Issue 4

October 2008

THE MARINE GEOLOGY UNIT
UWI, MONA

ShoreLines

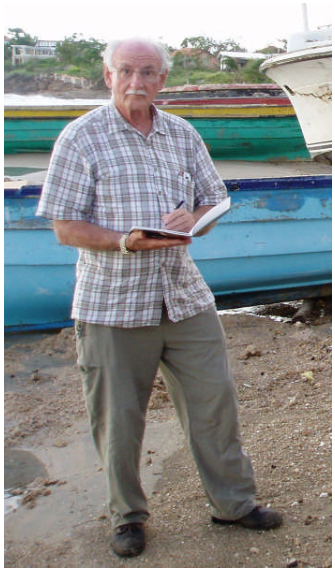
EDITORIAL: The Marine Geology Unit presents ShoreLines, a newsletter which provides a forum to share our activities from May to September 2008, with interested parties.

Jamaica's third highest honour, The National Order of Merit (OM)

Heading the list of 100 recipients to receive national honours and awards this year, Professor Edward Robinson of the Marine Geology Unit has been conferred with Jamaica's third highest honour, The Order of Merit (OM).

Professor E. Robinson - Central Inlier 1957

As a professional educator, researcher, author, international consultant, administrator, Professor Robinson has made significant contributions in the earth sciences including paleontology, oceanography, mineral and energy resources and environmental and engineering geology. This award recognizes his notable service, his dedication, his humility, and especially his 52 years of leadership in his beloved field of Geology.



Professor E. Robinson - Order of merit

He was instrumental in the formation of the Department of Geology at UWI, Mona in the early 1960's, appointed Lecturer in 1961, then Senior Lecturer and Head in 1965, Reader in 1974 and Professor in 1976. Guiding more than two generations of geologists, many of who now occupy leadership positions in public and private sectors, science and academics.

He currently holds the title of Emeritus Professor of Geology at the University of the West Indies, Mona and is the Head of the Marine Geology Unit, UWI Mona where he is still an active researcher, contributing valuable insights into the coastal processes and activities of Jamaica's marine environment.

The award will be presented on National Heroes Day on October 20th, 2008.

Inside this issue:

Sea-level rise, Beach erosion and Long Bay

In light of current concerns about the possible effects of sea-level rise, the Marine Geology Unit undertook an investigation on the elevation of the barrier beach complex making up the Negril strip above sea-level.

Oblique aerial photograph of the Long Bay barrier beach complex (N. Butterfield).

The field survey consisted of generating some 200 networked elevation points tied to a reference point and an average sea-level. This was accompanied by preliminary analysis of aerial photographs and satellite imagery to determine the magnitude and disposition of shoreline changes over the past forty five years.

The survey showed that most of the southern section of Long Bay on the seaward side of the main road is less than 2 metres and in some places less than 1.5m above sea-level. Detailed photo analysis also revealed two "hot spots" one between Conch Hill and the northern boundary of Swept Away, and the other centered on the UDC Beach Park.

Assuming that future erosion rates will be directly linked to future rates of sea-level rise, then average projections for the whole of Long Bay, using the base year of 2003 as a starting point, are suggested to be as much as 3.5m to 5m by 2015, 9 to 14m by 2030 and 17 to 32m by 2050. In the hot spots recession is likely to be much higher.

Unit Activities

Conference Presentation

On the 10th of July, Professor Robinson gave an insightful presentation entitled; Coastal hazards: Preparing for the Future, at the Geography and Geology Departmental Conference, Foundations and Directions: Celebrating Geography and Geology at the University of the West Indies.

Representing the Unit on the 22nd –28th of September Ms. Shakira Khan attended the 2nd International Tsunami Symposium in Ostuni, Italy, to give her presentation titled; Size of shoreline boulders moved and emplaced by recent hurricanes, Jamaica.

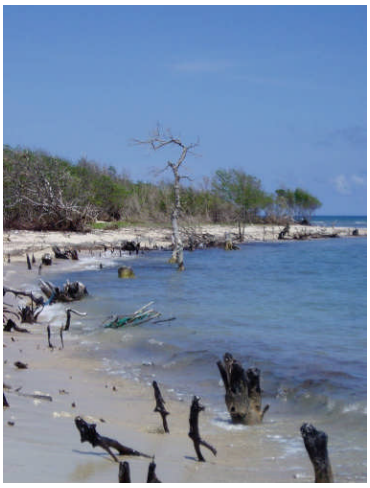
Ms. Shakira Khan giving her presentation at the 2nd I.T.S. in Ostuni, Italy

Community Out reach/ Public Awareness

The Marine Geology Unit also gave an educational presentation to the Royal Jamaica Yacht Club Summer Camp on the 17th August, 2008. The presentation was titled Geology and informed the young minds on basic principles, including rock cycles, fossils, rocks found in Jamaican, the formation of Jamaica and a brief look at a geological timescale.

