SWOT analysis: MARI

*Strengths*

**Departments:**

**Department of Science and Geography**

Members of the department have a knowledge of regional and global patterns in climate, ecosystem, relationships between citizens and governments, and social conflicts, environmental issues, climate change, sea level rise, GIS (geographic information system) environmental politics, political behavior, interdependence of states and nations on resources, globalization and its issues.

**Department of Civil and Environmental Engineering**

Faculty members of the department conducted numerous researches and projects on coastal engineering, environmental engineering, coastal processes and structures, and GIS modeling and simulations. In addition, it houses coastal, environmental, geotechnical, hydraulics, water resources, structures and computing laboratories.

**Department of Electrical and Computer Engineering**

Faculty members can provide their expertise in electrical and computer engineering, energy science and alternative energy sources. The department has strong partnerships with laboratories and research centers such as the Applied Research Center (ARC) and Virginia Modeling and Simulation Center (VMASC).

**Department of Engineering Management and Systems Engineering**

Faculty members possess expertise in risk and knowledge management, engineering management, vulnerability analysis, modeling, simulation and the assessment of critical infrastructures and complex situations.

**Department of Community and Environmental Health**

Undergraduate, graduate, and certificate programs which lead to careers in health services research, public health, community health, health care administration, environmental health, health education and long-term care administration. This program will provide oversight and serve as a resource to MARI about the effects of Climate Change on the environmental health of the community.

**Department of Ocean, Earth and Atmospheric Sciences (OEAS)**

The department acquires and disseminates knowledge of the earth system, including the relationships among the biological, chemical, geological and physical components of the planet, including Climate Change. This department offers extensive expertise and research to MARI and would act as a think tank for research and information on Climate Change. They also host seminars and events centered on topics around oceanography.

**Department of Interdisciplinary Studies**- Opportunity to create individual degree program for prospective students interested in sea level rise in addition to other interests.

**Faculty:**

**David Earnest (Dept. of Science and Geography)** *Associate Professor*

Expertise in globalization and vulnerability, interdependence, international networks and resources

**Hua Liu (Dept. of Science and Geography)** *Assistant Professor*

Expertise in Remote Sensing, GIS, and Urban Environmental Change

**Glen Sussman (Dept. of Science and Geography)** *Professor*

Expertise in environmental politics, environmental opinion, environmental presidency; environmental politics, politics of climate change, environmental opinion, science and politics

**St. John Burton (Dept. of Communication & Theater)**

**Specialist in** Public Relations and Crisis Communications, Public Speech Writing and Media Interviews.

**Elizabeth Kersey (Government Relations)**

Assistant to the President for Local, State & Federal Governmental Relations

**Gary Schafran (Dept. of Civil & Environmental Engineering)** *Professor and Chair*

Expertise inEnvironmental engineering, aquatic chemistry, physicochemical treatment processes, systems water quality, Lake Oxygenation, reservoir management

**David Basco (Dept. of Civil & Environmental Engineering)** *Professor*

Expertise in coastal structure engineering, and shore protection. Dr. Basco teaches all courses in the coastal engineering certificate program. Also, he is an author of the State of the Region’s Beaches: Hampton Roads Virginia.

**Gangfeng Ma (Dept. of Civil & Environmental Engineering)** *Assistant Professor*

Expertise in estuarine and coastal hydrodynamics, coastal hazard assessment, sediment transport dynamics, wetland hydrodynamics, sea level rise impacts, and computational fluid dynamics

**Jaewan Yoon** **(Dept. of Civil & Environmental Engineering)** *Associate Professor*

Expertise in geographic information systems and GIS based environment simulations.

**Michael McShane (Dept. of Finance)** *Associate Professor*

Expertise in risk management, property-casualty insurance, and risk management. McShane is an educator in finance, and can inform people on how to ensure house is insured since Norfolk experiences flooding on a regular basis.

