

**VINCENT COOPER****Lecturer, Environmental Engineering  
Department of Civil and Environmental Engineering**

<b>QUALIFICATIONS:</b>	PhD (Applied Hydrology)	McGill University	2002
	M. Eng. ( with Environmental Engineering)	McGill University	1994
	M.A.Sc. (Applied Hydrology)	Technical University of Nova Scotia	1987
	B.Sc. (Civil Engineering)	U.W.I.	1983
<b>EXPERIENCE</b>	Lecturer	Department of Civil & Environmental Engineering	2002-
	Assistant Lecturer	Same	2000-2002
	Research Assistant	Same	1999-2000
	Project Engineer	Drainage Project Implementation Unit, Ministry of Works	1998-1999
	Operations Engineer	Water Resources Agency	1990-1992
	Drainage Engineer	Drainage Division, Ministry of Works	1983-1990

**CURRENT DUTIES****Academic****Teaching and Academic Supervision:**1<sup>st</sup> Examiner for:

CVNG2011—Engineering Hydrology  
 CVNG3007—Environmental Engineering  
 CIEN6000—Advanced Environmental Engineering  
 CVNG3016—Environmental Engineering Systems Design  
 ENGR6004—Solid Waste Management

Examiner for:

CVNG3020—Design Project (Environmental)  
 CVNG3021—Special Investigative Project (Environmental)  
 CVNG3008—Environmental Engineering II  
 CIEN6005— Civil Engineering Design  
 CIEN6011—Water Resources Metrics  
 COEM6020—Research Methods  
 ENGR6003—Research Project

**Administrative**

Acting Head of Department (August, 2017)

Programme Coordinators for:

M.Sc. Environmental Engineering;  
 M.Sc. Water and Wastewater Services Management

## PUBLICATIONS

### Refereed Journals and Conference Papers

1. Jaramillo, F., Baccard, M., Narinesingh, P., Gaskin, S. and **Cooper, V.** (2015). Assessing the role of a limestone quarry as sediment source in a developing tropical catchment. *Land Degrad. & Dev.* DOI: 10.1002/ldr.2347  
**Impact Factor 8.734; Citations 6**
2. Phillip, D.A.T., Antoine, P., **Cooper, V.A.**, Francis, L., Mangal, E., Seepersad, N., Ragoo, R., Ramsaran, R., Singh, I. and Ramsabhag, A. (2009). Impact of recreation on recreational water quality of a small tropical stream. *J. Environ. Monit.*, **11**, 1192 – 1198.  
**Impact Factor 2.461; Citations 14**
3. **Cooper, V.A.**, Nguyen, V. T. V. and Nicell, J. (2007). Calibration of Conceptual Rainfall Runoff Models Using Global Optimisation Methods with Hydrologic Process-Based Parameter Constraints. *Journal of Hydrology*, *334(3-4)*, p455-466.  
**Impact Factor 4.043 (over five years); Citations 46**
4. **Cooper, V.A.**, Nguyen, V. T. V. and Nicell, J., (1997). Evaluation of global optimization methods for conceptual rainfall-runoff model calibration, *Water Science and Technology*, *36(5)*, p53-60.  
**Impact Factor 1.297 (over five years); Citation, 115.**
5. **Cooper, V. A.** and Nicell, J. A., (1996). Removal of phenols from a foundry wastewater using horseradish peroxidase, *Wat. Research*, *30(4)*, p954-960. **Impact Factor 7.715 (over five years); Citations: 213**

### Conference Papers

1. Cooper, V., (2015). Material retrieval rates in a semi-regulated environment: The case of Trinidad and Tobago. Conference proceedings of the ISWA World Congress. Antwerp, Belgium, September 2015.
2. Jaramillo, F., **Cooper, V.A.** and Gaskin, S. (2007). Application of the Erosion 3-D model to a developing catchment. *Conference Proceedings, 11<sup>th</sup> International Conference on Diffuse Pollution, August 26-31, Belo Horizonte, M.G., Brazil.*
3. **Cooper, V. A.**, Waller, D. H. and Rowney, C., (1989). A comparative evaluation of four runoff algorithms in the QUALHYMO model, *Proceedings Canadian Water Resources Association 42<sup>nd</sup> Annual Conference, Halifax, Nova Scotia.*

