

CCPO CIRCULATION

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The Past, Present and Future of CCPO
Dr. Larry Atkinson

CCPO is going into its second generation. Over the past quarter century, it has gone through evolutions and will, no doubt, go through more. I have now retired so it is appropriate to do a short retrospective on how CCPO got started and how we got to where we are. Maybe we can learn a bit from the past that can help us move into the future. In the past we have taken advantage of various opportunities and we have been able to focus our activities to expand those opportunities.

So how did CCPO get started? Well, the seeds were planted in the late 1980's, when Bill Dunstan was Chair and, unexpectedly, the Slover Endowment was modified to increase the income significantly. Bill had to work essentially in secret because of the dealings between the University and the Endowment. He decided to recommend that the new funds be allocated to physical oceanography.

Specifically, he recommended a focus Descriptive and Physical Oceanography, Satellite Oceanography, and Acoustical Oceanography.

His rationale was that at the time neither VIMS, nor any other Virginia university had any faculty in those fields. Thus, a gap was identified and filled; it made sense.

Bill's ideas were accepted by the administration and the Department began by hiring Gabe Csanady and Denny Kirwan, and shortly thereafter, **Eileen Hofmann** and **John Klinck**. They joined **Chet Grosch** and me as physical oceanographers on the faculty.

Then, another unexpected thing happened. The Commonwealth announced an opportunity to create Commonwealth Centers of Excellence. ODU had joined other universities in several unsuccessful proposals. Senator William Spong Jr., who was interim President at the time, recommended a smaller group submit a proposal focused on coastal physical oceanography. The thinking was that we had hired people who were doing physical oceanography with the Slover Endowment and this expansion could be leveraged with new Commonwealth funding.



OLD DOMINION UNIVERSITY

Center for Coastal Physical Oceanography

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Letter from the DIRECTOR

The main focus of this newsletter is to celebrate **Larry's** "retirement" and his change of title to Professor Emeritus. The title is fitting as he continues to work with the campus Sea Level Rise Resilience Collaborative, as well as the national NSF-supported Ocean Observing Initiative. It is important to remember that he helped create CCPO and was the first director who got everything moving in a good direction. He has been an energizing presence at ODU for the whole time he has been on faculty and we hope that he continues to contribute to activities at CCPO and ODU. His retirement may be only a change in his title rather than a big change in his activities.

This newsletter reinforces the idea that there has been a number of changes through the years to

the focus of CCPO. Previous newsletters highlight different projects done by folks at CCPO. We lost the narrow focus on coastal physical oceanography long ago but the spirit of adopting innovative topics and pursuits has continued through the history of CCPO. We have recently turned our attention to climate change, changing regional sea level and offshore wind energy. I feel that these new topics expand our contribution to science with a more direct offering to marine related issues for the local area.

We look forward to continuing contributions from Larry and to ongoing expansion of the interests and activities of everyone at CCPO.

Pictured Below: Larry Atkinson and Crittenton Hall circa 1995 | Photos by Chuck Thomas



The Past, Present and Future of CCPO | Cont'd.

Dr. Larry Atkinson

Well, it worked. In 1991, the Commonwealth Center for Coastal Physical Oceanography was funded. The new money would go to support graduate students, postdoctoral research associates, as well as short (a few weeks) and long-term (a semester) visits by experts to support and expand our activities. The financial plan was that CCPO would be supported by a combination of funds from the Commonwealth, the Slover Endowment, and returned indirect overhead from grants and contracts.

John Eck was Vice President for Research at the time. Bill Dunstan and I worked with him to establish how returned overhead would be distributed. CCPO would receive a part of returned overhead in the same way that a Department does.

In 1994, the concept of a self-supporting research position (SSRP) was created, thanks to John Eck and President James Koch. The idea was that we could attract people who could support all of their salary through external grants. The key was to have a way for them to accrue overhead in an account for 'rainy days' and to use to invest (buying equipment, paying students and postdocs). By this means, we were able to hire Lou Codispoti, Glenn Cota, Cathy Lascara, and Glen Wheless.

