

# Prologue to SEACOOS

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To help establish a framework for this special volume, activities relevant to ocean observing immediately preceding and during the first years of the Southeast Atlantic Coastal Ocean Observing System (SEACOOS) are outlined below (see Briscoe and Martin, this issue, for a more complete history). The stage for SEACOOS was set with the formation of the National Oceanographic Partnership Program (NOPP) as a congressionally-mandated interagency program. The NOPP legislation and its passage can be credited in part to the efforts of Admiral James Watkins, who had become a champion for ocean research and policy issues after many notable years in government service. The NOPP was then overseen by the National Ocean Research and Leadership Council (NORLC; it is now overseen by the Interagency Committee on Ocean Science and Resource Management Integration, ICOSRMI, <http://ocean.ceq.gov/about/icosrmi.html>), comprised of the leaders (Secretaries and Administrators) of the agencies involved; most active have been the U.S. Navy, the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration, and the National Science Foundation. The NOPP began fostering collaborations between government, industry and academia through its focused grant program.

The inception of the U.S. Integrated Ocean Observing System (IOOS) began with the creation of the U.S. Global Ocean

Observing System (GOOS) Steering Committee by Dr. D. James Baker, Under Secretary for Oceans and Atmosphere and Administrator, NOAA, in 1998 (<http://www-ocean.tamu.edu/GOOS/goos.html>). In response to requests from the Congress, the Steering Committee authored some of the first descriptions of the system (NORLC 1999a, 1999b).

In recognition of the size of the planning and coordination effort required to engage the numerous federal agencies and state and local interests, the NORLC formed Ocean.US in 2000 ([http://www.ocean.us/Ocean\\_Timeline](http://www.ocean.us/Ocean_Timeline)). Ocean.US was a planning and coordination office that has utilized, for the most part, federal agency employees seconded to Ocean.US for a year or two. Capt. David Martin, USN, as first director of Ocean.US, organized and hosted the 5-day Arlie House Workshop in 2002 (Ocean.US, 2002a, 2002b), an essential exercise in the development of IOOS because of its breadth of participation and focus on defining a clear development path. The workshop report stressed the broad applicability of a suite of ocean variables to a variety of societal interests, and identified a subset of these variables for which observational technologies are in a state of maturity that enable operational capability in the immediate future. This workshop's emphasis on goals, products and variables would have a lasting effect on the development of IOOS and has been a positive influence; however, the identification of ways in which the variables and products can be applied to societal needs is not always apparent. This has led to a lack of awareness among many in the general public of the extraordinary value of ocean observations to solving real-world problems.

On a more regional scale, the Southeastern Universities Research Association (SURA) saw an opportunity to foster inter-institutional collaboration among research universities in support of coastal ocean observing and, consequently, sponsored a

workshop in 1999 held in Charleston, SC that considered the ocean observing needs for the region from Delaware to Louisiana (Malone et al., 1999). The workshop resulted in recommendations for establishment of a southeast coastal ocean observation and prediction system. SURA then established an Ad Hoc Coastal Committee to provide guidance on how to move forward with development of such a system. The Coastal Committee met several times over the following year, and those activities resulted in the establishment of the SURA Coastal Ocean Observing and Prediction Program (SCOOP) by SURA in 2001, which has focused on data management methodology and coastal inundation modeling.

Also in 2001, the University of Miami and University of North Carolina at Chapel Hill sponsored a follow-on workshop to the SURA workshop, held in Miami, to better define interests present in the southeast U.S. (specifically North Carolina, South Carolina, Georgia and Florida), and to establish first steps for creating a regional coastal ocean observing program (SECOOS, 2001). This Southeast Coastal Ocean Observing System (SECOOS) workshop thus laid the groundwork for the SEACOOS program.

A SURA workshop held soon afterward in Tampa, FL sought to establish a larger regional collaboration, from Texas to Delaware, but the effort was sidetracked by a SURA focus at the time on building fiber infrastructure to support a high-end observing network. Subsequent activities were almost exclusively focused on either the national scale or on the regional scale programs as they now exist.

