

Research Development Fund

**Application Title: TEXAS WATER OBSERVATORY (TWO): CAPACITY BUILDING IN BRAZOS CORRIDOR
PHASE II: OPERATION & MAINTAINANCE**

Lead contact for RDF Application:

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Key Participating Units: Biological and Agricultural Engineering (COALS, COE)
Ecosystems Science and Management (COALS)
Soil and Crop Science (COALS)
Civil Engineering (COE)
Ocean/Coastal Engineering (COE)
Geology and Geophysics (GEO)

Anticipated Request Amount (\$): \$750,000 (2017-2022)

Executive summary of the intended application to utilize Research Development Funds.

Supported by RDF (AgriLife Research, TEES, and Geosciences), Texas Water Observatory (TWO), a distributed network of field observation platforms in Brazos River corridor (along a 700 km fetch), for better understanding of the hydrologic flow across various natural reservoirs in the critical zone (encompassing groundwater, soil water, surface water, plant evapotranspiration, and atmospheric water) at various space and time scales has been established (see <http://two.tamu.edu>, website and data access to be fully functional by December, 2017). Monitoring infrastructure (including Eddy Covariance towers, phenocams, disdrometers, spectral nodes, weather stations, soil (moisture, pressure, temperature) monitoring stations, COSMOS field scale moisture sensors, surface water stage radar, ground water wells and water quality sondes) at different locations including Riesel twin watersheds, Stiles Farm, Texas A&M Research Farm, Danciger Wildlife Refuge, Sargent Salt Marsh, and La Copita experimental station in various land use and land covers have been developed. This new field observatory has facilitated new collaboration with other key partners within and outside Texas and generated research grants. TWO infrastructure will serve as a long-term (10+ years) regional resource (for TAMU faculty across the full spectrum of colleges and other operational agencies) for better understanding and/or managing: Agriculture, Water Resources, Ecosystems, Biodiversity, Disasters, Energy, Weather and Climate. While TWO will be a game changer for Texas A&M in water science in the coming times, TWO has been a significant undertaking for our investigators team for this installation phase I (Oct 2015- Sept 2017) including survey, access, design, deployment, and calibration of distributed sensor network in the Brazos River corridor. This is a great success in itself and reflects the team effort and futuristic vision. We are cognizant in working towards developing various new research proposals to different agencies (NASA, NSF, USDA, NOAA, DOE, state/local), mostly the grant money will provide support for various hypothesis-driven science investigation and growth of regional and national collaboration for TWO. Here, we request for certain baseline operational/maintenance personnel support (for field site/equipment maintenance/repair, supporting seasonal/annual field campaigns; data harvest, value-addition, backup and distribution; web maintenance and user support) and other recurring expenses (e.g., travel to field sites for regular sensor maintenance, telemetry and data harvesting, electricity, hazard insurance, database services, web management, etc.) for next five years.