

# EMINENT SPEAKER SERIES 2010-2011

Hosted By the: NATIONAL COMMITTEE ON COASTAL AND OCEAN ENGINEERING

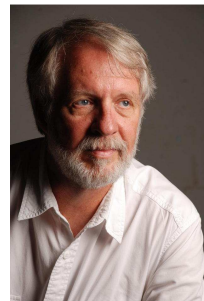
## Dr Steven Hughes

Senior Research Scientist, Colorado State University (USA)

To RSVP for all sessions:

<http://www.engineersaustralia.org.au/eminentspeaker/>

(Please note there is a \$10 charge for Non-Members to attend these presentations)



### Flood and Storm Surge Levees – design, maintenance & performance

The primary purpose of earthen levees is to prevent flooding during high storm surges or elevated river stages. In urban areas, flood prevention is particularly critical because of the human and economic consequences as evidenced by the levee failures during Hurricane Katrina in the US, and more recently by floods in Australia. This presentation updates post-Katrina policy and management aspects of levees in the United States with a focus on engineering design of resilient levees, providing valuable lessons learned for Australia.

Most failures of earthen levees during Hurricane Katrina were attributed to soil erosion and subsequent breaching caused by massive wave overtopping or steady overflow of the levee crest. Ideally, all levee systems would have sufficient crest elevation to prevent water overtopping the levee under any circumstance. However, economic reality dictates that levees cannot be built to that standard, and so there will always be some overtopping probability. Tolerable average overtopping rates established years ago are quite conservative, and recent full-scale experiments have shown that properly constructed and maintained levees can withstand overtopping rates well above the tolerable design criterion. A new analysis method will be described that accounts for both the hydraulic loading and duration of levee overtopping. Ultimately, this methodology will lead to more cost-effective levee designs with greater resiliency. However this increased levee performance will ultimately depend on high quality construction and long term maintenance to achieve the level of protection the public deserves.

*Dr Steven Hughes was recently appointed to the position of Senior Research Scientist at Colorado State University. Previously he had been the Senior Research Hydraulic Engineer at the U.S. Army Corps of Engineers' Coastal and Hydraulics Laboratory for 30 years. He has been involved in a variety of research activities and project specific studies ranging from fundamental fluid flow experiments to coastal structure design. Most recently, he has conducted experiments and research related to stability and resiliency of the New Orleans coastal levees, which are presently being strengthened in the wake of Hurricane Katrina.*

*Dr Hughes has authored or coauthored over 70 journal articles, scientific papers and reports. He was involved in writing the replacement for the Shore Protection Manual and he has also written a comprehensive textbook about physical modeling and laboratory methods as applied to Coastal Engineering. Dr Hughes received his Ph.D. in Civil Engineering from the University of Florida. He is a member of several professional and Honor societies as well as being a registered professional engineer.*

### PRESENTATIONS

#### Melbourne

Tuesday 3<sup>rd</sup> May

#### Adelaide

Wednesday 4<sup>th</sup> May

#### Perth

Thursday 5<sup>th</sup> May

#### Brisbane

Monday 9<sup>th</sup> May

#### Sunshine Coast, Qld

Tuesday 10<sup>th</sup> May

Dinner presentation – additional costs payable at door.

#### Rockhampton, Qld

Wednesday 11<sup>th</sup> May

#### Darwin

Thursday 12<sup>th</sup> May

#### Sydney

Monday 16<sup>th</sup> May

**Please see all time & venue details on the website.**

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Members should refer to Engineers Australia's CPD Policy for requirement details and conditions.