## CONFERENCE AND WORKSHOP PRESENTATIONS

1. Presented paper entitled: “Material retrieval rates in a semi-regulated environment: The case of Trinidad and Tobago.” International Solid Waste Association Congress, Antwerp, Belgium, September 7-9<sup>th</sup>, 2015.
2. Presented paper entitled: “Application of the Erosion 3-D Model” at 11<sup>th</sup> International Conference on Diffuse Pollution. Belo Horizonte, M.G., Brazil, August 26-31, 2007.
3. Delivered a 3-day workshop on Production of Flood Hazard Maps. Presented to engineers and senior technicians from St. Lucia and Grenada. *Sponsored by the Caribbean Development Bank and hosted by NEMO, St. Lucia, Castries, St. Lucia, September, 2005.*
4. Flood Hazard Mapping in the San Juan River Catchment at *Flood Simulation Seminar, Caribbean Disaster Mitigation Project, hosted by the Caribbean Institute of Meteorology and Hydrology, Barbados, May, 2004.*
5. Flood Identification and Mapping, *Natural Hazard Disaster Mitigation and Integrated Development Planning, NEMA, November, 1999.*
6. Comparison of global optimization methods for conceptual Rainfall-Runoff model calibration, *4<sup>th</sup> International Symposium on Systems Analysis and Computing in Water Quality Management, Quebec City, June, 1997.*
7. Enzyme catalyzed polymerization and precipitation of phenols from a foundry wastewater, *9<sup>th</sup> Eastern Region Conference, Canadian Association on Water Quality, Sherbrooke, Canada, October, 1993.*

## Technical reports

1. **Cooper, V.A., 2015.** Feasibility Studies and Design Consultancy Services for the Improvements to Diego Martin Highway / Western Main Road Intersection and Related Improvements—Drainage Study (~100 pages). For Trintoplan in collaboration with MMM. Client Highways Division, Ministry of Works and Transport.
2. **Cooper, V.A., 2010.** Drainage expert representing UWI to assess the impact of extreme rainfall on infrastructure, on Tortola, British Virgin Islands.
3. **Cooper, V.A., 2009.** Development of a water resources management plan for the restoration of the Nariva Swamp (70 pages). Report submitted to the Environmental Management Authority, Government of the Republic of Trinidad and Tobago.
4. **Cooper, V.A., 2009.** Development of a flood map for the Johnson Ghut, Tortola, BVI (40 pages). Report and associated flood maps submitted to the Government of the British Virgin Islands.
5. **Cooper, V.A., 2008.** Development of flood maps for the Turks and Caicos Islands (27 pages). Report and associated flood maps submitted to the Government of the Turks and Caicos Islands.
6. **Cooper, V. A. and Opadeyi, J., January, 2006.** Flood hazard map of St. Lucia (26 pp). Report and associated Flood Hazard Maps submitted to the Caribbean Development Bank for the Government of St. Lucia.

7. **Cooper, V. A.** and Opadeyi, J, January, 2006. Flood hazard map of Grenada (29 pp). Report and associated Flood Hazard Maps submitted to the Caribbean Development Bank for the Government of Grenada.
8. Manual for the production of flood hazard maps in the Caribbean, October 2005. Contribution of a chapter on the hydrology and hydraulic of flood mapping. Submitted to the Caribbean Disaster Emergency Response Agency (CDERA).
9. **Cooper, V. A.**, May 2004. Flood Hazard Mapping of the San Juan River Catchment: Hydrologic analysis (45 pp). Draft report submitted to CDERA.
10. **Cooper, V. A.**, May 2004. Flood Hazard Mapping of the San Juan River Catchment: Hydraulic analysis (48 pp). Draft report submitted to CDERA.
11. **Cooper, V.A.**, July 2003. November 05 2002 Flood in St. Joseph River Catchment: Hydrologic Analysis. (25 pp). Submitted to the Drainage Division, Ministry of Works and Transport, Government of the Republic of Trinidad and Tobago.
12. **Cooper, V.A.**, September 2003. November 05 2002 Flood in St. Joseph River Catchment: Hydraulic Analysis. (18 pp). Submitted to the Drainage Division, Ministry of Works and Transport Government of the Republic of Trinidad and Tobago.

## **RESEARCH:**

Main areas of research in:

1. Quantification of the hydrologic response of catchments in the Caribbean and the development of hydrologic tools for practising engineers;
2. Estimation of pollutant loadings from non-point sources.

### **1. Hydrologic Response of Catchments and Development of Hydrologic Tools**

#### Establishment of an Experimental Catchment:

In collaboration with the Water Resources Agency, WASA, a \$150,000 (TT) grant from UNESCO was obtained in 2006 for procurement of instrumentation for establishing the St. Joseph River Catchment as an experimental catchment. Projects undertaken to date are:

#### RDI Project Team Member: Terrestrial Flood Risk and Climate Change in the Caroni River Basin: Adaptation Measures for Vulnerable Communities:

Supervision of M.Sc. theses on:

- a. Investigation of the Optimal design frequency for flood mitigative works along St. Joseph River. Student **Vishnawath Maraj**. Completed 2015
- b. The application of a HEC-HMS SMA continuous hydrologic model towards assessing the effectiveness of an early flood warning system for the St. Joseph River Catchment. Student **John Monrose**. Completed 2015.

