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Special Lecture- 2023

Theme: **Climate Change and Flood Risk in Jamaica**

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Date: **25 July 2023**

Venue: **Diamond Harbour Women's University Campus and Conference Hall (Room No. 101), Academic Building Diamond Harbour Women's University**

Sessions:

- 🞣 **Inaugural Session**
- 🞣 **Special Lecture Session**

Session Details:

11:30-12:00 hrs: Felicitation of Guest by **Dr. Sujit Mandal, Professor,** Department of Geography, Diamond Harbour Women's University.

12:10 hrs : Welcome address by **Dr. Kapil Ghosh, HoD/Co-ordinator,** Department of Geography, Diamond Harbour Women's University

12:15 hrs : Inaugural speech by **Dr. Anindya Basu, Assistant Professor,** Department of Geography, Diamond Harbour Women's University.

12:20- 13:10 hrs : Special lecture by **Dr. Aparajita Mandal, Associate Professor**, Department of Geography and Geology, The University of West Indies, Mona, Jamaica.

Dr. Arpita Mandal talked about *Landslide susceptibility using the Frequency Ratio Method:* GIS mapping and analysis using a Frequency Ratio Model was implemented in this study to assess the contribution of conditioning factors to landslides, and to produce a landslide susceptibility map of the study area. A landslide inventory map was prepared from a database of historic landslides events. In addition, thematic maps (soil, rainfall, land cover, and geology map) and Digital Elevation Model (DEM) were prepared to examine landslide conditioning factors. The relationship between landslides and conditioning factors was statistically evaluated with FR analysis. The result shows that lithology, soil, and land cover are the most important factors generating landslides. FR values were used to produce the Landslide Susceptibility Index (LSI) and the study area was divided into zones of relative landslide susceptibility.

She also highlighted the *Riverine flood mapping methodology: Hydrological modelling in HEC HMS:* Flood-related hydrological software, including WMS and HEC-HMS, to study this issue and determine how to reduce the recurrence of flooding. The software can be used to calculate a hydrograph of torrential flows in a river drainage basin and estimate the volume of torrential water and its flow rates

on the Earth's surface. The depth of rain has been evaluated and calculated in the Unit Hydrograph for different return periods.

To analyze and model the flood risks, the HEC-RAS model was combined with the HEC-GeoRAS extension in ArcGIS. The floods were the focus of different study periods, were based on the digital elevation model and river discharge during the floods. According to the classification map of the flood depths, the areas of flood risk varied from low to very low, medium, and high to very high. HEC-HMS and HEC-RAS have been shown to have a strong correlation in evaluating flood risks and reliably forecasting future floods in the study area.

i) *GIS based flood hazard mapping for the island in case of riverine flooding.*

ii) *Discussion about different categories (Booster station, catchment, entombment, intake, production well, pump station, relift station, reservoir, river source, spring, storage tank, sump, treatment tank – NWC potable facilities; sewer ponds, sump, pump station, treatment plants, relift station – waste water facilities; asbestos cement, cast iron, concrete, crossed poly, durable iron, fibre cement, galvanized iron, other, PVC St. Cop., PVC Unpl., Polyethylene – Water pipelines) and factors of landslide, flood and potable water facilities and it's analysis.*

iii) *Probabilistic risk assessment for Jamaica: ITEC Columbia:*
Discuss the study area's infrastructure and its methods, data analysis, modelling and mapping.

After her deliberation, there was a Question-answer session and interaction with students.

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