

RESEARCH AIMS

- To involve new aspects of fundamental physics and fluid mechanics coupled with life sciences.
- To tackle long-standing problems directly applied to biosystems, agricultural and environmental fields.



RESEARCH FACILITIES

- Computational Fluid Dynamics (CFD) software
- Particle Image Velocimetry (PIV)
- Particle Tracking Velocimetry (PTV)
- Geographical Information Systems (GIS)
- Biochemical-physical coupled mathematical models
- YSI Fluorometer, Pyranometer, and HOBO Weather Station

CONTACT INFORMATION

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**NSERC
CRSNG**

INDUSTRY COLLABORATORS



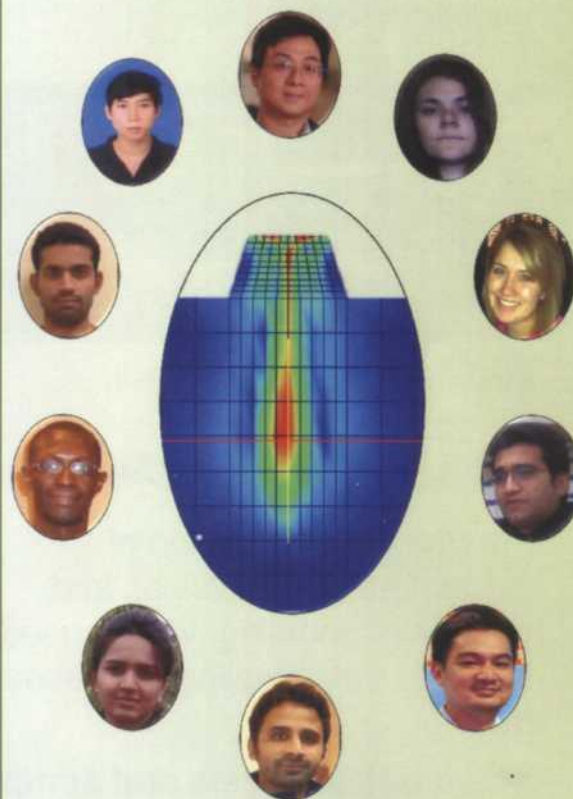
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FACULTY OF AGRICULTURE

BIOFLUIDS AND BIOSYSTEMS MODELING LAB

**Laboratoire de Bio-fluides et de
Modélisation des Bio-systèmes**



"Start small, think tall..."

ABOUT

The Biofluids and Biosystems Modeling Lab (BBML) was officially created in September 2013 based on two CFI (Canada Foundation for Innovation) grants for Dr. Tri Nguyen-Quang's research. The lab continues to be developed and operated thanks to other NSERC (Natural Sciences and Engineering Research Council) funding grants.



Particle Image Velocimetry in BBML

RESEARCH PROGRAM

The tri-focus orientation of experimental, theoretical, and numerical modeling, will be used to deal with the following five research themes.

1. Ecological bursts and complex natural patterns:

This theme of research will cope with microorganism dynamics in fluid and porous media, with applications to water quality, water monitoring, and distribution systems.



Algal bloom in Yarmouth, NS

2. Sustainable irrigation, Precision Agriculture and fluid flow patterns:

This research will deal with optimal irrigation and irrigating efficiency. This will require a panorama of combined factors such as soil properties, field topography, crop need, water flow characteristics and environmental factors. Mathematical and physical modeling will be used.

3. Pattern recognition by Bayesian Statistical Modeling:

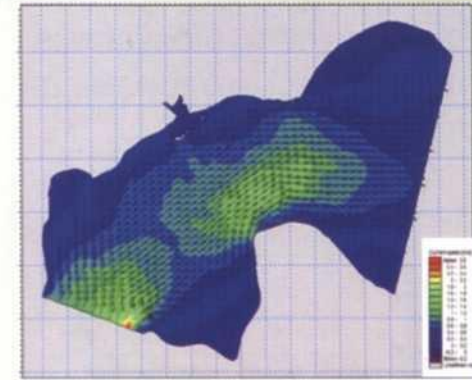
This research aims to provide a reasonable answer for all possible natural inputs and to match them, taking into account their statistical variation with applications in agriculture and human disease diagnosis via imaging techniques.

4. Modeling in production: management, operation and optimization:

In collaboration with the Department of Industrial Engineering, Dalhousie University, this research will focus on the ergonomic factors and human-centered analysis approach.

5. Coastal dynamics and coastal ecosystem evolution:

Developed with the University of Moncton and the University of Quebec, this research will focus on vulnerable coastal areas of Quebec and New Brunswick.



Calculated distribution of velocity and flow direction for eroded area of Bouctouche, New Brunswick

TRAINING PHILOSOPHY

The advisor's accessibility, team spirit, frankness, and an open mind, all play key roles in the BBML training philosophy.

Critical aspects of BBML training plans therefore include the multi-disciplinary and trans-discipline nature of the various subjects covered and methodologies used to interact, exchange ideas and views, and collaborate closely in a common and truly multidisciplinary research approach.