Summer 1987

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NSU Oceanographic Center

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In the beginning, under the directorship of the late Dr. William Richardson, our faculty were predominantly physical oceanographers. In fact, our original name was the Physical Oceanographic Laboratory (fondly known as "The Lab"). In the late 70s our name was changed to the Ocean Sciences Center, and the nature of our research changed as well: we branched out into other disciplines. In the early 80s we changed our name once again, this time to the Oceanographic center, and we continued to diversify. Listed below are the Center's present faculty and researchers, with their specialties.

Nathaniel Apter, Resident Adjunct M.D., University of Buffalo
Malacology - marine snails

Pat Blackwelder, Assoc. Professor
Ph.D., University of South Carolina
Marine Biogeology - micropaleontology

Georges Blaha, Research Scientist
Ph.D., Ohio State University
Geophysics - satellite altimetry

Curtis Burney, Asst. Professor
Ph.D., University of Rhode Island
Marine Ecology - dissolved nutrients

Richard Dodge, Assoc. Professor
Ph.D., Yale University
Marine Biogeology - coral reefs

Gary Hitchcock, Assoc. Professor
Ph.D., University of Rhode Island
Marine Biology - phytoplankton

Gary Kleppel, Asst. Professor
Ph.D., Fordham University
Marine Biology - zooplankton

FROM THE DIRECTOR

The Oceanographic Center of Nova University has a rich history that goes back to its founding in 1966 by Dr. William S. Richardson, the first director. The laboratory prospered until tragedy struck in 1975, when Dr. Richardson and four associates were lost at sea while conducting an open-ocean experiment off the coast of Maine. This tragic event was the first fatal oceanographic accident in history, and it sent shock waves throughout the oceanographic community. It was a loss that nearly caused the demise of the laboratory.

During the past several years the laboratory has recovered dramatically. The number of faculty has increased to ten members, and there is a support staff of nine people. Current research interests include modeling of large-scale ocean circulation, coastal dynamics, ocean-atmosphere coupling, surface gravity waves, biological oceanography, chemical oceanography, coral reef assessment, Pleistocene and Holocene sea level changes, physiology of marine phytoplankton, calcification of invertebrates, cell ultrastructure, fouling effects, marine fisheries, and nutrient dynamics. Specialized studies include the El Nino phenomenon, ocean pollution, and food chain resources. Funding for research is provided by highly competitive grants from such agencies as the National Science Foundation, the Office of Naval Research, NOAA, NASA, and the U.S. Air Force, as well as from private foundations.

One of the most exciting improvements at the lab is the recent expansion of our teaching program. The Institute of Marine and Coastal Studies, which offers the Ph.D. and M.S. degrees in Ocean Sciences, has increased its enrollment from ten students five years ago to over 60 full- and part-time students today. The Ph.D. program currently has an enrollment of seven students.

The Nova University Oceanographic Center is the only oceanographic institution in Broward County. It has a high reputation in both the national and the international oceanographic communities, but surprisingly it is little known locally. The primary purpose of this newsletter is to inform the local community, as well as others, of our activities and progress as a research and teaching institution.
first of all, a reduced young research person starting on bureaucracy- or under their superstructure. Even though superstructure. Here there is, setting at a faculty everything I asked for is not here clear that this place was on a individual gets lost in the in a beautiful setting such as we There's a lot of it going on here. When I came here to visit, it was he responded, "and sometimes the individual gets lost in the bureaucracy - or under their superstructure. Here there is, it's not here posiiveness among the faculty and staff and administration that

yet, there is a sort of honesty and positiveness among the faculty and staff and administration that

**RECENT CONTRACT AND GRANT AWARDS**


"Coastal Circulation along Western Boundaries" (year 3) Investigators: P. Kundu/J. McCready Agency: Office of Naval Research

"Investigation of Wind-forced Inertial Oscillations" (year 2) Investigator: P. Kundu Agency: National Science Foundation

"Dynamics of the Instability of Equatorial and Coastal Currents" (year 2) Investigator: J. McCready Agency: National Science Foundation

"Modeling of the Circulation of the Western Indian Ocean" (year 2) Investigators: J. McCready/P. Kundu Agency: National Science Foundation


"Diet Reproduction and the Role of the Copepod Acartia tonsa in the Coastal Marine Food Web" Investigator: G. Kleppel Agency: Sea Grant/California

"Physical and Chemical Oceanography of the Ocean in the Vicinity of the Los Angeles County White's Point Outfall" (year 3) Investigator: G. Kleppel et al. Agency: Sea Grant/California

"Small Scale Spatial Distribution of Zooplankton" (year 3) Investigator: G. Kleppel Agency: National Science Foundation

"Coral Growth Survey" (year 2) Investigator: R. Dodge Agency: Broward County Commission

"Coral Growth Project" Investigator: R. Dodge Agency: Coastal Planning and Engineering, Inc.

