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## SURA and the Science of Collaborative Research

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## Opening Comments

### SURA and the Science of Collaborative Research

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*SURA facilitates multi-institutional collaborations, develops data and model standards and frameworks, enables comparisons of multiple models and provides HPC, data archiving and visualization support.*

**The Southeastern Universities Research Association (SURA)** is a 501(c)(3) founded in 1980 to “collaborate on transformational research, education and training of next generation scientists and engineers” and development across disciplines. The original focus was to design, bid for, build and manage the Thomas Jefferson Accelerator Facility (JLab), a nuclear physics research facility in Newport News, VA. Today, SURA’s Research Programs and initiatives include Nuclear Physics (JLab), Information Technology, Coastal & Environmental Research, and Minority Outreach. The program of immediate relevance to this workshop is Coastal and Environmental Research.

The ongoing NOAA-funded, SURA-led *Coastal and Ocean Modeling Testbed (COMT)* has demonstrated significant success in facilitating a multi-institutional collaboration. The COMT has shown that accessible and discoverable observational data integrated with an advanced suite of open source community models can enable discovery and innovation of large-scale processes. The goal has been to accelerate the transition of scientific and technical advances from the coastal ocean modeling research community to improved operational services.

A new SURA-led initiative is focused on *Understanding and Modeling Risk and Resilience in Complex Coastal Systems*. This initiative involves integration of the natural and social sciences to mitigate the nation’s risk of loss of life and physical and economic damage from natural and manmade hazards. The overall goal is to integrate social and natural sciences to assist planning and risk assess-

ment of coastal communities threatened by both long-term and event-driven (e.g., by severe storms) inundation, land loss, water quality degradation and resulting economic declines in industries such as tourism, fisheries and shipping.

*Wave-related COMT activities* to date have focused largely on predictions of deep-water conditions and on wave-storm-surge coupling. However, the intensely non-linear transformations that take place in the shallow waters of the inner shelf and surf zone play critical roles in driving the processes of coastal erosion, sediment redistribution and inundation height. Included are wave dissipation by bed friction, energy transfer to soft cohesive inner shelf beds, wave induced sediment transport and related shallow water wave transformations that condition the nature of wave spectra and breakers within the surf zone. Future Testbed activities should encourage participation of the nearshore research community. SURA can facilitate multi-institutional collaborations, develop standards and frameworks, enable comparisons of multiple models and provide High Performance Computing, data archiving and visualization support.

#### References

Luetich, R.A., L.D. Wright, R. Signell, C. Friedrichs, M Friedrichs, J. Harding, K. Fennel, E. Howlett, S. Graves, E. Smith, G. Crane, and R. Baltes, 2013, Introduction to Special Section on the U.S. IOOS Coastal and Ocean Modeling Testbed, J. Geophys. Res. Oceans, 118, pp 1-10

SURA, Workshop entitled, “Understanding and Modeling Risk and Resilience in Complex Coastal Systems,” October 29 & 30, 2014, Southeastern Universities Research Association, 1201 New York Ave. NW., Washington, DC.