

## *S*udies at Marine Sciences

Examples of research into physical oceanography being undertaken at MSRC include the study of turbulent transport and mixing in the estuary, which serves to redistribute physical properties such as momentum, heat, salt, as well as living organisms like fish eggs, larvae and various suspended and dissolved contaminants. MSRC oceanographers investigate island wakes, ocean fronts and internal tides using observations, remote sensing, theoretical and numerical ocean models in a variety of coastal environments world wide. Other researchers are studying the dynamics of the Hudson River estuary, which carries a great burden of waste from the metropolitan New York City region to the adjacent coastal ocean.

Atmospheric scientists at MSRC conduct research on climate variability, both on the longer time scale of increasing greenhouse gas concentrations and on the shorter time scale of interannual variability. They also study the Earth's stratospheric ozone layer, both theoretically and observationally. Experimental atmospheric science efforts at MSRC include laboratory determination of infrared spectroscopic parameters and atmospheric research using stable isotopes. MSRC faculty are also engaged in the investigation of the atmosphere of other planets (e.g., Venus, Mars, etc.).

The graduate program at MSRC offers a master's degree in Marine Environmental Science and a Ph.D. in Coastal Oceanography with tracks in oceanography and atmospheric sciences. You will have opportunities to work on research projects ranging from the basic dynamics of oceans and atmospheres, to applied studies such as pollutant transport and dispersal and global climate change. You will share experiences with other students working on a great variety of topics in biological, chemical and geological sciences, and will be able to share your knowledge of the physical environment with them.

## *F*acilities and support

The Center owns and operates the R/V Onrust, a 20 m steel hulled research vessel, well equipped with wet and dry labs, winches, and modern instrumentation such as GPS navigation, conductivity-temperature-depth (CTD) recorder, acoustic doppler current profiler (ADCP), electromagnetic current meters, and a high resolution microstructure profiler. It can be fitted out with side scan sonar for sea floor mapping, as well as fluorometers and autoanalysers for mapping of chlorophyll and nutrient distributions.

MSRC computer facilities are available for numerical modeling and data analysis. These include networked VAX computers and UNIX workstations. There are Macintosh and PC laboratories for student use.

Financial aid is available to well qualified MS and Ph.D. students on a competitive basis. For further information, write or call the Director of Graduate Studies:

MARINE SCIENCES



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## *L*ocal Environment

Stony Brook is located on the historic north shore of Long Island, about 60 miles east of New York City. Long Island provides a great diversity of coastal marine environments, from the highly impacted waters of New York Harbor, to the bays and harbors of Long Island Sound, to the relatively pristine waters of the Peconic Bays.

All these coastal waters are readily accessible by the R/V *Onrust* from its home base in Port Jefferson. Larger seagoing ships are chartered as necessary for extended cruises.

## *F*aculty

Of the Center's 44 full-time faculty, the following are most closely associated with this program

*Malcolm Bowman* - Estuarine and coastal dynamics, fronts

*Robert Cess* - Climate modeling and climate change

*Daniel Conley* - Near shore sedimentary processes, tidal inlets

*Robert deZafra* - Microwave remote sensing of the stratosphere

*Jane Fox* - Planetary aeronomy, atmospheric evolution

*Marvin Geller* - Atmospheric dynamics, middle

atmospheric processes

*Sultan Hameed* - Climate change

*Kamazima Lwiza* - Estuarine dynamics, shallow sea fronts

*John Mei* - Trace gas chemistry, biosphere-atmosphere

exchange processes

*Hannul Peters* - Turbulent mixing in estuaries and coastal seas

*Prasad Vinayachandran* - Radiative spectroscopy and remote sensing

*Dong Ping Wang* - Coastal ocean dynamics, internal waves

*Deanna Walker* - Climate studies and remote sensing

*Robert Wilson* - Estuarine dynamics and kinematics

*Yueh-Li Zhang* - Climate feedback processes and modeling

Studies in physical oceanography and atmospheric sciences at Stony Brook take a unifying approach to the investigation of atmosphere-ocean physics and the coupling between the two systems. Atmospheric science emphasizes the understanding of global atmospheric processes as they affect climate and chemical composition. Physical oceanography studies emphasize both observations and modelling of transport and mixing processes within estuaries, the coastal and open ocean.

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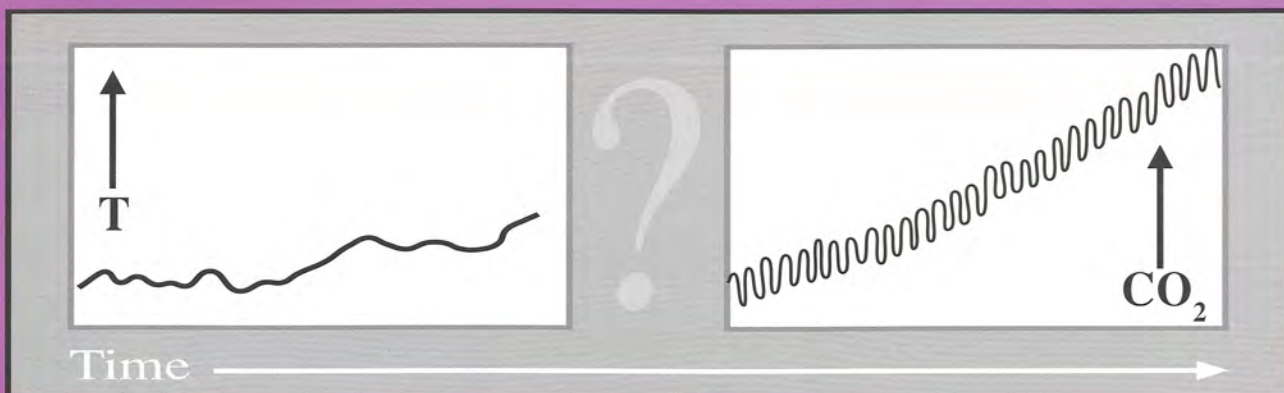
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## *Physics of the Oceans and Atmospheres*

Marine Sciences Research Center SUNY Stony Brook