There was a need to house this growing group so Crittenton Hall, a little used University building which was off-campus on the Lafayette River, was repaired and made available for us to use. This two-story building had room for all the scientists, the administrative staff, a classroom and a computer room. This new building allowed us to set up a modern computer system to support modeling and data analysis. The state-of-the-art computing system was obtained via Commonwealth and grant funding. Part of the CCPO funding provided a full-time computer manager who helped us design, install and run the system. We managed to have all the latest systems including one of the first 3-D CAVE systems – a five-wall, immersive, virtual reality computer environment.

More importantly, Crittenton Hall provided space for visitors and conferences and allowed all of us to constantly interact. We found that social interaction leads to scientific interactions, which led to expanding research opportunities for students, visitors, and faculty alike. One of the hallmarks of CCPO is the willingness to collaborate on various projects and ideas, even if we are not directly involved with the project or funding.

The various research projects over the years went beyond a narrow interpretation of coastal physical oceanography. We had faculty working in local estuaries (Arnoldo Valle-Levinson and Malcolm Scully), Chilean fjords (Arnoldo Valle-Levinson), coastal Antarctica (**Eileen Hofmann** and **John Klinck**), Southern Ocean circulation (**Mike Dinniman**), coastal biogeochemistry (**Eileen Hofmann**), coastal circulation from surface radar (**Larry Atkinson**), ocean color (Glenn Cota), gas exchange at the ocean surface (Brian Ward), coastal circulation dynamics (**Tal Ezer**), LES turbulence simulations (**Chet Grosch**), and sea level change (Ben Hamlington).

So what is next for CCPO? In 2007, we moved to the new research building, Innovation Research Park 1, on Monarch Way. We all miss the Crittenton Hall location, but it is nice being closer to campus and near the research office (and many new restaurants!).

The growing interest in the coastal ocean, as exemplified by the National Science Foundation Coastlines and People (CoPe) (<https://coastlinesandpeople.org/>) initiative, will make CCPO's focus even more relevant. CCPO looks forward to participating in ODU's new Institute for Coastal Adaptation and Resilience initiatives. We anticipate new hires and arrangements with federal agencies that will bring new faces and new skills to CCPO and take it into the future.



Above: The Boy Scout Oceanography Merit Badge program includes a classroom presentation and an excursion aboard the ODU *R/V Fay Slover* where the troops participate in collecting and analyzing samples. **Right:** Example of the Friend of the Bay license plate.

Expanding CCPO Outreach through the Chesapeake Bay Restoration Fund | Dr. Eileen Hofmann

Since 2004 CCPO has run a program designed to satisfy the requirements of the Boy Scout Oceanography merit badge. The program starts with a classroom presentation that gives an overview of oceanography and highlights some of the research being done at CCPO. Following the presentation, the Scouts board the ODU research vessel, *R/V Fay Slover*, for a short cruise on the Elizabeth River, a tributary of Chesapeake Bay. While on the *R/V Slover* the Scouts do hands-on activities that demonstrate how oceanographers sample the ocean and provide information about the ecology of the Elizabeth River. To date, nearly 800 Boy Scouts have completed the Oceanography merit badge program. These Scouts have come from the local Hampton Roads area, throughout northern and western Virginia, southern Maryland, and even Pennsylvania.

The Oceanography merit badge program is popular as indicated by a waiting list of over 35 Boy Scout troops. The program occurs twice per year on a Saturday in mid-May and early September, which means that many of these troops will wait years. So, we have been looking for ways to expand the program.

In Fall 2017, CCPO personnel submitted a proposal to the Chesapeake Bay Restoration Fund, which is funded by revenues from the sale of *Friend of the Chesapeake Bay* license plates. The license plate funds are targeted to environmental education and restoration projects relating to the Chesapeake Bay and its tributaries. The CCPO proposal was selected for funding, allowing us to add merit badge programs. The first of the added programs occurred in late July with participation by Boy Scout troops from Williamsburg, VA and Virginia Beach, VA, with 43 Scouts completing the Oceanography merit badge. Additional programs are being planned for Spring 2019.

The outreach and education activities that are facilitated by the support from the Chesapeake Bay Restoration Fund allow us to provide more Boy Scouts with information on environmental science, the ecology of the Elizabeth River, and the importance of supporting Chesapeake Bay restoration efforts. We look forward to the expanded program and the opportunity for more Boy Scouts to earn the Oceanography merit badge.