In parallel with these various regional planning efforts in the Southeast, a group of multi-institutional, multi-disciplinary investigators (with pre-existing, sub-regional observing, modeling, and information management subsystem projects) proposed the SEACOOS program as a regional-scale demonstration project. This bottom-up,

PI-centric initiative seemed remarkably congruent and timely relative to the top-down, national-level planning that was calling for a regional approach to the coastal ocean component of IOOS. The inevitable conflicts of standardized/centralized versus idiosyncratic/distributed approaches gave SEACOOS some of its technical vitality, which is of interest to the individual scientists, engineers, technicians, and graduate students involved. The incorporation of existing sub-regional activities also provided demonstrative utility and the potential to influence the national IOOS effort (Seim et al., 2003). The SEACOOS program, as a congressionally-mandated item in the Office of Naval Research budget, received its first funding in Fiscal Year 2002. As described in the accompanying articles, SEACOOS initiated a number of working groups, overseen by a program management structure, that sought to promote ocean observing in the Southeast United States, to engage a broad range of users, and to implement (and develop as needed) the technology necessary to provide an accurate portrayal of the state of the coastal ocean in near real-time.

It was not until a year later, in the spring of 2003, that the first Ocean.US Summit on regional ocean observing systems was held in Washington, DC. It was at this time that the purpose and function of the Regional Associations (RAs), as well as the National Federation of Regional Associations (NFRA), were first agreed upon by a substantial fraction of the community. For example, while the RAs focused on governance, outreach, and related activities, they would each have a technical/operational arm, the Regional Coastal Ocean Observing System (RCOOS), to perform the regional observing, modeling, and information management subsystem functions. Those assembled signed a resolution to advance the establishment of regional associations and the NFRA. This resolution gave the first indication that the SEACOOS program would need to transition to a more open and public enterprise if it were to help fulfill the objectives of a regional association. A subsequent Ocean.US-sponsored

workshop held in 2004 identified several criteria for certification of the RAs and served as a major impetus for the formal creation of RAs around the nation.

Another dimension of complexity is that the RCOOS activities are intended to complement the substantial ocean and related observing and modeling subsystems operated by several federal agencies, known collectively as the National Backbone. Thus, a central challenge is to produce integrated products from the RCOOS and National Backbone observing systems. In most cases, numerical ocean dynamical models are needed to produce such gridded information products from the inevitably relatively sparse observations, and to make forecasts. Programs such as SEACOOS were neither of a basic research nature nor of a truly operational character. Instead, they functioned in the applied research, demonstration, and quasi-operational (real-time) modes that are necessary to design effective and efficient operational information systems that will meet societal needs, including those of the basic research community.

SEACOOS received its initial funding during the summer of 2002. As described in the accompanying "SEACOOS Program Management" article, the program received slightly less than \$21 million in support over the next five years, distributed among a dozen institutions. However, as a result of the uncertainties associated with being a congressionally-funded program, the annual funding level varied from a maximum of \$5.76 million in year 3 to a minimum of \$1.56 million in year 5. Despite the vagaries of the annual funding levels, which translated into challenges in project planning and execution, the program did achieve many of its initial objectives by forming a regional consortium and demonstrating the viability of the regional coastal ocean observing system concept.

Participants of SEACOOS took to heart the charge of the Ocean.US workshops and, beginning in summer 2003, helped initiate the creation of the Southeast Regional Association (SERA, later renamed the Southeast Coastal Ocean Observing

Regional Association, or SECOORA; see [www.secoora.org](http://www.secoora.org)). The Executive Director of the South Carolina Sea Grant Consortium, a member of the Board of Directors of SEACOOS, was identified as the Principal Investigator on the first planning grant submitted in response to the NOAA Coastal Services Center's call to establish regional associations, while a large number of SEACOOS investigators were co-investigators or named collaborators in the proposal. The initiation of the SECOORA effort clarified the role of SEACOOS as a pilot RCOOS program, and SEACOOS consequently focused more narrowly on the observing system architecture and operation as its priorities for development, implementation, and evaluation.

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