**continued from cover**

Pijush Kundu, Assoc. Professor  
Ph.D., Pennsylvania State University  
Physical Oceanography - modeling

Julian McCready, Assoc. Professor  
Ph.D., Univ. of California/San Diego  
Physical Oceanography - modeling

Russell Snyder, Professor  
Ph.D. Univ. of California/San Diego  
Physical Oceanography - gravity waves

Janet Witte, Research Assoc.  
M.S., Purdue University  
Program coordination, bibliographies, scientific editing
The M.S. program offered by the Institute is unique in its approach. Two degree specialties are available: Marine Biology and Coastal Zone Management. Classes are held in the evening at the labsite, allowing students to continue their employment while pursuing their degrees. Courses are offered for audit and teacher recertification as well as for credit. There are four 12-week terms during the year.

The Coastal Zone Management specialty addresses specific aspects of varied coastal ecosystems, as well as the complex issues brought about by conflicting demands on our delicate environments. Student research areas include the evaluation of the physical properties of renourished and natural beach sand, beach profiles as a function of renourishment materials, legal aspects of coastal utilization, artificial reef siting considerations, and the chemistry of coral skeletons as indicators of pollution or sea water composition.

The Marine Biology specialty has brought about a wide range of student projects. Included are studies of lobster behavior in trap enclosures, sea turtle biology, bottom dwellers in Port Everglades, virus indicators of marine sewage pollution, evolution of gastropods (marine snails), fish aquaculture, and marine primary productivity.

Several innovative courses are offered this year, and it is planned to repeat them in future years, given enough student interest. Marine Archaeology, taught by Peter Throckmorton (the "Father of Marine Archaeology"), is a favorite among students. Activities include field trips to local shipwreck sites and instruction in actual archaeological practices. This is a popular course for audit as well as credit.

Marine Botany offers an unusual look at tropical marine algae, grasses, seaweeds and mangroves. Several field trips are conducted to local near-shore sites.

Dr. Richard Dodge and Dr. Curtis Burney are co-directors of the Institute of Coastal Studies.

The Institute of Marine and Coastal Studies recently received a $10,000 donation for Conservation research. The funds will be awarded to qualified graduate student projects through a competitive proposal format. The research fund is named The Karlen Graduate Conservation Research Fund in honor of the donor, Mr. Bernard Karlen, of New Rochelle, New York.
SPOTLIGHT

Asian Students Adapting to Ways of the West

Three Ph.D. students from the Far East have come to Nova to study physical oceanography under Dr. Julian McCreary. Their homes are in South Korea, Japan, and the People's Republic of China.

Hyong Sun Lee received his B.S. degree from the Naval Academy of Korea and his M.S. degree from the Naval Postgraduate School in Monterey, CA. Lee is interested in coastal dynamics in general, and in typhoon prediction in particular. How did he hear about us? His professors at Monterey, he said, "told me Nova University is famous for coastal oceanography and several major programs." Lee is now in his second year at Nova and often can be found late at night in his office on our houseboat "with the candles burning." After receiving his Ph.D., Lee would like to stay in the U.S. as long as possible. Eventually, however, he must return to South Korea, where he will teach physical oceanography at either the Naval Academy or the War College.

Yasushi Fukamachi graduated from Hokkaido University in Sapporo, Japan. He heard about Nova from his major professor, who had met Dr. McCreary at a meeting in Hawaii. His professor then recommended Nova to Yasu (as we call him), and the rest, as is said, is history. Yasu has been here for only a few months, but he has acclimated quite well. He has, for example, already purchased a car—a Buick! He misses ice hockey (as we all do in South Florida) and girlfriends, he says. After receiving his Ph.D., Yasu would like to stay in the U.S. as a postdoc and then find a position that would allow him to combine research and teaching. He too plans to return to his homeland "eventually."

Zuojun Yu (Jo, for short) received her M.S. degree in Meteorology from Zhongshan (Sun Yat Sen) University in the People's Republic of China. Her advisor also met Dr. McCreary in Hawaii and spoke with him on Jo's behalf. Although Dr. McCreary is not a meteorologist, it was decided that some collaborative work on air-sea interaction could be done, and so Jo was accepted. Since Jo had never been out of China, no doubt many aspects of our lab life were revelations. In particular, the movement of her houseboat office took some getting used to. Unlike Lee and Yasu, Jo receives no financial support from her government to attend school, so she is dependent on Dr. McCreary's NSF grants for tuition and living expenses. After receiving her Ph.D., Jo would like to remain in the U.S. as a postdoc for a year or two and then return to China. She reports that a university in China will hold a position for her in meteorology and oceanography "for as long as it takes me to return."