Water-aCCSIS, a research project conducted by CERMES on improvement of water management and climate change adaptation of Caribbean states

Performed study on the effects of climate change on hydrologic response of Nariva Swamp.

## 2. Estimation of Pollutant Loadings from non-point sources

- a. Estimation of the pollutant loading from an urban catchment. Student **Mr. Travis Sooknanan; Mr. Rajiv Mootiram**. Work in progress.
- b. Estimation of the pollutant loading from highways. Student **Ms. Franschesque Manikchand**. Work in progress.

### RDI Project Team Member: Environmental Impact of the Guanapo Landfill

Supervision of M.Sc. theses on:

- a. Determination of the transport and fate of pollutants in surface waters draining the Guanapo Landfill. Student **Ms. Denece Dawkins** Completed in 2014.
- b. The effectiveness of coagulation in the treatment of leachate from the Guanapo Landfill. Student **Mr. Adrien Edo** Completed in 2014.

## SUPERVISION OF GRADUATE STUDENTS

### **Ph.D. Supervision**

1. Hydrologic response of steep tropical catchments with unplanned developments. Student Paul Hinds (Thesis corrections to be completed by October 2017.)

### **M.Sc. Supervision**

1. Characterization of runoff from a composite sub-catchment across varying seasons in Macoya, Trinidad. **Student Rajiv Mootiram**. Completed in 2016
2. Contribution of urbanization to heavy metals loadings in stormwater. **Student Travis Sooknanan**. Completed in 2017.
3. Investigation of the optimal design frequency for flood mitigation works along the St. Joseph River. **Student Vishwanath Maraj**. Completed in 2015.
4. The application of a HEC-HMS SMA continuous hydrologic model towards assessing the effectiveness of an early flood warning system for the St. Joseph River Catchment. **Student John Monroe**. Completed in 2015.
5. Determination of the economic feasibility of collecting plastics in the Tunapuna/Piarco Regional Corporation. **Student Shanta Ramnarine**. Completed in 2016.
6. Development of a methodology for creation of a recycling depot network for the City of San Fernando. **Student Arianna Kissoon**. Completed in 2015.
7. Determination of the transport and fate of pollutants of the Guanapo River Catchment. Student **Denece Dawkins**. Completed in 2014.
8. The effectiveness of coagulation in the treatment of leachate from the Guanapo Landfill. **Student Adrien Edo**. Completed in 2014.
9. Development of a flood hazard map for the St. Joseph River Catchment. Student **Erland Alleyne**. Completed in 2014.
10. Data driven analysis of chlorine decay in the effluent discharge of a chlor-alkali plant. **Keisha Barcellos**. Completed in 2014.

11. Development of design storms for drainage designs in Trinidad and Tobago  
**Avinash Ramswarup**. Completed in 2014.
12. Investigation of reduction of power consumption by the optimization of oxygen usage in the bio-reactors at the Beetham Wastewater Treatment Plant. Student **Khadia Alfred**. Completed in 2013.
13. **Tamira Lalchand, M.Sc.** Environmental Engineering student investigating the pre-treatment of oil and grease from the food industry for treatment in a municipal wastewater treatment plant. (Co-supervision) Completed in 2011.
14. **Kavita Singh, M.Sc.** Environmental Engineering student investigating the treatability of leachates from the Forres Park Landfill in a municipal wastewater treatment plant. (Co-supervision) Completed in 2011.
15. **Roshni Seeramsingh, M.Sc.** Environmental Engineering student modelling the urban hydrology of a sub-catchment in the Chaguanas Borough. (Co-supervision) Completed in 2011.
16. **Matthieu Baccard, M.Sc.** thesis student, McGill University, investigating bedload contribution of a quarry to a river in the Northern Range. (Co-supervision) Completed in 2011.
17. **Shiva Maharaj, M.Sc.** Environmental Engineering student, investigating the quality of irrigation water being used in the Maloney agricultural region. (Co-supervision) Completed in 2010.
18. **Geoffrey Vaughn, M.Sc.** Construction Engineering and Management student, investigating maintenance programme development for the seawall in Georgetown, Guyana. Completed in 2009
19. **Ricardo Ramdin, M.Sc** Environmental Engineering student, UWI, investigating aquifer recharge in the Caparo River Basin. Completed in 2008.
20. **Dillon Tadis, M.Sc.** Environmental Engineering student, UWI, investigating the mechanism of re-suspension of pathogens in recreational waters. (Co-supervision) Complete in 2008.
21. **Kerri Sukbir, M.Sc.** Environmental Engineering student, UWI, investigating the hydraulic efficiency of the process for iron removal in water treatment plants in Central and South Trinidad. Completed in 2008
22. **Fernando Jaramillo, M.Sc.** thesis student, McGill University (see Research Activities for project description). (Co-supervision) Completed in 2007.
23. **Vishram Ramlakhan** research project for the **M.Sc.** Construction Management. Thesis title: “The development of the Point Lisas Industrial Estate and the role of the Water and Sewerage Authority in water demand.” Completed in 2007.
24. **Devin Hayward, M.Sc.** thesis student, McGill University (research on the informal recycling sector in North Trinidad. (Co-supervision) Completed in 2006.
25. **Kameel Virjee, Ph.D.** student, McGill University (guided his fieldwork on the willingness to pay for water). (Co-supervision) Completed in 2006
26. **Judy Francis, M.Sc.** Management of Tropical Environments—research on the Conjunctive use Water Management Opportunity in the Caura Watershed in North Trinidad. Completed in 2005.