CCPO Faculty Spotlight George Hagerman

As the newest CCPO faculty member, I appreciate this opportunity to introduce myself and say a bit about my background and research. Looking to previous Spotlights for guidance, I was struck by Anthony Meza's statement in his REU Spotlight (Summer 2018) where he indicates the importance of stepping back to "see a bigger picture." That approach guides this introduction, and indeed, has been fundamental to my own career choices.

In the summer of 1980, I was wrapping up my graduate work in Marine Sciences at the University of North Carolina at Chapel Hill. The previous summer, I had moved to Atlantic Beach, where I completed my field research on dispersal of benthic meiofauna by wave and current action in Bogue Sound. As a check on dispersal rates calculated from my sediment trap experiments, I reviewed the literature on sand recolonization by meiofauna following disturbances at various spatial scales.

The largest such disturbance was the published case study of a tanker carrying over 100,000 tons of crude oil, which grounded, exploded, and burned at the entrance to La Coruña harbor on the Atlantic coast of Spain in 1976. Most of the oil burned, but about 30,000 tons washed

ashore. Meiofauna were completely absent from a 350-km stretch of sandy beaches for eight months after that spill, requiring more than a year to be reestablished.

Stepping back to look at the bigger picture, that event became more than a row in a table of case studies on a page in my thesis. It represented the same length of sandy coastline as extends from Little Creek to Atlantic Beach. Imagine all of Virginia Beach and the Outer Banks completely devoid of its interstitial life for more than a year!

When I moved from Chapel Hill to the coast in 1979, the Iranian revolution was at its peak, crude oil prices had skyrocketed, and President Carter had installed a solar water heating system on the roof of the White House. A year later, as I was writing my thesis, the summer 1980 issue of *Oceanus* magazine featured articles on all forms of renewable ocean energy, ranging from marine biomass (giant kelp farming off Southern California) to ocean thermal energy conversion (OTEC), which was the main research focus of the then fledgling U.S. Department of Energy.

That's when I decided to professionally pursue a vision of renewable energy from the sea. From 1980 to 1985, I worked for Gibbs & Cox, Inc., a naval architecture firm in Arlington, Virginia, in support of the U.S. Department of Energy's OTEC program.

When President Reagan removed

the White House solar panels in 1986, his administration also eliminated DOE's ocean energy program. I left Gibbs & Cox to become a private consultant, conducting regional wave energy studies for utilities and state government organizations in California, Hawaii, Virginia, and North Carolina. By the late 1990s, however, even state and utility interest in ocean energy was waning.

In 1999, I was fortunate to be hired by Virginia Tech. Although there were no more ocean energy funding opportunities at that time, I had sponsored projects that included development of an educational Web site on geothermal heat pumps, implementation of a state partnership for the "Million Solar Roofs" program, and participation in our state's initiative of the "Wind Powering America" program, all funded by DOE.

North American interest in ocean energy was revived in the early 2000s by the Electric Power Research Institute's (EPRI's) offshore wave energy and tidal stream energy demonstration programs. EPRI sponsored my work at Virginia Tech as program oceanographer, responsible for resource characterization and site assessment in six states and two Canadian provinces. EPRI's tidal stream energy conversion program led to establishment of the Fundy Ocean Research Center for Energy in Parrsboro, Nova Scotia, where tidal current turbines are tested in Minas Passage.

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Just the Facts

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Castelao, R.M., P.M. Mederios, **J. Klinck**, and **M. Dinniman**, "Particulate organic carbon export off the Antarctic Peninsula by nonlinear mesoscale eddies," 2018 ASLO Summer Meeting, Victoria, Canada, June 2018.

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Ezer, T., "Numerical modeling of the interactions between hurricanes, the Gulf Stream and sea level," The 10th

Dr. Tal Ezer was featured in the *Land, Architecture Magazine* in the article, "The Rising Tidewater, Revisited." Visit the official Center for Coastal Physical Oceanography Facebook page at www.facebook.com/ccpo.odu to check it out!

International Workshop on Modeling the Ocean (IWMO-2018), Santos, Brazil, June 25, 2018.

