Research & Innovation

The UWI is a key pillar of the Region's research and innovation system. The institution provides the infrastructure, sets priorities based on national imperatives and helps to mobilise funds in support of its valuable contribution to the knowledge base of the Region.

Research conducted at the Mona Campus during the review period touched on most disciplines and focus areas such as the evaluation of information for culturally relevant groups; parenting programmes on early childhood development; the characteristics of locally advanced breast cancer in Jamaica and its response to neo-adjuvant chemotherapy: analysing seismic vulnerability, and controlling the lion fish population in Jamaica.

The Office of Sponsored Research (OSR) provides technical and administrative support to these efforts by helping to develop proposals and accessing external grants. During 2010/2011 the OSR assisted in procuring funding of J$14.3 million and formulating collaborative agreements for several projects.

Generally, the increasing challenge in identifying funding sources notwithstanding, we were successful in securing total new externally funded grants in the amount of J$484.9 million compared to J$258 million in the previous year.

Research highlights included works examining the:

- Development of new technology in food preservation;
- Protection of Jamaica's coastal waters;
- Mapping of vehicle theft and accident hot spots in Jamaica;
- Assessment of seismic vulnerability;
- Development of disease-free plant materials;
- Development of better reader in primary schools;
- Improvement to the quality of life after brain tumour surgery;
- Management of viral diseases; and
- Significant contribution of the local entertainment industry.

Research Day 2011

The UWI, Mona Campus hosted its 12th Annual Research Day on January 27 and 28, 2011, under the theme, "Supporting the Agricultural Sector, Through Teaching, Research and Entrepreneurship".

Among the many features of the event were two lectures - the annual American Friends of Jamaica (AFJ)/Cobb Family Lecture titled, "Ganja: Legalise or Not Legalise," delivered by Dr. Wendel Abel, Lecturer of the Department of Community Health and Psychiatry; and a public lecture titled, "Violence and the Jamaican Child: A Call to Action," delivered by Dr. Claudette Crawford-Brown, Lecturer in the Department of Sociology, Psychology and Social Work.

The event also saw the launch of three publications:

- Physical Impacts by Recent Hurricanes on the Coast of Jamaica, authored by Mrs. Shakira Khan-Butterfield, Research Associate and Professor Edward Robinson, Director of the Marine Geology Unit;
- Between Two Grammars by Dr. Beverley Bryan, Senior Lecturer and Head of the Department of Educational Studies and;
- Jamaican Gold, Jamaican Sprinters by Dr. Rachel Irving, Lecturer in the Basic Medical Sciences and Ms. Vilma Charlton, Lecturer in the Institute of Education.

Dr. Christopher Tufton, then Minister of Agriculture and Fisheries addresses the audience at the Opening Ceremony of Research Day 2011

Innovation

At the UWI, Mona Campus, we recognise that innovation is the key to ensuring Jamaica's and the Region's future as a world-class economic and cultural Mecca. Consequently, we have heightened our focus on research whose outcomes will have direct, tangible societal applications and impact.

Some notable outcomes of innovations which had their genesis in previous years include:

Cardiac Surgery Simulator

Developed by UWI, Mona Faculty members Dr. Paul Ramphal and Dr. Daniel Coore, the Cardiac Surgery Simulator demonstrates the true depth of the innovative capacity and intellectual genius that resides at Mona. Over the last four years we have been demonstrating the capabilities of the simulator to hundreds of surgical residents and thoracic surgical Programme Directors at special symposia and meetings all over the United States, and interest in its use has come in from as far as away as Melbourne, Australia.

The innovation provides a highly realistic training environment for surgical residents and is capable of enabling the practice of routine as well as unusual surgical procedures. There is no exposure of a human patient to any danger since the simulator uses porcine hearts from animals slaughtered for consumption.