**Rani Kady (Dept. of Engineering Mgmt & Systems Engineering)** *Assistant Professor*

Expertise in application of human performance, modeling, and optimization techniques to emergency evacuation

**Cesar Pinto** **(Dept. of Engineering Mgmt & Systems Engineering)** *Associate Professor*

Dr. Pinto is Co-Founder of Emergent Risk Initiative at ODU and has expertise in risk in engineered systems extreme event analysis, port and maritime safety, and risk management.

**Andres Sousa-Poza (Dept. of Engineering Mgmt & Systems Engineering)** *Assistant Professor*

Expertise in complex situations, knowledge theory, decision Making, planning and goal attainment in uncertain environments

**Anusorn Singhapakdi**, (**Marketing Department)** *Chair*

MARI is going to need a person or advisor with expertise in proper marketing techniques and getting the word out to the community and stakeholders. A solid marketing plan, consulted by a professional in the field, can be beneficial.

**Dr. Jimmie Carraway (Department of Information Technology)** *Senior Lecturer*

With many accolades under his belt Dr. Carraway is skilled in all things Information Technology from systems design to project management. If MARI were looking to develop an online component, Dr. Carraway would be a qualified go-to person.

**Dr. Laurie Henry, CPA (Department of Accounting)** *Associate Professor*

If Mari is to seek funding from grants and pay for staff within its institute, it shall need a finance liaison. Dr. Laurie Henry specializes in accounting, as she is a certified personal accountant. She also teaches the graduate course on governmental and non-profit accounting, and could provide insight into how to handle the finances of the institute.

**Dr. Ling Li (Department of Decision Sciences/Information Technology)** *Professor*

MARI is going to need to be evaluated on performance. Dr. Li is skilled in performance management research and firm performance analysis, and has published over 150 journal articles.

**Dr. Wie Yusuf (Department of Urban Studies and Public Administration)** *Assistant Professor*

Dr. Yusuf has recently developed interest in climate change, especially SLR. She is currently doing research on climate change communication as it relates to SLR, and proper techniques that researchers can use to get the word out depending on specific audiences.

**Dr. Gary Morrison** **(Department of STEM Education and Professional Studies)** *Professor*

One of MARI’s many objectives is to mitigate, and by doing so they must educate. Dr. Morrison is skilled in instructional design to enhance learning. Also, MARI has expressed interest in developing an online course component that students can take to acquire more information about sea level rise; Dr. Morrison is also skilled in distance education research and technology integration. He would be a good asset when the online component is ready to be discussed.

**Dr. James English, (Dept. of Environmental Science)** *Associate Professor*

Expertise is in the area of food safety, communicable and infectious disease control, mosquito and vector control, water and air pollution and its control, epidemiology and environmental law. He is also a member of member of the National Environmental Health Association, the Virginia Environmental Health Association and the Tidewater Environmental Health Association.

**Dr. Roger Harvey (Dept. of OEAS)** *Interim Vice President for Research*

Research interests include Organic Geochemistry and Biogeochemistry Sources, transformation and fate of organic compounds in aquatic environment and their linkages with climate.

**Dr. Tal Ezer (Dept. of OEAS)** *Professor* *and ModSim affiliated faculty.*

Research Interests: Physical oceanography, ocean circulation, computer ocean modeling, physical-biological interaction

**Dr. Larry Atkinson (Dept. of OEAS)** *Professor & Eminent Scholar*

Research interests include climate change, sea level rise, offshore renewable energy and high frequency radar applications to ocean observing.

**Brian Payne** *Vice Provost*

He is in support of interdisciplinary activities.

**Organizations/Centers/Offices/Institutes:**

**Mace and Crown** Student Newspaper

*Editor-in-Chief* Derek Allan Page

**Monarch Magazine**

*Editor* James Raper

**WODU-** Official radio station of ODU

*General Manager* Alex McGinnis

**Social Science Research Center**

Provides survey research, evaluation, performance measurement and evaluation, and data collection (interviews, observations, phone & mail surveys, focus groups) for human service programs and the social services.