Ezer, T., "Sea level rise and flooding in the Hampton Roads," Seminar to REU students, Old Dominion University, June 21, 2018.

Ezer, T., "Sea level rise and variability in the Chesapeake Bay: numerical modeling of the impact of climate change, hurricanes and the Gulf Stream," Chesapeake Research & Modeling Symposium, Annapolis, MD, June 12, 2018.

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LANDSCAPE ARCHITECTURE MAGAZINE

THE MAGAZINE OF THE AMERICAN SOCIETY OF LANDSCAPE ARCHITECTS

THE RISING TIDEWATER, REVISITED

September 13, 2018 by LAM Staff

BY BRETT ANDERSON / PHOTOGRAPHY BY SAHAR COSTON-HARDY, AFFILIATE ASLA

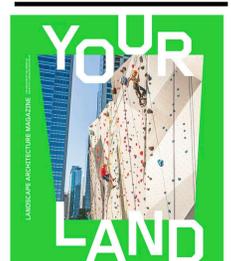


Disparate but urgent efforts to address sea-level rise in the Virginia Tidewater, one of the country's most important strategic centers, are striving to keep up with visible realities.

Editor's Note: Norfolk, Virginia, is both highly vulnerable to sea-level rise and a critical center of military and government infrastructure. As Hurricane Florence bears down on Virginia and the Carolinas, the risks associated with storm surge flooding are intensified by the region's strategic importance. As Brett Anderson reported in the magazine's [December 2017 issue](#), this isn't a new story, and landscape architects, academics, municipal officials, and residents are collaborating to find ways the region can respond to the inevitability of rising tides.

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Virginia To Challenge For Top Offshore Wind Spot In US — 2 Gigawatts By 2028

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September 26th, 2018 by Joshua S Hill

Hot on the heels of New Jersey's decision to solicit 1.1 gigawatts (GW) worth of offshore wind capacity, southern cousin Virginia is positioning itself to become the South's first offshore wind giant with a goal of installing at least 2,000 megawatts (MW) in the coming decade.

New Jersey's Board of Public Utilities announced last Monday that it would open an application window for 1,100 MW worth of offshore wind capacity, a first step in the State's goal of installing 3,500 MW of offshore wind by 2030. The news immediately spurred discussion about the possibility of the state being the country's first offshore wind powerhouse, building on the recent flurry of activity in the East Coast's offshore wind development which, at the moment, boasts a pipeline of around 5 GW.



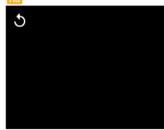
Block Island Offshore Wind Farm, America's first offshore wind farm

Virginia, not to be outdone, however — and building on its commitment to building 5.5 GW worth of solar and wind energy as part of its 2018 omnibus energy bill announced earlier this year — believes that it can become the South's first offshore wind giant. Within the space of a few days, global renewable energy consultants BVG Associates published a self-proclaimed "landmark report" which charted a course that would place the state as one of the country's leading offshore wind hubs, before the Virginia Offshore Wind Executive Summit was held, at which Virginia Governor Ralph Northam spoke, heralding offshore wind as "a tremendous victory for Virginia."

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WIND [Y] BUSINESS INTELLIGENCE

Reported by BVG Associates on 19 September 2018

Landmark Report Charts a Course for Virginia Offshore Wind

New Report Shows Virginia's Leaders Have the Opportunity to Reap Significant Economic, Energy Benefits from Urgent Action to Develop Offshore Wind

BVG associates

Offshore wind in Virginia
A vision

(Courtesy of BVG Associates)

of electricity for homeowners and businesses. We have a massive opportunity to build a clean, renewable source of domestic energy that will help to secure a better, safer future for Virginia families. The time to act is now."

A new report released today by BVG Associates shows that Virginia's key decision makers can help position the Commonwealth as a national leader in the growing U.S. offshore wind industry during the next decade. The "Vision for Virginia Offshore Wind" report points to the Commonwealth's unique infrastructure and geographical advantages as keys to developing 2 gigawatts (GW) of offshore wind — enough to power 500,000 homes — by 2028. The report comes on the heels of recent legislation setting a statewide goal of building 5 GW of renewable energy by 2028.

