JOHNS HOPKINS
Center for Environmental & Applied Fluid Mechanics

SPRING 2021 CEAFM VIRTUAL SEMINAR

"Uncertainty Quantification and Data Assimilation for Predictive Computational Wind Engineering"

Presented by Prof. Catherine Gorlé

Stanford University
Department of Civil and Environmental Engineering
Hosted by Dennice Gayme (JHU - MechE)

Computational fluid dynamics (CFD) can inform sustainable design of buildings and cities in terms of optimizing pedestrian wind comfort, air quality, thermal comfort, energy efficiency, and resiliency to extreme wind events. An important limitation is that the accuracy of CFD results can be compromised by the large natural variability and complex physics that are characteristic of urban flow problems. In this talk I will show how uncertainty quantification and data assimilation can be leveraged to evaluate and improve the predictive capabilities of Reynolds-averaged Navier-Stokes simulations for urban flow and dispersion. I will focus on quantifying inflow and turbulence model form uncertainties for two different urban environments: Oklahoma City and Stanford's campus. For both test cases, the predictive capabilities of the models will be evaluated by comparing the model results to field measurements.

Friday, February 12, 2021 at 3:00 PM
https://wse.zoom.us/j/93762992307