**Center for Regional and Global Study**

Assists in coordinating resources to enhance to regional and global studies and provides efficient channels for communication with businesses, the media, military and volunteer organizations

**The Consortium for Maritime Research**

Facilitates research in all areas related to the maritime at Old Dominion University and the Hampton Roads region.

**Spatial Analysis of Coastal Environments (SpACE)**

SpACE research is focused on coastal environments and management. It also provides a certificate in coastal environmental analysis and management, remote sensing, and geographic information systems (GIS) applications.

**The Laboratory for Remote Sensing and Environmental Analysis (LARSEA)**

Provides geospatial technologies and tools in remote sensing, geographic information systems (GIS), and spatial analysis technology

**The Hampton Roads Naval Reserve Office Training Corps**

As the largest officer training battalions, it provides an opportunity to educate, promote, and cooperate regarding the issue of sea level rise.

**National Center for System of Systems Engineering**

Faculty members possess knowledge on analyzing, modeling and structuring complex system processes and problems.

**Office of Assessment**

Can help to assist MARI staff in assessing outcomes of research, evaluating effectiveness and satisfaction of projects.

**Office of University Events**

Provides assistance in organizing and promoting MARI events.

**Maritime Institute**

With SLR impacting all areas in Hampton Roads, it would be important for MARI to partner with this institute. By providing information on how ports in the local area can be affected by SLR, greater precautions can be taken to assure that the ports are prepared and aware of the situation. Maritime Institute can also provide useful information, as they are qualified in delivering logistic and port management education.

**Center for Real Estate and Economic Development (CREED)**

CREED is responsible for real estate market reviews and is interested in development issues affecting the region. SLR is an important issue that CREED should be aware of and in return could educate their constituents. Having this center as a stakeholder could further MARI’s outreach efforts. Also, CREED has an extensive collection of information of real estate data that MARI may find beneficial when doing research.

**Center for Coastal Physical Oceanography**

Established to promote research on the physical oceanography of the coastal ocean and related oceanographic processes. The coastal ocean is the focus of increasing research for reasons relating to both short-term anthropogenic impacts and long-term global change.

**The State Council of Higher Education for Virginia (SCHEV)**

Established the Commonwealth Center for Coastal Physical Oceanography (CCPO) at ODU to promote research on the physical oceanography of the coastal ocean and related oceanographic processes. This center paved the way and pioneered research centered on climate change.

**Climate Change and Sea Level Rise Initiative (CCSLRI)**

Created by ODU in 2010 to facilitate research and education in all aspects of climate change and sea level rise.CCSLRI is a research initiative housed within the university to address through research and education climate change and sea level rise.

*Weaknesses*

**Organizations/Centers/Offices/Institutes:**

**Climate Change and Sea Level Rise Initiative (CCSLRI)**

This office is both strength and a weakness. MARI and CCSLRI will need to merge or realign efforts in order to be efficient and not duplicate services.

**Human Resources Department**

Slow hiring process

**Construction and Procurement Services**

MARI will have to ensure they are following all policies and procedures to receive necessary resources.

**Office of Institutional Research**

Provides analytical and technical support, coordinates the reporting of enrollment, student characteristics, and other data to state, federal, and private agencies and creates and maintains databases for reporting academic performance, retention/attrition, and graduation rate data. MARI can utilize this office for the development of reports.

*Opportunities*

**Departments:**

**Department of Modeling and Simulation** (Potential strength)

ODU was the first to offer the Ph.D. in modeling and simulation in 2000 and the first to establish an academic department and to offer an undergraduate engineering program in modeling and simulation. Research activities range from investigation of fundamental modeling and simulation methods and technologies to applications of modeling and simulation in the domains of medicine and health care, transportation, education and gaming, science and engineering, homeland security and defense, and business enterprise decision support.