## **OUTREACH:**

### **EDULINK Programme for Capacity Building in the Water Sector in the Caribbean (2009-2012)**

In conjunction with the UNESCO-IHE as lead partner and the WASA as the governmental institution, funding for a project for the building of capacity of the water sector in the Caribbean Region was won. The project, worth about **EUR 500,000**, aimed at developing various graduate and undergraduate programmes in water and the delivery of several short courses, to address deficiencies in training for water resources management, including water supply, wastewater treatment, pollution control and river basin management.

### **Collaboration with International Universities**

Research collaboration has been established with the Department of Civil Engineering and Applied Mechanics, **McGill University** and **since 2005 four (4) graduate students** have been attached to the Department for their fieldwork.

## **OTHER RELEVANT PROFESSIONAL EXPERIENCE**

1. Project Engineer, Drainage Division, Ministry of Works, 1998-1999
2. Operations Engineer, Water Resources Agency, 1990-1992
3. Drainage Engineer, Drainage Division, Ministry of Works and Transport, 1983-1990.

## **PUBLIC/PROFESSIONAL SERVICE**

1. **Hydrologic specialist.** Impact of climate change on the hydrologic response of Nariva Catchment System. Report for the Water-aCCSIS research project conducted by CERMES on improvement of water management and climate change adaptation of Caribbean states. (June, 2017)
2. **Hydrologic specialist** on the UWI team performing the hazard assessment of sites proposed by the Dominican Government for the resettlement of displaced communities in the aftermath of Tropical Storm Erika. (February 2016—).
3. **UWI Representative** on the Steering Committee on the South Oropouche River Basin study being performed by Royal Haskoning. (November 2015—)
4. **Hydrologic expert** for UWI to investigate the collapse of the Pond Casse Road, Dominica (2013)
5. **Local coordinator** for the development of six 1-week short courses for local and regional professionals on water supply, wastewater treatment plant modelling and flooding and its mitigation, held at the Faculty of Engineering, between June and October 2012.
6. **Reviewer** of manuscripts for ICE Journal of Water Management (2009—).
7. **Reviewer** on Drainage Division Steering Committee for the consultancy for the Ortoire River Basin Study.
8. **Co-Leader of the UWI technical team** contracted by the EMA for the development of a water resources management plan for the restoration of the Nariva Swamp. (January, 2008 to February 2009).

9. **Development** of an alternative drainage infrastructure design for the St. Augustine Campus. Report submitted in March, 2007.
10. **Design** of erosion protection works on the Roseau River Bank to protect the UWI Centre, Dominica, Draft report submitted in April 2006.
11. **Member on a Cabinet appointed technical evaluation committee** of tenders submitted for the integrated solid waste management plan for Trinidad and Tobago (September, 2006 to March, 2007)
8. **Developed** a 3-day workshop on Production of Flood Hazard Maps. Presented to engineers and senior technicians from St. Lucia and Grenada. *Sponsored by the Caribbean Development Bank and hosted by NEMO, St. Lucia, Castries, St. Lucia, September, 2005.*
12. **Member on a Cabinet appointed committee** for the formulation of a hillside development policy for Trinidad and Tobago (2004 to 2006),
13. **Technical advisor** to the Basin Flood Hazard Mitigation Committee of the San Juan River Basin Community, (2004-2005)
14. **Regional team member** (representing UWI-St. Augustine), flood hazard mapping on the CADM project, administered by CDERA (2002-2005).
15. **Secretary, Organising Committee** for the 6<sup>th</sup> Caribbean Conference on Fluid Dynamics, held in January, 2004, at UWI, St. Augustine.
16. **Member, Drainage Code Committee**, for the Board of Engineers of Trinidad and Tobago, (2002 – 2006).
17. **UWI coordinator** for the Youth Water Forum, as part of the public consultation on the document entitled “Draft national water resources management policy,” (March 2003).
18. **Department coordinator** of Water Day 2002 (October 2002).

#### **PROFESSIONAL AFFILIATIONS**

1. Registered Engineer, Board of Engineers of Trinidad and Tobago.
2. Member, International Association of Water Quality.