TEXAS WATER OBSERVATORY (TWO):
CAPACITY BUILDING IN BRAZOS CORRIDOR

Texas A&M Research Development Fund (RDF) Proposal
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Participating TAMU Colleges
College of Agriculture and Life Sciences (COALS)
College of Geosciences (GEO)
College of Engineering (COE)

Key Team members
Gretchen Miller, Civil Engineering
Steven Quiring, Geography
Georgianne Moore, Ecosystem Science and Management
Cristine Morgan, Soil and crop Science
Mark Everett, Geology and Geophysics
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Total Project Cost: 1.36 million
COALS-GEO-COE cost share: $330K
Total $ requested to TAMU-RDF: $1.03 million

Executive Summary

We propose to develop a distributed network of field observatories in Brazos River corridor, known as Texas Water Observatory (TWO), for better understanding of the hydrologic flow across various natural and man-made reservoirs in the critical zone (encompassing groundwater, soil water, surface water, and atmospheric water) at various space and time scales. Using many advanced observational platforms and real-time / near-real time sensors, this observatory will be monitoring high frequency data of water stores and fluxes, critical for understanding and modeling the water resources sustainability in the state of Texas and Southern USA. TWO will be positioned to support high-impact water science that is beyond the existing capabilities at Texas A&M University (or other Texas Universities) and that is highly relevant to societal needs. Among others, this will be a regional resource for better understanding and/or managing agriculture, water resources, ecosystems, biodiversity, disasters, health, energy, and weather/climate. TWO infrastructure will span land uses (cultivation agriculture, range/pasture, forest), landforms (low-relief erosional uplands to depositional lowlands), and across climatic and geologic gradients of Texas to investigate the sensitivity and resilience of fertile soils and the ecosystems they support. Besides developing a network of field water observatory infrastructure/capacity for accounting water flow and storage, TWO will facilitate developing a new generation interdisciplinary water professionals (from various TAMU Colleges) with better understanding and skills for attending to future water challenges of the region. This holistic growth will have great impact on TAMU research enterprise related to water resources, leading to higher federal and state level competitiveness for funding and establishing a center of excellence in the region.