

Research Development Fund – SPRING 2019 Application

Application Title:

Mobile off-shore platform for multi-disciplinary coastal research: A signature TAMU research facilityLead contact:

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Key Participating Units:

Engineering (Marc Perlin and Scott Socolofsky),
Agriculture and Life Sciences (Binayak Mohanty and Russell Feagin)
Geosciences (Henry Potter and Steve DiMarco)
Liberal Arts (Filipe Castro and Morgan Smith)

Anticipated Request Amount: \$1.5M

Executive summary of this application to utilize Research Development Funds:

The overarching goal of the proposal is to develop a unique mobile off-shore facility for field research in ocean, atmospheric and coastal phenomena of critical global and local importance. The facility will be a towed jack-up type platform envisioned as being easily transportable to any coastal zone along the Texas (or entire Gulf of Mexico) coast and deployed in water depths of 10 – 50 ft. Once towed to location, jack-up legs will be lowered until the main hull is lifted above the water surface to provide a nearly fixed experimental platform. The technology for building such a facility is already available in the offshore oil and gas industry. With the help of industry partner (Deep Down Inc), we will customize the platform for research use. Ahead of extreme storms, the entire facility can be relocated to protected inland waters. However, it is anticipated that the platform can withstand moderate weather. The platform will be outfitted with a central data collection and control module that are hard-wired to arrays of sensors. The facility will enable TAMU researchers to gather high-fidelity field data in several critical areas of research investigations including: weather and climate, coastal erosion and sea level measurements, renewable energy, submerged living reefs, aquaculture, coastal environment, hypoxia, nautical archaeology and estuarine research. Further, the facility will host and serve as a testing platform for autonomous and remotely operated water vehicles (AUV, ASV and ROVs). The nearly-fixed nature of the platform is critical for coastal and oceanographic measurements which are not possible with other currently available means. It will also augment and enhance existing state ocean-observing assets such as the Texas Automated Buoy System, Texas Water Observatory, the GERG Glider and AUV Program, and the GERG Codar High Frequency Radar Array. The new facility is an important component of a large NSF Science and Technology proposal under development titled 'Center for Coastal Infrastructure Recovery and Resiliency'. Several other federal and state funding opportunities will become available through agencies such as the National Oceanographic and Atmospheric Agency (NOAA), National Science Foundation (NSF), US Army Corps of Engineers (USACE), Texas Sea Grant and others. In summary, the mobile scientific platform will be a signature TAMU research facility that will provide TAMU researchers a clear advantage over competitors in performing ground-breaking atmospheric, ocean and coastal research, and in obtaining large federal grants.