

## **POSTER PRESENTATION**

**Florida Climate Change Task Force Workshop**

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### **Storm Surge and Climate Change: the Forgotten Factor**

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Tropical cyclones cause damage through the impact of their component wind and water on the built and natural environment in their paths.

In vulnerable coastal regions most of the water damage is caused by the storm surge generated by a tropical cyclone, which is considered to be by far one of the most destructive components of said natural hazard.

The potential for damage as storm surge rushes onshore is a function of several factors including maximum wind velocity of approaching hurricane, tracking velocity of tropical cyclone system, depth of water [bathymetry], underwater topography, slope of underwater continental shelf, wave height, morphology of impacted coastal region, the influence of area-specific natural or human impact modifiers, and the characteristics of the impacted community in terms of type of construction, human activity and the prevalence of protective measures and practices or lack thereof.

In addition to its enormous potential for causing damage on impacted coastal communities, storm surge is one component of tropical cyclones that is directly linked to climate change through sea level rise. Because of this linkage storm surge may be continuously exacerbated in the future, which increases its damage causing capabilities.

Recent studies show some \$100 billion in residential properties are at risk of storm surge impact in Long Island, NY, and close to \$45 billion more in the Miami-Palm Beach coastal region. Once we consider the entire exposed USA coastline and include commercial properties and supporting infrastructure, the value at risk of being damaged by storm surge easily climbs beyond \$1.0 trillion.

Given this exposure to catastrophic damage and the prospect that it may continuously get worse in the future one would expect building and project owners, but especially design professionals, to have an arsenal of tools to characterize the potential impact of storm surge on a site-specific basis in order to establish design-criteria to build hazard-resistant buildings in coastal regions.

However, a review of standards for structural loading and building codes reveals a lack of specifics when it comes to storm surge. In fact what is generally available is long on generalities and short on actions and guidance to quantify the impacts of storm surge.

It is high time the research and building design sectors combine forces to establish clear methodology and sources of data, to allow engineers to characterize surge impact on a site-specific basis.

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