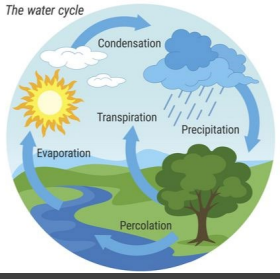
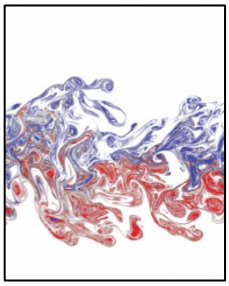
Boase Seminar Series in Hydrology and Water Resources Engineering

Department of Civil, Environmental and Architectural Engineering





Impacts of climate and human activities on lake water storage and implications for sustainable managements

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CIRES

University of Colorado, Boulder, CO

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Zoom: https://cuboulder.zoom.us/j/95668504496

(passcode: water)

Abstract:

Lakes hold 87% of liquid freshwater on Earth's surface and are essential components of biogeochemical, hydrological, and ecological processes. They function as regulators of climate change through the cycling of carbon and provide indispensable water supply, hydropower generation, and aquatic ecosystems for meeting natural and human needs. The potential goods and services from lakes are largely modulated by lake water storage. Human activities and a changing climate increasingly threaten lake water storage, as evidenced by record-low water levels in some of the world's largest lakes, such as Aral Sea in Central Asia and Lakes Mead and Michigan-Huron in North America. Yet, trends and drivers of lake water storage over decadal scales remain poorly constrained at large geographical scales, which impedes sustainable management of surface water resources, both now and into the future. Here, I will present my recent work on quantifying and attributing decadal variability of lake water storage at regional and global scales using satellite observations, hydrological models, and statistical-learning techniques. I will also discuss the impacts and implications of changing lake water storage, as well as future research opportunities.

Speaker Bio: Fangfang is a postdoctoral fellow in the Cooperative Institute for Research in Environmental Sciences (CIRES) at the University of Colorado Boulder. He holds a Ph.D. in Physical Geography from Kansas State University and a M.S. in Geographic Information Systems from University of the Chinese Academy of Sciences. His research explores the interaction among surface water resources, climate change and human activities, which is highly relevant to sustainable water management. The research focuses on quantifying changes in surface water storage, diagnosing the drivers of surface water changes, and examining the impacts of surface water changes, both in the satellite era (past a few decades) and in the future. Most of his research approaches are highly data-driven, with the development and application of novel algorithms for leveraging large-scale satellite observations and hydrological models.