Given his recent successes, let us hope that Dr. McCreary goes to more meetings in Hawaii!
BEACH RENOURISHMENT: A PROBLEM

Brian Lipsitz, a June graduate of the Master's Degree Program in Coastal Zone Management, chose for his thesis project a problem that hits close to home for those of us in South Florida and in many other coastal areas of the U.S.: beach erosion and renourishment.

Brian's background is in geology. He received his B.S. degree from Pennsylvania State University in Geosciences, and he has retained a strong interest in sediments. He was drawn to Nova by its novel approach to coastal studies in that a combined science and management program is offered. In fact, Nova is one of only a few graduate schools that offer degrees in coastal zone management.

Working in coastal areas often entails encounters with beach erosion problems. Brian feels that in many areas beach renourishment may be more widely used in the near future to restore our swiftly receding coastlines. He also notes that using this environmental "tool" may prove to be a safe and harmless way to preserve our beaches.

An important problem that arises when planning beach renourishment is determining the type of sand that should be used. Therein lies a thesis problem. Brian has been able to put his background and graduate research to good use in his own back yard. Our laboratory is conveniently located inside a state park that boasts about 2.5 miles of prime beach area. Brian worked in conjunction with park personnel, who are considering a second beach renourishment project. He set up an experiment in which he tested two different types of sand: aragonite (calcium carbonate) and quartz (silica).

Samples of each were dyed with fluorescent tracers and placed in test areas along the beach. The relative distance of transport of the two types of sand then was measured and statistically analyzed. The results of his tests showed that the aragonite sand registered shorter transport distances and was generally more stable than the quartz sand. Thus the better material was identified for renourishment purposes: a sand that would better resist erosion and at the same time would produce an aesthetically pleasing beach. According to Brian, aragonite sand initially would be more expensive to obtain than quartz sand, but we must look 10 to 12 years down the road. He feels that using sand that stays on our beaches longer would put us ahead in the long run. In considering his future in the job market, Brian notes that "there is the possibility of a government job or employment through a private engineering firm." Combining science and management into one program seems to have been the right move for this graduate.

A FACULTY ON THE MOVE

Dr. Julian McCreary spent the week of June 22 at the Woods Hole Oceanographic Institution in Woods Hole, MA. He was invited by the graduate students in physical oceanography to present a series of lectures as part of their Visiting Scholar Program. From July 13 through 17, Dr. McCreary will be in Sao Paulo, Brazil. He will attend the Conference on Geophysical Fluid Dynamics with Special Emphasis on El Nino, and will present a paper on a related topic. The conference is sponsored by several international agencies, as well as the National Science Foundation. In August Dr. McCreary will be on the move again, this time traveling to Vancouver, Canada, to attend the XIX General Assembly of the International Union of Geodesy and Geophysics (IUGG). He will present a talk entitled "A Numerical Study of the Somali Current during the Southwest Monsoon," from a paper written in conjunction with his colleague at Nova, Dr. Pijush Kundu.

Dr. Gary Hitchcock will participate in his second Indian Ocean cruise this year, during the period July 17 - August 14. He will be accompanied by Ph. D. student Denis Frazel. They will travel to Kenya to meet the British research vessel RRS Charles Darwin. From there the ship will proceed to the Arabian Sea, where monsoon upwelling will be studied. Dr. Hitchcock's research project is sponsored by ONR. After the cruise, Dr. Hitchcock and Mr. Frazel will stop off in Karachi, Pakistan, to attend a meeting at the Institute of Ocean Science. Under discussion will be the Ship-of-Opportunity Program, which is a joint U.S.-Pakistan project. ONR will sponsor this travel also.

Dr. Pijush Kundu attended the annual American Geophysical Union spring meeting in Baltimore, May 18-22. He presented a paper entitled "Interaction of Internal Waves and Mean Flow Observation Near a Coast."
Philanthropists Dr. Charles and Lucy Forman, of Fort Lauderdale, gave the Center a fine Christmas gift in December -- a $250,000 trust to be used for Center development. The Formans, who provided a like amount for Oceanography when the Center's boat basin was constructed in 1970, have kicked off a $1,000,000 development project, in the hope that others will come forward with donations to the Center. Because Nova is a private institution, Center researchers look primarily to the federal agencies for their research funds. They must move within a highly competitive framework. Although the Center has received nearly $1,000,000 in research funds during the current fiscal year, much more income is needed before self-sufficiency can be achieved. The Forman Trust will be used primarily to help researchers during their occasional "down times" between funding periods. This assistance will go a long way toward relieving some of the pressure from our research faculty.