LUMS | Centre for Water Informatics & Technology

Models, Learning and Sensing in Hydrology

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Detection and mapping of shifts in dominant hydrologic processes, plant water stress and drought cascade using satellite data

Wednesday, February 09, 2022 | 6 – 7 pm PKT

Dr. Dara Entekhabi

Professor, Barcadi and Stockholm Water Foundations Chair, Massachusetts Institute of Technology (MIT)

Abstract: In the hydrologic sciences, as in other scientific and engineering disciplines, notable advances follow the introduction of new types of measurements. New types of measurement shed light on processes that are not apparent with prior observing systems. Models too are affected. Models are developed to best match observations. Once a new type of observation becomes available, it poses new questions for models. In the hydrologic sciences, soil moisture has always been the state-variable of models, linking fluxes such as runoff, drainage and evapotranspiration. in situ sensors for measuring soil moisture are sparse and inadequate for mapping and for practical use in constraining models. In the recent few years, the capability to measure this state-variable has emerged with new technologies for microwave remote sensing. Global fields of surface soil moisture and vegetation water content are now available. In this presentation, the following three questions are addressed, given the recent availability of the new type of measurements: 1) how are the land surface water and energy balance coupled and what does this imply for regional vulnerability to climate change?, 2) how and when do vegetation and crops respond to water stress?, and 3) how do droughts develop and expand across the landscape?

Moderated by Dr. Jawairia Ashfaq Ahmad, Centre for Water Informatics & Technology (LUMS)

Speaker Biography: Dara Entekhabi is the Bacardi and Stockholm Water Foundations Professor at the Massachusetts Institute of Technology (MIT) in the Department of Civil and Environmental Engineering with joint appoint in the Department of Earth, Atmospheric and Planetary Sciences. His research interests are in land-atmosphere interactions, surface water-groundwater coupling and Earth remote sensing. He is the Science Team leader of the NASA Soil Moisture Active Passive (SMAP) mission that was launched in 2015. He received his Ph.D. in civil engineering from MIT in 1990. He is a Fellow of the American Meteorological Society, the American Geophysical Union and the Institute of Electrical and Electronics Engineers. He is a member of the National Academy of Engineering.

The webinar can be attended via Zoom. In order to attend, the participants must register at the following link:
https://wit.lums.edu.pk/MLSH2022
Instructions to log into the webinar will be sent via email.

For more details and queries, contact Soban Hameed Saigol at soban.hameed@lums.edu.pk 0332 4495057