

## **POSITION ANNOUNCEMENT:**

### **GEORGE MELENDEZ WRIGHT INITIATIVE FOR YOUNG LEADERS IN CLIMATE CHANGE**

The National Park Service (NPS) is pleased to announce the 2017 *George Melendez Wright Initiative for Young Leaders in Climate Change* (YLCC) to provide a pathway for exemplary students in higher education (graduate students, advanced undergraduate students, and recent graduates) to apply their skills and ideas to park-based challenges and solutions. The Initiative offers 12-week paid internships which allow students to gain valuable work experience, explore career options, and develop leadership skills through mentorship and guidance while helping to advance the NPS response to climate change. Successful students may be eligible for non-competitive hire into federal positions for which they qualify following completion of all academic requirements.

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### **REEF TEMPERATURE WRANGLER FOR SOUTH FLORIDA NATIONAL PARKS**

South Florida / Caribbean Inventory & Monitoring Network  
Miami, Florida

Analyze, interpret and report on a large data set of water temperature collected at resource depth over the recent past (~20yrs). Using Access and R program languages correlate temperature reading between sites, fill data gaps, and report on trends at both a local and regional level.

#### **INTERNSHIP PROJECT BACKGROUND**

Climate change is expected to have an major impact on South Florida in the form of sea level rise, increased carbon dioxide concentrations, and rising sea surface temperatures. There is a strong association between sea surface temperature and coral bleaching events. Coral bleaching is when the zooxanthellae (symbiotic dinoflagellate (algae)) are jettisoned from the coral body which causes a loss of color. This bleaching event stresses these long lived, key stones species that literally build the coral reef ecosystem and can result in death of the coral colony.

The NPS and USGS have collected water temperature data at 5 reef locations in Virgin Islands National Park since 1990 with in-situ water temperature loggers at reef depth. This effort has been expanded throughout the Dry Tortugas, Biscayne, Buck Island and Salt River National Park. The reef temperature database has 2.5 million records of bi-hourly water temperature data. It is a rarity to have such a long term water temperature dataset at the reef resource depth. Here we have long term temperature data that has been consistently collected that can be associated to site specific changes. Full investigation and development of a trend report based on this long term reef temperature data is critical in understanding the association of temperature to percent live coral cover; which has been monitored at these sites as well.

#### **INTERNSHIP PROJECT DESCRIPTION**

The intern will develop a trend report for the long term reef temperature data set. This trend report will investigate site specific records, park wide records and compare across the network monitored parks. Additional goals are 1) to develop R code to automate interpolation for filling small gaps that have

occurred in the long term temperature records and 2) then conduct a trend analysis to see if there are differences across sites, parks and compare to regional drivers such as the Atlantic Multi-Decadal Oscillation, 3) intern develops outreach products to explain the findings of the trend report that would cummlinate in a resource brief, webpage information, and a outreach product that would be given to park interpret staff, 4) the intern will make recommendations to resource management regarding the climate change strategies based on these findings.

The intern will gain skills working with “large” data, manipulating data, development of R code, graphic visualization skills, trend analysis and comparison of trend data. The project deliverable will be the baseline assessments that will be allow long term monitoring to occur.

The 2.5 million temperature records are in a fully functioning database, the data already has had quality assurance and quality control procedures applied to the period of record. Preliminary attempts at developing trend analysis have occurred. Intern will work with the SFCN Marine ecologist, a quantitative ecologist, ecologist, and a marine biological technician who are all interested completing this project. There is considerable interest in getting this information processed and having this trend report presented to the professional research community and to the public.

### **Internship Tasks**

The intern will develop a trend report for the long term reef temperature data set. This trend report will investigate site specific records, park wide records and compare across the network monitored parks. Additional goals are 1) to develop R code to automate interpolation for filling small gaps that have occurred in the long term temperature records and 2) then conduct a trend analysis to see if there are differences across sites, parks and compare to regional drivers such as the Atlantic Multi-Decadal Oscillation, 3) intern develops outreach products to explain the findings of the trend report that would cummlinate in a resource brief, webpage information, and a outreach product that would be given to park interpret staff , 4) the intern will make recommendations to resource management regarding the climate change strategies based on these findings.

### **Internship Products**

The intern will produce a report detailing the outcome for the trend analysis. The trend analysis will be the base line for future manipulations of the reef temperature data. The use of R code to automate interpolation for filling small gaps that have occurred in the long term temperature records will be documented in a standard operation procedure (SOP). The findings from the comparison within sites, between parks and compare to regional patterns will be used to interpret patterns in the changes in live coral cover that is also monitored at the SFCN. Output products would be a resource brief document, webpage as part of the SFCN webpage and a outreach package deleivered to the park interpretation staff (VIIS, DRTO). Finally, recommendations will be made to resource management regarding the climate change strategies based on this work.

### **QUALIFICATIONS**

The intern should have education or planning to major in: biology, ecology, marine biology, climatology, oceanography, and an interest in climate change. The intern should have basic computer proficiency skills, examples include familiar with word, excel, power point, or similar programs. Familiarity with the R program (or similar Statitital program) is required. Intern should be able to work well with a team and be able to complete task in a timely and professional manner. A happy person is desirable.

## **LEADERSHIP DEVELOPMENT**

The intern will be mentored by a number of the South Florida/Caribbean Inventory and Monitoring Network (SFCN) staff. The intern will be directly supervised by the SFCN Marine Ecologist along with the Quantitative Ecologist who will oversee the entire project. The intern will collaborate with the SFCN data manager for guidance on R code skill development and evaluation. The intern will collaborate with the SFCN biological technician responsible for the field parts of the monitoring program. The intern will make a power point presentation of the results. The intern will be evaluated using a system based on the Employee Performance Appraisal Plan (EPAP) system where there will be four critical elements.

## **DATES OF POSITION**

Approximate start date is May 22, 2017. Dates are flexible and will occur on or around summer of 2017.

## **COMPENSATION**

This initiative supports one student at \$15/hour for 12 weeks, or 480 hours.

## **HOUSING**

Park housing is available at Pine Island in Everglades National Park; this is a substantial distance from the SFCN office (26 miles away - 40 min drive time - a personal vehicle is necessary). The housing is group housing, with up to 6 housemates. There are 3 rooms, so each room has 2 roommates. There is a shared kitchen. Interns will need to provide their own food and linens. Cleaning is responsibility of everyone and it is expected that shared living space and personnel spaces will be kept in a clean and orderly manner.

Everglades National Park is 10 miles from Florida City/ Homestead Florida. There are stores and other basic entertainment in this area. It is 20 miles from Key Largo and 25 miles from Miami Beach. South Florida is a hot and humid location in the summer months with occasional Hurricanes and tropical storms affecting the area.

## **WORK ENVIRONMENT**

The internship work is mostly data process and manipulation; as such it will occur in the main office of the SFCN. The SFCN office is a comfortable and accommodating location. There are approximately 20 people would work in the office; covering a range of ages and life stages from part time student interns (who attend the local university) too well established NPS staff with 20 plus years working on resource management issued within the NPS.

## **CONTACT INFORMATION**

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