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Hurricane Research-From Storm Surge Field Surveys of Katrina, Nargis, and Haiyan to Large-Scale Laboratory Experiments



Hermann Fritz

*Professor, School of
Civil and
Environmental
Engineering, Georgia
Institute of
Technology*

Seminar Details

*Friday, September 27,
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*Online via Teams [https://
www.cive.uh.edu/
research/beyer-
distinguished-lecture](https://www.cive.uh.edu/research/beyer-distinguished-lecture)*

ABSTRACT: The presentation will discuss field observations and engineering lessons from three of the most devastating and deadliest coastal disasters in the past two decades across three basins. Hurricane Katrina (2005) struck low-lying coastlines particularly vulnerable to storm surge flooding. Maximum storm tides, overland flow depths, and inundation distances were measured along the Gulf Coast. The storm tide peaked to the East of Katrina's path exceeding in 10 meters in a few locations along the Mississippi coastline. The high water marks indicate that New Orleans's 17th Street Canal levee failed prior to overtopping. Hurricane Katrina's storm tide exceeded the corresponding envelope of Hurricane Camille (1969) at all locations. Both hurricane Katrina and cyclone Nargis struck vulnerable coastlines with major river deltas and estuaries. Tropical cyclone Nargis (Cat.4) made landfall in 2008, causing the worst natural disaster in Myanmar's recorded history. Official death toll estimates exceed 130,000 fatalities making it the 7th deadliest cyclone ever recorded worldwide. The survey by boat spanned more than 150km parallel to the cyclone track. More than 1m vertical erosion and 150 m land loss were measured at various coastal locations. Massive deforestation of mangroves were documented. Inundation distances reached beyond 50 km inland. In 2013 super typhoon (ST) Haiyan killed more than 6,000 and destroyed over a million dwellings in the central Philippines. Damage and losses from ST Haiyan were particularly high along the coasts surrounding San Pedro Bay and Tacloban. The surge heights from ST Haiyan are compared with a similar event from an unnamed typhoon in 1897, which highlights the importance of ancestral knowledge, historical awareness and education for appropriate hazard mitigation, response and evacuation.

BIOGRAPHY: Dr. Hermann Fritz is a Professor of Civil Engineering at the Georgia Institute of Technology (Georgia Tech). He is an expert of tsunamis and coastal hazards, such as hurricane storm surges, storm waves, landslides and submarine volcanic eruptions, as well as their mitigation and coastal protection. Dr. Fritz has led or participated in more than a dozen post-disaster reconnaissance campaigns encompassing tsunami, hurricane, landslide, and earthquake events. Primary Hurricane Survey: 2005 Hurricane Katrina, 2008 Tropical Cyclone Nargis (Myanmar), 2013 Typhoon (Philippines). Select Tsunami Surveys: 2004 Indian Ocean (basin wide from Indonesia to Somalia), 2010 Chile and Haiti, 2011 Japan, 2017 Greenland. Dr. Fritz has led multiple large-scale experimental projects at NHERI and NICHE facilities. Dr. Fritz obtained his Doctorate degree from the Swiss Federal Institute of Technology (ETH).