Contribution to the 2nd National Communication to the UNFCCC

In response to a request from the Meteorological Service of Jamaica, The MGU has contributed to the coastal resources section on the Second National Communication to the United Nations Framework Convention on Climate Change (UNFCCC). The Unit conducted integrated assessments to determine the expected effects and vulnerability of the coastal zone, including human settlements, to the impacts of climate change and sea-level rise and the adaptation measures that will be required to mitigate these effects.



Exhumed wetland vegetation along the eastern coast, a result of coastal erosion

Five areas were chosen for closer study and assessment. These include; St. Margaret's Bay, Portland, The St. James coastline from Sangster International Airport as far east as Rose Hall, The resort area of Long Bay Negril, West End to Little Bay, Westmoreland, and Portmore, St. Catherine.

Boulders ripped off the coastal cliffs by large waves in Westmoreland

A semi-quantitative Index of Coastal Vulnerability to Sea-level rise was applied to the five study areas, along with measures for adapting to sea-level rise, the most important involving a revision of present set-back guidelines. The draft report was submitted in mid-September.

Scenes from Hurricane Gustav

Gustav originated from Tropical Depression #7 which developed in the central Caribbean on Monday August 25th 2008. By mid-afternoon on the 28th, Jamaica came to a standstill as emergency units moved into high alert to prepare for landfall of Tropical Storm Gustav with winds at 70 miles/110km per hour.

Residents remained isolated as the Harbour View bridge collapsed under the pressure of the Hope river. The bridge leads to the eastern side of the island

The first Parish to feel the brunt of its force was Portland. Residents of Manchioneal, Long Bay and Black Rock were left homeless as Gustav ravaged the area. Roadways were left impassable by sand, fallen trees and other debris. Over the rest of the island, storm surges brought strong waves in several communities while the persistent rainfall left many in devastation. A number of houses also collapsed along the Hope river and two major bridges, the Harbour view bridge in St. Andrew and the Westmoreland bridge in St. Mary had been severely damaged. At least 150 houses had been destroyed, 129 roads blocked and almost 4000 people displaced.

Looking east towards Harbour View, as waves surge onto the southern sections of the Palisadoes.

The Palisadoes road however with its new boulder revetment, was able to withstand the storm surge associated with Gustav. Despite being partially washed over in certain areas, it was not impassable.

The Palisadoes road looking west, washed over, but not impassable

THE MARINE GEOLOGY UNIT
UWI, MONA

Department of Geography & Geology
University of the West Indies
Mona
Kingston 7
Jamaica

Phone: 876-977-1441
Fax: 876--977-6029
E-mail: mgu@uwimona.edu.jm
marinegeologyunit@gmail.com

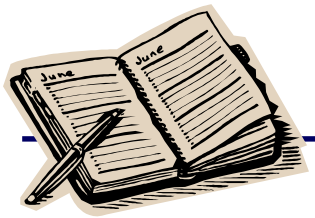
Web site:

www.mona.uwi.edu/geoggeol/mgu/home.htm

The Marine Geology Unit was formed in November 2000 as an informal unit of the Department of Geography and Geology to carry out a compilation of geological and geophysical activities in Jamaica's Exclusive Economic Zone.

THE MISSION OF THE MGU IS TO APPLY RESEARCH ON COASTAL PROCESSES AND LANDFORMS FOR THE BENEFIT OF THOSE LIVING IN AND UTILIZING THE COASTAL ZONE.

The main thrust of the Unit's programme is the application of its research expertise to the examination of processes leading to coastline changes, particularly in light of present concerns of climate change and sea level rise. The results of these investigations are applied to identifying site specific hazards of the Jamaican coastline, coastal vulnerability, and the impact on coastal communities.



Recent Presentations & Reports

Giant wave & surge deposits in the coastal zone: their emplacement and evolution and the implications for coastal management (Poster)

22nd - 29th March, 2008

18th Caribbean Geological Conference

Santo Domingo, Dominican Republic

Coastal Hazards: Preparing for the Future

7th - 11th July, 2008

Foundations & Directions: Celebrating Geography & Geology at the University of the West Indies

Kingston, Jamaica

Draft Report on a survey of elevations and beach changes at Negril, Jamaica

27th July, 2008

The Environmental Foundation of Jamaica

Emplacement and Evolution of Debris deposits on Coastal Platforms, Jamaica

1st - 3rd September, 2008

26th ISA Meeting of Sedimentologist

Bochum, Germany

Draft Report on Coastal Resources including Human Settlement

15th September, 2008

UNFCCC 2nd Communication on Climate Change

Meteorological Service of Jamaica and UNDP

Size of shoreline boulders moved and emplaced by recent hurricanes, Jamaica

22nd - 28th September, 2008

2nd International Tsunami Field Symposium

Ostoni (Puglia), Italy & Ionian Islands, Greece