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Hurricane Modeling Preparation and Response in the Cayman Islands Emergency Management Mapping & Analysis (EMMA)

ABSTRACT

Being able to access the likely impact of a hurricane is vital in hurricane preparation and response. The Cayman Islands Government via the Lands & Survey Department/CaymanLandInfo has integrated the TAOS storm modeling system with a real time assessment tool which uses the latest GIS server technology to make hurricane damage predictions useful before, during, and after a storm.

The TAOS system generates real time predictions of wind intensities, storm surge, and wave heights for a given storm. Lands & Survey collected extensive bathymetric and topographic data for the Cayman Islands to ensure that these TAOS predictions are as accurate as possible. A comprehensive building inventory was also completed. It includes details such as construction type, roof type, replacement cost, and overall quality. TAOS outputs can be applied against this building inventory to give both predicted structure damage and predicted financial loss information.

To make these outputs useful in an emergency situation, a user-friendly real time GIS assessment tool was developed. This tool supports the display of relevant GIS data such as parcels, roads, buildings, critical infrastructure, and aerial photography. TAOS outputs can then be projected on top of this GIS data to enable decision-makers to quickly visualize the worst hit areas. Analysis can then be conducted to determine expected wind, water, and wave levels at any location. Further damage cost analysis can be conducted on single/multiple buildings with a single click, together with the production of detailed customized reports.

Real time incidents such as structure failures and evacuations can be placed. These incidents are visually displayed on the map and are shared with other users of the assessment tool. Maps and damage reports can also be printed and exported to a variety of formats.

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