Dr. Paul Ramphal and Dr. Daniel Coore, Inventors, the Cardiac Surgery Simulator

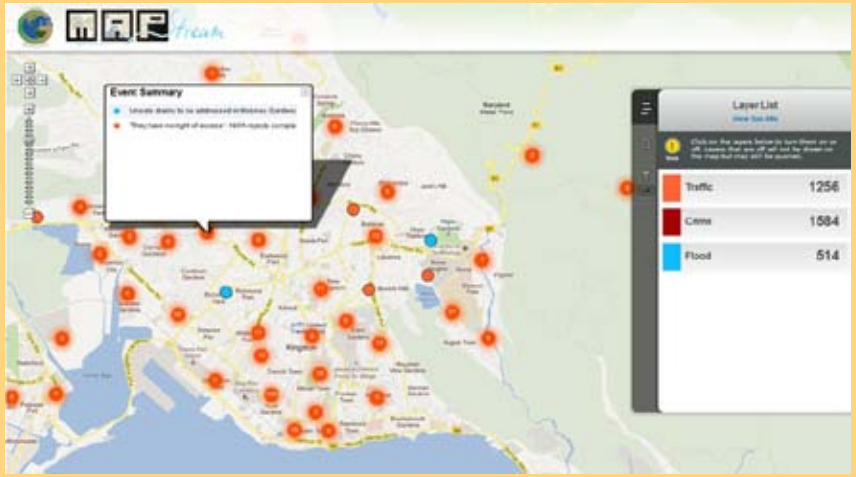
GPS Technology – Blackberry

GasLo signals Mona Geoinformatics Institute's (MGI) debut into the mobile programming world. GasLo is a Blackberry mobile application that allows users to find the cheapest gas stations closest to their location.

Even if the phone is not equipped with GPS technology, the motorist may use the application to locate gas stations. The application will be updated weekly to ensure the delivery of current information. The application unites GIS and Computer Science in a fashion that continues a trend that started long ago at MGI.

Mapstream

Mapstream is a new framework being developed in an attempt to extract information from social data streams (such as Twitter and Facebook) and present it in a meaningful geographic context. The result will be the creation of a tool that can help to 'map' social trends. For example, it will allow the system to acknowledge trending reports of flooding in a certain area on Twitter or Facebook, and show this occurrence live on a map.



