

# USF NEXUS INITIATIVE 2018 AWARD RECIPIENT

## **Boris Galperin**

*Experimental Investigation of the Momentum and Mass Transfer by Zonal Jets*

In collaboration with Dr. Stefania Espa at the DICEA Sapienza Università di Roma, Magnetohydrodynamically-produced eastward zonal jets will be investigated. While westward jets produce energetic eddies, eastward jets generate basin-wide gyres. As a result, most eddies in the atmospheres of Jupiter and Saturn—where the jet flows are profound—reside in the vicinity of the westward jets. In Earth's oceans, the continental constraints produce western boundary currents that give rise to eastward jets, such as the Gulf Stream and the Kuroshio Extension, which, in turn, spawn large recirculation gyres. We are investigating the subtleties of such jets and gyres, as well as their interaction. This collaboration will provide intellectual impetus and infrastructural support for the work being done in USF's College of Marine Science.

### ***Partnerships:***

**Stefania Espa**, Ph.D., Assistant Professor  
Sapienza University of Rome (Rome, Italy)

**Gregory King**, Ph.D., Research Associate  
University of South Florida (St. Petersburg, Florida)



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