



**SACEMA**  
DST/NRF Centre of Excellence in Epidemiological Modelling and Analysis

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## **SACEMA NEWSLETTER**

### **No 11: December 2008**

The SACEMA staff and students would like to wish our friends and colleagues a joyous and peaceful holiday season. We will be taking a short break from 21 December 2008 until 5 January 2009 to recharge our batteries and will hopefully be energized and ready to tackle the challenges for the New Year!

### **NEWS:**

#### **Canadian International Development Agency (CIDA) awards a R21 million grant to South Africa to assist in health policy**

The Department of Science and Technology and SACEMA announced the award of a grant of R21 million (3 million Canadian dollars) over a five-year period by the Canadian International Development Agency (CIDA) to assist in the development of health policy in the country.

This grant will assist in developing new methods and mathematical models over the next few years in the fight against the HIV/Aids epidemic and related diseases such as tuberculosis in South Africa.

In partnership with the World Health Organisation and Statistics Canada, SACEMA will develop mathematical models of diseases to increase understanding of their transmission, development and interaction. These models will use data from various studies and clinics around South Africa, and will consider issues such as the percentage of the population infected and the rate of occurrence of new infections under different policy assumptions. This includes conducting various cost-benefit analyses, thereby assisting government to address the major choices it faces regarding the most effective interventions and the associated policies.

The project will focus mainly on HIV and tuberculosis, which are two of the most common and devastating diseases in South African and the subcontinent. The infection of individuals with both of these diseases, and the ways in which this affects transmission and disease development, will be included in the study.

The grant includes bursaries to train students in the appropriate modelling techniques, contributing to the development of mathematical epidemiology skills in the country.

This grant is one of the first under a 2006 bilateral General Agreement on Development Cooperation between the Canadian and South African governments.

## New faces at SACEMA

We are delighted to welcome the following new staff and students to the wine cellar.



Lynnemore Scheepers is the new Research Manager, replacing Margaret Ward who left SACEMA in August this year. She joined SACEMA in October and was previously employed for several years in research management in the higher education sector.

Wim Delva from the University of Ghent will be spending the next three years at SACEMA completing his PhD. Wim is a medical doctor with a strong interest in statistics and epidemiological modelling of the HIV epidemic. His PhD project aims to develop and apply dynamical epidemiological models to estimate the expected impact of a partially efficacious microbicide on the HIV prevalence and HIV incidence. These models will be applied to the population of Mombasa, Kenya. Various scenarios for microbicide efficacy, coverage and adherence will be modelled. Besides these research questions related to public health. Wim is also interested in comparing stochastic models and deterministic models for the HIV epidemic in sub-Saharan Africa. In particular, he wants to use the ability of stochastic models to keep track of things, to increase the understanding of the impact of a (deterministic) model's structure and parameterization on selected outcome variables



Wim has also been instrumental in obtaining funding from the Flemish Inter-University Council for the forthcoming international conference "Can We Treat Our Way Out Of The HIV Epidemic?"



Guy Mahiane, of the University of Yaoundé, in Cameroon, is visiting SACEMA for three months while working on his PhD, on statistical models for the study of the co-infection by HIV and HSV-2 from experimental data. During his stay at SACEMA he is working together with Rachid Ouifki modelling the impact of HSV-2 infection and Male Circumcision on the HIV epidemic. The work is supervised by SACEMA associate, Prof. Bertran Auvert of the University of Versailles.

## New Master's students



Bewketu Bekele is supervised by Dr Farai Nyabadza. His thesis is titled "Modelling Tuberculosis Dynamics in children and adults".



Bilkisu Abdulra'uf Bello is supervised by Dr Brandon van der Ventel. Her thesis is titled "Theoretical modelling of drug-resistant HIV".



Geomira Sanga is also supervised by Dr Farai Nyabadza. Her thesis is titled "Modelling the detection and delayed treatment on Tuberculosis Dynamics".



Doreen Mbabazi is supervised by Dr Rachid Ouifki. Her thesis is titled "Modelling the joint epidemics of TB and HIV; the effect of exogenous reinfection".

### **Conferences/workshops attended by staff and students**

Dr Farai Nyabadza attended a short course on "Introduction to mathematical models on the epidemiology and control of infectious diseases", in London from 1 to 14 September 2008. This was a two-week course designed to introduce principles of quantitative epidemiology, estimation of epidemiological parameters and how the mathematical results translate into public health policy and decisions.

Theresia Marijani attended the AMMSI, Symposium on the African Woman and Mathematics in Maputo, Mozambique, from 29 to 30 November 2008. The theme of the conference was "Mathematics Education and the African Woman". Theresia presented a paper titled "Modelling drug resistance in Malaria".

Drs Rachid Ouifki and Farai Nyabadza both attended the SAMS conference in Durban from 5 to 8 November 2008. Farai presented a paper titled "Modelling HIV/AIDS prevention".

### **Academic Exchanges**

Dr Farai Nyabadza took part in a joint summer school held at the University of Botswana and organized by the MITACS Canada-Africa Biomathematics Network (launched in Kampala, Uganda, November 2007) as a tutor, which ran from 18 August 2008 to 29 August 2008. The school consisted of a series of lectures and tutorials on the design and analyses of models for the spread of emerging and re-emerging diseases. It also included a number of hands-on and computer exercises, together with group projects to reinforce and extend the various concepts covered during lectures.



Pictured above are Dr Farai Nyabadza and delegates of the summer school held at the University of Botswana.

Dr Farai Nyabadza also spent a week in November on a research visit to the University of KwaZulu Natal, where he is collaborating with two academics in the Department of Mathematics on a research project that deals with graph theoretic approaches to epidemic modelling.