The report presents a realistic and immediate opportunity for Virginia to establish itself as a hub for the entire East Coast offshore wind supply chain. By developing 2 GW of offshore wind during the next decade, Virginia can reduce its reliance on out-of-state electricity by 30%, create thousands of local jobs, and build healthier and safer communities across the state by eliminating 3 million tons of carbon pollution each year, the equivalent of removing 650,000 cars from the road.

"Virginia's leaders have an immediate opportunity to strengthen the Virginia economy for working families and create safer, healthier communities by tapping into our vast offshore wind resource," said Eileen Woll, the director of the Virginia Sierra Club's offshore energy program. "The 'Vision for Virginia Offshore Wind' report should remind every Virginia leader that investing in offshore wind will pay off for Virginia's economy by creating well-paying jobs and lowering the cost

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George Hagerman was featured in several news articles regarding Virginia's initiative for offshore wind.

CCPO Faculty Spotlight | Cont'd. George Hagerman

In 2006, I became Director of Research for the Virginia Coastal Energy Research Consortium (VCERC), a multi-university partnership established by state legislation and based at ODU. VCERC pioneered the rigorous evaluation of offshore wind and marine biomass derived fuels as potential future coastal energy supplies for Virginia. I coordinated Virginia's first offshore wind feasibility study and was principal author of Virginia Offshore Wind Studies, July 2007 to March 2010, Final Report, which is posted at https://digitalcommons.odu.edu/odurc_offshore-wind/.

Through VCERC, ODU has been engaged in offshore wind research since 2007. That study helped spur Dominion Resources' involvement and led to Virginia having the first and still the only renewable energy research lease in federal waters, which is held by the Virginia Department of Mines, Minerals and Energy (DMME). Dominion will build the nation's first utility-owned offshore wind demonstration

project, which will start operating on DMME's research lease in 2020. This demonstration will usher in a decade when more than a dozen offshore wind projects involving hundreds of turbines from Cape Cod to Cape Hatteras will be designed and built. It's amazing that after so many twists, turns and setbacks, our state and our nation will finally realize a vision of renewable energy from the sea.

This move to ODU after 19 years at Virginia Tech came out of a casual phone conversation I had last fall with Larry Atkinson, with whom I had collaborated previously on two offshore wind studies. Larry sensed that I might be ready for a change and I'm grateful to him and to Morris Foster, Vice President for Research, for making this change possible. It's been wonderful to be part of the CCPO team, and everyone here has made me feel most welcome. I look forward to helping ODU be at the center of a new maritime industry, which can make a substantial positive difference to our regional economy and to the wellbeing of the ocean we love, the ocean we study, and the ocean that we love to study!



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It hasn't been long since I received my PhD from ODU, and in that short time, so much has changed. I defended my dissertation in June of 2016 and moved on to a postdoc position at the University of Washington, Seattle. The birth of my son, Damien, in December of that year was both a blessing and a struggle. It was difficult to start a new position and new research in a pregnancy and birth-induced haze, and my final dissertation corrections were much delayed. And yet, it was a small price to pay to come home every day to my energetic happy toddler.

The research I do now is very related to what I worked on while at CCPO. I am using ROMS, a regional ocean model, and working with glaciologists to couple it to an ice shelf model. The end goal of the project is to use this coupled model to increase our understanding of potential future changes to ice shelves in Antarctica. Specifically, my research group is interested in the range of responses of Pine Island Glacier to different ocean forcing scenarios. My role is working on the actual coupling and testing the new coupled model in smaller, idealized domains. I keep in frequent contact with **John Klinck**, **Mike Dinniman**, and **Pierre St. Laurent** of CCPO, as they are experts with ROMS and help me navigate some of the quirks of using

CCPO Alumni Spotlight Dr. Stefanie Mack

ROMS for Antarctic applications.

Towards the end of my stay at CCPO, I was elected as the Student Representative to The Oceanography Society (TOS) Council. I've enjoyed my position there over the past 3 years and have worked to increase and improve what TOS provides for student members. For example, I developed and contribute to a monthly newsletter targeted at graduate students. You can find past issues of the newsletter at tos.org/opportunities.

Overall, I am grateful to the people at CCPO for providing me with an excellent start to my research career and for their continued support and collaboration during my postdoc.