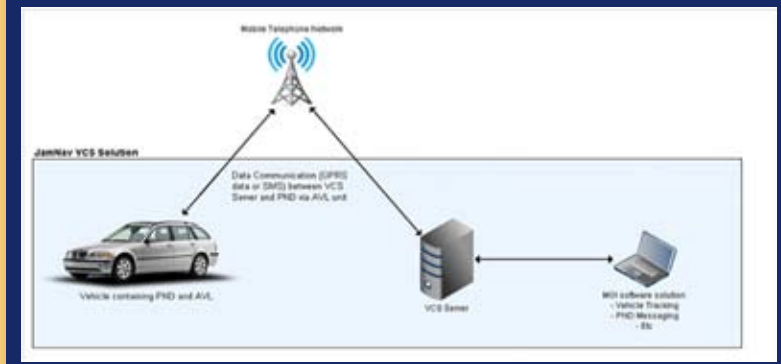
JAMNAV - VCS

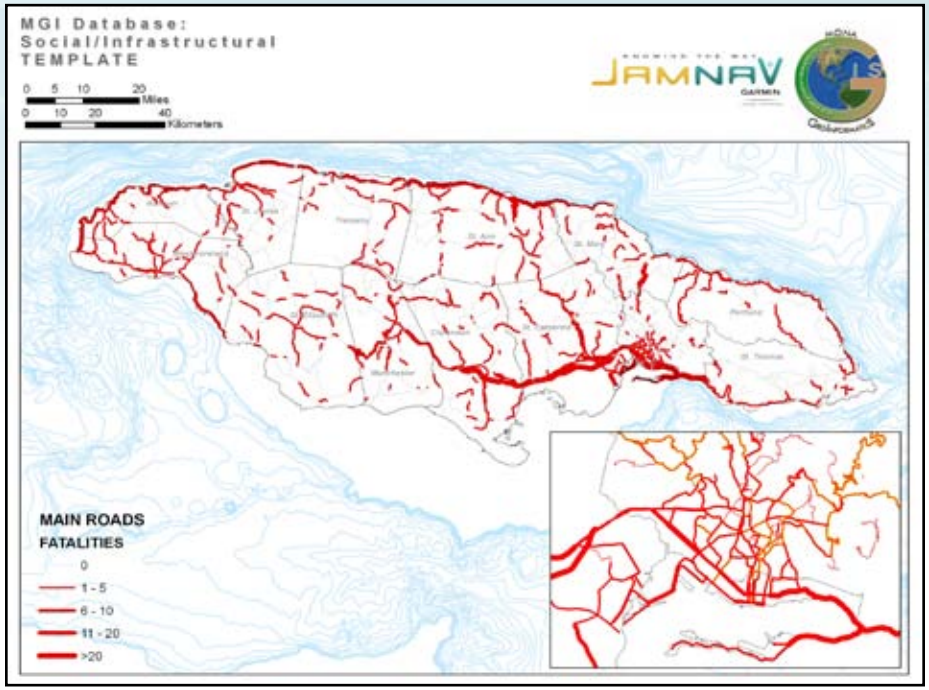
Mona Geoinformatics Institute (MGI) will soon release another cutting edge solution for the business sector which is derived from MGI's pioneering and successful JAMNAV, a GPS navigational product.

The merger of the GPS navigation and GPS tracking platforms has created JAMNAV–VCS (vehicle concierge service) which adds the interactive link which had been missing from conventional fleet management and tracking systems in the island.

MGI in partnership with security giant Hawkeye Electronic Security Limited, are preparing to launch this product in response to the needs of the fleet management market. There is confirmed interest in the product from leading private security courier, logistics and emergency response companies as well as national security interests.

Fleet managers will have full control of their systems, managing dispatch, routing and communication with their vehicles via web-based portal.





Road Safety Initiative

MGI is currently mapping more than 70,000 road accidents across Jamaica, dating back to the 1930s. In keeping with an evidence-based approach to solving problems, MGI has used GIS to evaluate spatial trends and accident patterns. These analyses have so far identified Jamaica's most dangerous roadways. This information is valuable to the National Road Safety Council (NRSC) and insurance companies alike.

MGI has also examined the correlation between road crashes and socio-demographic and economic activities within communities, with the objective of providing solutions for the increasing number of road accidents.

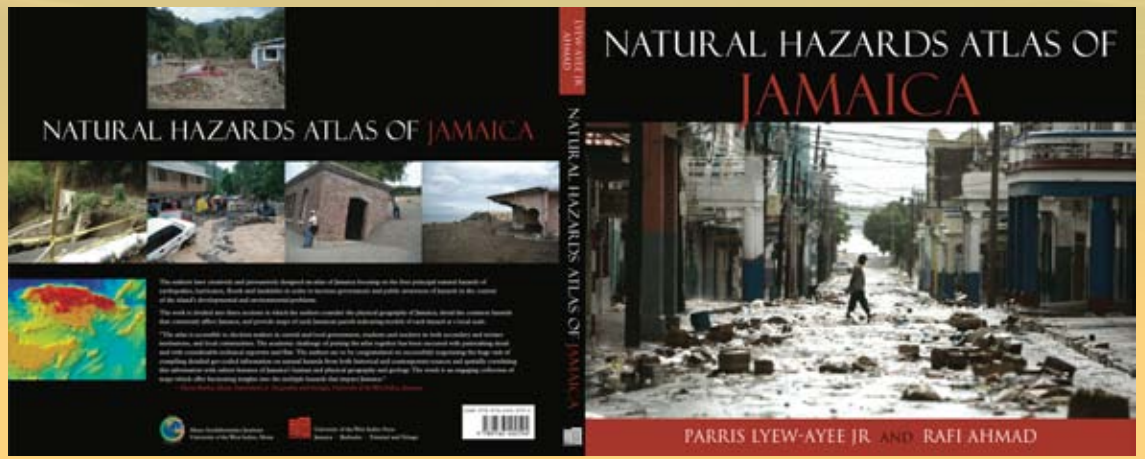
It is hoped that these analyses will raise awareness of the need to implement effective measures to reduce the vulnerability of road users. Plans are also underway to set up a subsidiary of MGI, which will focus on mapping and analysing road accidents and accordingly promote road safety.

