



# UTSA Geological Sciences

And

## Institute of Water Research, Sustainability and Policy (IWRSP)

*Seminar Presentation*

*By*

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*On*

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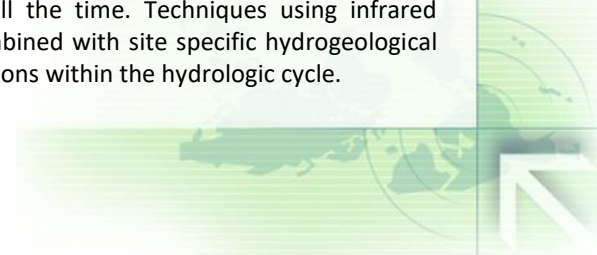
*“Groundwater/Surface-water Interactions: how connected is the cycle?”*

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### **Abstract**

Whether you are interested in conjunctive water management, legal rights to water, or just understanding flow systems, the interaction between groundwater and surface water is critical to your interests. Previous decades focused on educating the public and decisionmakers with the simple fact that groundwater and surface water were generally connected but current research is focused on quantifying the dynamic interchanges between groundwater and surface water. Research at Baylor University has concentrated on using field techniques to gather data in the northern segments of the Brazos River Alluvium aquifer and the Edwards Balcones Fault Zone aquifer. In addition to combining water levels and chemistry, advances in water-level data collection resulting from data loggers and other new techniques have provided interesting insights into the processes affecting groundwater and surface-water interactions. Results show more complexity in groundwater/surface-water interactions than can be explained simply by heterogeneity. Groundwater and surface water in the aquifers studied are not directly connected everywhere, not connected to the same degree everywhere, and not connected all the time. Techniques using infrared photography, isotopic chemistry, CFC/SF6 concentrations, and eDNA combined with site specific hydrogeological investigations appear to be helpful in quantifying these important connections within the hydrologic cycle.





**Dr. Joe C. Yelderman Jr., Ph.D., P.G. #2941,** is a hydrogeology professor at Baylor University where he is acting Graduate program Director of the Institute of Ecological, Earth and Environmental sciences. Since receiving his Ph.D. from the University of Wisconsin in 1983 he has taught hydrogeology and water management classes in the Geosciences Department at Baylor University. Known by most as “Dr. Joe”, he has conducted research with students working in most of the Texas aquifers but concentrating on the northern Trinity aquifer, the Brazos River Alluvium aquifer and the Northern Segment of the Edwards Balcones Fault Zone aquifer. In addition to his work in Texas, Dr. Joe has supervised students with water management research in Hacienda Baru, Costa Rica, and Restoration Gateway in northern Uganda. Prior to becoming a professor, he worked in natural resource planning for the City of Waco, the Ark-Tex Council of Governments, and the Wisconsin Geological and Natural History Survey. He also worked for U.S. Steel – Texas Uranium Operations as an Environmental Engineer and served as president of the Texas In Situ Uranium Mining Environmental Association. He is a member of the Geological Society of America and the National Ground Water Association.