In late October Prof John Hargrove visited Etosha Pan in northern Namibia where a team of scientists is doing research on anthrax in zebra and elephant. The team comprised workers from the Namibian National Parks Board and also from the UC Berkeley laboratory of SACEMA associate Professor Wayne Getz. The visit has led to the suggestion of a joint project to look at the question of whether flies are involved in the transmission of anthrax in some localities of southern Africa - such as Malilangwe in Zimbabwe and Kruger Park in South Africa - but not in others – such as Etosha.

The intention is to utilise the techniques developed for studying tsetse flies, by SACEMA Visiting Research Fellow Professor Glyn Vale, to sample other flies coming to and leaving the carcasses of animals that have died of anthrax.

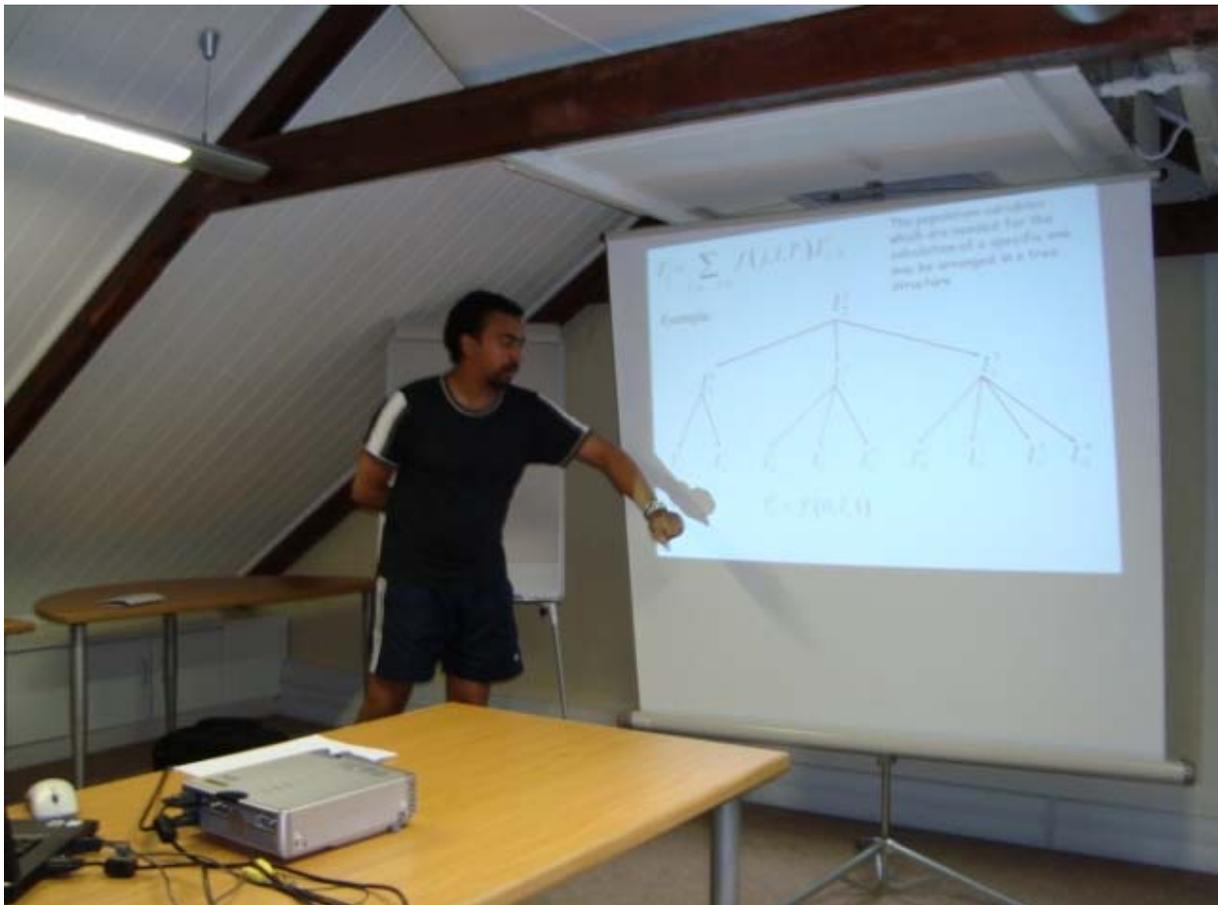
## EVENTS:

### SACEMA Seminar Series

With the work on the new loft completed, SACEMA was pleased to host the following seminars in our very own seminar room.

Mr Carel Pretorius: “Modeling the joint epidemics of TB and HIV in a South African township”.

Dr Brandon van der Ventel: “The analysis of multiple strain disease systems”.



Dr Brandon van der Ventel explains a point during his lecture on multiple strain dynamics

## **FORTHCOMING EVENTS:**

### **International Conference**

**Can We Treat Our Way Out Of The HIV Epidemic? - 6 to 8 May 2009, Stellenbosch Lodge.**

This conference is organized by the International Centre for Reproductive Health (Ghent University) and SACEMA (Stellenbosch University) in collaboration with the University of the Western Cape and the AIMS. The theme of the conference responds to the ongoing debate about the role of antiretroviral therapy for HIV prevention in Sub-Saharan Africa.

This conference aims to be a forum to present and discuss the advantages and disadvantages of this pro-active, out-of-the-box approach. By the end of the conference, HIV treatment experts, epidemiologists, health system experts and health economists will have formulated an answer to the question whether or not we can treat our way out of the HIV epidemic.

For more info and registration, visit <http://www.hivearlytreatment.org>