Natural Hazards Atlas

The Mona GeoInformatics Institute and the Unit for Disaster Studies (UDS), have created an extensive hazards database containing geo-physical base data, modelled hazards and derived data, field-collected data and archived information.

These data, along with complementary information from sources, such as Mines and Geology Division, Water Resources Authority and the National Environment and Planning Agency are showcased in this Natural Hazards Atlas.

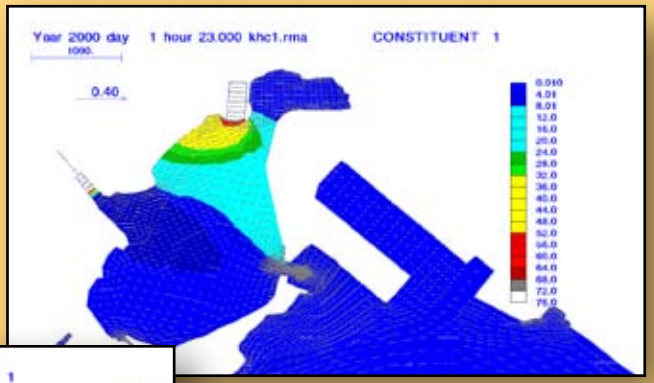
The Atlas presents existing research and information on hazards in Jamaica, in a jargon-free, easy-to-use manner for the general public. The three-part Atlas published by UWI Press, details the physical geography of Jamaica; earthquake, hurricane, flood, and landslide hazards that commonly affect the Island; and also showcases parish hazard maps and summaries.



Oil Spill and Invasive Dynamics

Jamaica's main ports in Kingston and Montego Bay are the focus of a study using numerical modelling techniques to simulate coastal processes and their effect on environmentally challenging scenarios such as dispersion of invasive species and oil spills. The results will enable scientists to improve predictions about the environment, better informing mitigation strategies for reducing vulnerability.

Circulation modeling applications being developed by Dr. Ava Maxam, with potential application in oil spill modeling and water pollution - showing sediment distribution from rivers flowing into Hunt's Bay and current vectors depicting circulation.



Classification of Fish Sanctuaries across Jamaica

MGI is supporting the Fisheries Division, Ministry of Agriculture, by creating an ecological baseline for fish sanctuaries. Using remotely sensed satellite imagery derivatives, signatures for identifying crucial marine fish habitats such as mangroves, sea grass and coral reefs, will be developed. Through these signatures, the extent and health of each habitat in existing sanctuaries will be determined. This classification will better inform the Ministry on developing policies for improving the effectiveness of sanctuaries in protecting the Island's vital marine resources.

Disaster Simulation Software

An Emergency Response Planning (ERP) Disaster Simulation Software (DSS) system has been developed by the Mona Geoinformatics Institute for the Jamaica Social Investment Fund (JSIF) as a hazard evaluator tool.

The application functions as an interactive natural hazards system for Jamaica with the primary goal being to motivate the public into action in implementing preventative measures for securing life and property against the damaging effects of natural hazards. This is done by linking a hazards interactive map with a game-based hazards simulator, visualizing the effects of hazards in a manner that is realistic and interactive.

Dr. Marcia Roye, lecturer in Biotechnology, recipient of the L'Oréal-UNESCO Special Fellowship for following "In the Footsteps of Marie Curie". The award was accompanied by a personal grant of 30,000 Euro, and was presented to Dr. Roye on March 2, 2011 at the International Fellowship Ceremony, during For Women in Science Week in Paris, France.

Recipients of Awards at the Annual Research Day Ceremony, January 28, 2011