport in riverbank filtration". *III Colombian congress of hydrogeology. Colombian Association of hydrogeologists*. 2010.

Press:

7. **SA. Redondo**, CA. Rodríguez. "Recommendations about hydrological design for maintaining in good shape the country's roadways". *Infrastructure and development*. No. 47. Pp. 20-21. 2012.
8. **SA. Redondo**, CA. Rodríguez. "Reflections about the design of roadway drainage structures before flood events". *Engineering annals*. No.921. Pp. 68-77. 2012.

## AWARDS:

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Meritorious mention of thesis

March 2011

- Given to the works that "represent a significant contribution to knowledge or assume new solutions to problems".

Scholarship for outstanding graduate students

February 2010-December 2011