**Department of Mechanical and Aerospace Engineering**

Faculty members can provide their expertise in mechanical, aerospace, and marine engineering and architecture, modeling and simulations. An opportunity to assist in teaching, researching, developing and teaching about sea level rise and its impact on engineering science.

**Department of Teaching and Learning**

Department is dedicated to teaching and ensuring students acquire the most amount of knowledge.

**Faculty:**

**Dr. ManWo Ng (Dept. of Modeling and Simulation)** *Assistant Professor*

Interest areas and research are focused on modeling and analysis of transportation networks, and modeling and simulation of emergency evacuation for disaster management.

**Daniel O'Leary (Dept. of Sociology and Criminal Justice)** *Lecturer, Ethnographer*

Expert in sustainable agriculture. Dr. O’Leary can assist in understanding individuals’ behavior and how to connect to local residents in raising awareness on climate change and its effect on local food systems.

**Organizations/Centers/Offices/Institutes**

**The Virginia Modeling Analysis and Simulation Center (VMASC)**

A university-wide multidisciplinary research center that emphasizes modeling, simulation, and visualization (MS&V) research, development and education. The mission of the Center is to conduct collaborative MS&V research and development, provide expertise to government agencies and industry, and to promote Old Dominion University, Hampton Roads and Virginia as a center of MS&V activities. As a national leader in Modeling and Simulation, VMASC and ODU should partner to develop software that will realistically and visibly show stakeholders the dramatic effects of climate change in the Hampton Roads region.

**Sustainable Development Institute (SDI)**

SDI promotes and provides research, services, resources in sustainable development, pollution prevention, alternative energy/green energy/biofuel research, carbon emission/carbon recycling, air/water quality research and applications, life cycle analysis, environmentally conscious manufacturing, and green building design.

**Access EU**

Opportunity to establish meaningful partnerships, exchange knowledge and create a well-informed community though education, community awareness, and networking.

**Coastal Engineering Certificate Program**

This certificate program is an opportunity to share knowledge and research on sea level rise. Contains 4 graduate level courses.

**The Perry Library**

Potential to showcase MARI within the exhibit section of the library and purchase literature on climate change.

**Institute of Ship Maintenance, Repair and Operations (SMRO)**

Opportunity to research, develop and educate community about maintaining marine vehicles and future of marine engineering.

**Distance Learning**

Provides an opportunity to share the knowledge on sea level rise, educate and train interested individuals without location constrains.

**Office of Community Engagement**

Office’s expertise in community engagement, betterment, and partnership building.

**Office of Research**

Office provides assistance in research design, development, and funding. Also, it ensures that the research complies with university's legal, ethical and safety standards and regulations relating to research.

**Office of Assessment**

Assisting MARI staff in assessing outcomes of research, evaluating effectiveness and satisfaction of projects.

**Students Engagement and Enrollment Services**-

Opportunity to interest and involve students in MARI thought interactive programs and activities through student organizations.

**University Advancement**

Deals with alumni relations, community engagement, development, donor relations, foundations, university events, military relations and licensing.

*Threats*

**Organizations/Centers/Offices/Institutes:**

**Board of Visitors**

Must approve all decisions regarding MARI’s operating status.

**University Budget Office**

MARI has limited control over the university budget process and should focus on sustainability.

**Information Technology Services (ITS)**

Potential challenges for website development including construction delays and maintenance.

**Office of Research** (Potential Strength)

Office provides assistance in research design, development, and funding. Also it ensures that the research complies with university's legal, ethical and safety standards and regulations relating to research. The Internal Review Board (IRB) may limit approved funding for the development of research.

**Provost Council** (Potential Strength)

The Provost's Council is comprised of the college deans and senior administrators in Academic Affairs. The Council assists the provost and vice president for academic affairs in the development and review of policies and procedures and in determining future directions. The Provost Council will need to approve and enforce multidisciplinary opportunities for professors to participate in MARI. This Council could prove to be a challenge when developing certificate programs later down the road.