

The Institute for Sensing and Embedded Network Systems Engineering

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New Frontiers in Water Resources: Measuring and Monitoring the Hydro-Dynamics and Water Quality of Mixed Land Use Watersheds

Globally, metropolitan areas comprise 1-2% of the planet's land surface and contain more than 50% of the human population. These highly disturbed areas greatly impact regional hydrology and water quality and disrupt ecosystem services. Given anticipated continued aggressive growth, there is a critical need for advanced science-based understanding concerning development impacts to hydrologic regimes and water quality in contemporary mixed-land-use watersheds and the sensing systems (hardware and software technologies) used to guide future growth and development. The experimental watershed study (EWS) approach provides a way forward, facilitating necessary baseline and long-term information (including validation of current and identification of needed technologies) that can improve decision-making, and reduce misallocation of mitigation investments. Historically, the EWS approach was used in wildland watersheds to quantitatively characterize basic landscape alterations (e.g. forest harvest, road building). However, in recent years, EWS is being repurposed in contemporary mixed-land-use watersheds comprising a mosaic of land use practices such as urbanizing centers, industry, agriculture, and rural development. The EWS method is scalable and transferrable, providing results that address current uncertainties of development, while providing a scientific basis for mitigation using historic (i.e. well accepted) and new methods, sensing technologies and software systems. The evolution from historic wildland EWS applications to contemporary EWS designs in mixed-land-use watersheds will be presented by means of case study examples and applications while illustrating how such an approach can encourage and facilitate innovation, cooperation, and trust among watershed stakeholders.

Speaker

Jason A. Hubbart serves as the Director of the West Virginia University (WVU) Institute of Water Security and Science (IWSS), and is a Professor of Hydrology and Water Quality in the Division of Plant and Soil Sciences (School of Agriculture and Food) and Division of Forestry and Natural Resources (School of Natural Resources). He teaches and conducts research in the fields of hydrology, watershed management and water quality, environmental biophysics and environmental sensing technologies, and also directs the WVU Interdisciplinary Hydrology Laboratory (IHL).



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FAU Engineering East
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Boca Raton, FL

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