University of Houston
Mathematics

The Department of Mathematics presents

Spring 2024 Math Colloquium

Dr. Katherine B. Ensor

Professor, Department of Statistics
Rice University

Wednesday, January 24, 2024 | 3:00 PM | PGH 646A

Hierarchical Modeling for Spatial-Temporal Extremes

Methodologies for time-varying spatial-temporal extremes play an important practical role in urban planning and risk management. We put forward a hierarchical spatial-temporal peak-over-threshold modeling framework for studying rainfall history for large geographical regions. Modeling in space uses the extended Hausdorff distance to account for the irregularly shaped and sized regions. The objective is to obtain the distribution for the 25, 100 and 500 year return levels within each hydrologic region. Working with hydrologists, we can obtain improved flood maps for a region based on these return level estimates. Our methodologies are applied to study the greater Houston area, using the large library of spatially referenced data on the Kinder Urban Data Platform (kinderudp.org). This research supported the greater Houston area's recovery from Hurricane Harvey and long-term planning as the region learns to live with water.

Biography

Dr. Katherine Bennett Ensor is the Noah G. Harding Professor of Statistics at Rice University where she serves as director of the Center for Computational Finance and Economic Systems (cofes.rice.edu). Ensor served as chair of the Department of Statistics from 1999 through 2013, the director and creator of the Kinder Institute's Urban Data Platform (kinderudp.org), and is a leading national voice in data science. Ensor was the 2022 President of the American Statistical Association (ASA), serving on the. Board of Directors from 2021-2023 and also from 2016 through 2018. She currently serves on the ABET-CSAB Board (the computing programs accrediting organization), NIEHS Board of Scientific Board Advisors, Board of Trustees for the Institute for Pure and Applied Mathematics and previously served on the board of the Institute for Mathematics Applications. She develops statistical and data science methods for practical problems with specific interests in finance, energy, environment, health, and risk management. Ensor is a fellow of ASA and AAAS and has been recognized for her leadership, scholarship, and mentoring and was inducted in 2021 to the Texas A&M College of Science Academy of Distinguished Former Students. Ensor holds a BSE and MS in Mathematics from Arkansas State University and a Ph.D. in Statistics from Texas A&M University.