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University of South Florida	University of South Florida 3702 Spectrum Blvd. Tampa, FL. 336129446
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IS AWARDEE ORGANIZATION (Check All That Apply) (See GPG II.C For Definitions) ☐ SMALL BUSINESS ☐ FOR-PROFIT ORGANIZATION ☐ MINORITY BUSINESS ☐ WOMAN-OWNED BUSINESS ☐ IF THIS IS A PRELIMINARY PROPOSAL THEN CHECK HERE

TITLE OF PROPOSED PROJECT **REU Site Proposal: Weather, Climate and Society: An Interdisciplinary approach integrating physical and social sciences**

REQUESTED AMOUNT	PROPOSED DURATION (1-60 MONTHS)	REQUESTED STARTING DATE	SHOW RELATED PRELIMINARY PROPOSAL NO. IF APPLICABLE
$ [redacted]	36 months	05/01/17	

THIS PROPOSAL INCLUDES ANY OF THE ITEMS LISTED BELOW

☐ BEGINNING INVESTIGATOR (GPG I.G.2)
☐ DISCLOSURE OF LOBBYING ACTIVITIES (GPG II.C.1.e)
☐ PROPRIETARY & PRIVILEGED INFORMATION (GPG I.D, II.C.1.d)
☐ HISTORIC PLACES (GPG II.C.2.j)
☐ VERTEBRATE ANIMALS (GPG II.D.6) IACUC App. Date _____
PHS Animal Welfare Assurance Number _____
☒ FUNDING MECHANISM Research - other than RAPID or EAGER

☐ HUMAN SUBJECTS (GPG II.D.7) Human Subjects Assurance Number _____
Exemption Subsection _____ or IRB App. Date _____
☐ INTERNATIONAL ACTIVITIES: COUNTRY/COUNTRIES INVOLVED (GPG II.C.2.j)
☒ COLLABORATIVE STATUS
Not a collaborative proposal

PI/PD DEPARTMENT	PI/PD POSTAL ADDRESS
Geography, Environment and Planning	3650 Spectrum Blvd Suite 160 Tampa, FL 336129446 United States
PI/PD FAX NUMBER 813-974-4808	

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CO-PI/PD				
CO-PI/PD				

CERTIFICATION PAGE

Certification for Authorized Organizational Representative (or Equivalent) or Individual Applicant

By electronically signing and submitting this proposal, the Authorized Organizational Representative (AOR) or Individual Applicant is: (1) certifying that statements made herein are true and complete to the best of his/her knowledge; and (2) agreeing to accept the obligation to comply with NSF award terms and conditions if an award is made as a result of this application. Further, the applicant is hereby providing certifications regarding conflict of interest (when applicable), drug-free workplace, debarment and suspension, lobbying activities (see below), nondiscrimination, flood hazard insurance (when applicable), responsible conduct of research, organizational support, Federal tax obligations, unpaid Federal tax liability, and criminal convictions as set forth in the NSF Proposal & Award Policies & Procedures Guide,Part I: the Grant Proposal Guide (GPG). Willful provision of false information in this application and its supporting documents or in reports required under an ensuing award is a criminal offense (U.S. Code, Title 18, Section 1001).

Certification Regarding Conflict of Interest

The AOR is required to complete certifications stating that the organization has implemented and is enforcing a written policy on conflicts of interest (COI), consistent with the provisions of AAG Chapter IV.A.; that, to the best of his/her knowledge, all financial disclosures required by the conflict of interest policy were made; and that conflicts of interest, if any, were, or prior to the organization's expenditure of any funds under the award, will be, satisfactorily managed, reduced or eliminated in accordance with the organization's conflict of interest policy. Conflicts that cannot be satisfactorily managed, reduced or eliminated and research that proceeds without the imposition of conditions or restrictions when a conflict of interest exists, must be disclosed to NSF via use of the Notifications and Requests Module in FastLane.

Drug Free Work Place Certification

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent), is providing the Drug Free Work Place Certification contained in Exhibit II-3 of the Grant Proposal Guide.

Debarment and Suspension Certification

(If answer "yes", please provide explanation.)

Is the organization or its principals presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency? Yes ☐ No ☒

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant is providing the Debarment and Suspension Certification contained in Exhibit II-4 of the Grant Proposal Guide.

Certification Regarding Lobbying

This certification is required for an award of a Federal contract, grant, or cooperative agreement exceeding $100,000 and for an award of a Federal loan or a commitment providing for the United States to insure or guarantee a loan exceeding $150,000.

Certification for Contracts, Grants, Loans and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:
(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
(3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

Certification Regarding Nondiscrimination

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is providing the Certification Regarding Nondiscrimination contained in Exhibit II-6 of the Grant Proposal Guide.

Certification Regarding Flood Hazard Insurance

Two sections of the National Flood Insurance Act of 1968 (42 USC §4012a and §4106) bar Federal agencies from giving financial assistance for acquisition or construction purposes in any area identified by the Federal Emergency Management Agency (FEMA) as having special flood hazards unless the:
(1) community in which that area is located participates in the national flood insurance program; and
(2) building (and any related equipment) is covered by adequate flood insurance.

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) or Individual Applicant located in FEMA-designated special flood hazard areas is certifying that adequate flood insurance has been or will be obtained in the following situations:
(1) for NSF grants for the construction of a building or facility, regardless of the dollar amount of the grant; and
(2) for other NSF grants when more than $25,000 has been budgeted in the proposal for repair, alteration or improvement (construction) of a building or facility.

Certification Regarding Responsible Conduct of Research (RCR)
(This certification is not applicable to proposals for conferences, symposia, and workshops.)

By electronically signing the Certification Pages, the Authorized Organizational Representative is certifying that, in accordance with the NSF Proposal & Award Policies & Procedures Guide, Part II, Award & Administration Guide (AAG) Chapter IV.B., the institution has a plan in place to provide appropriate training and oversight in the responsible and ethical conduct of research to undergraduates, graduate students and postdoctoral researchers who will be supported by NSF to conduct research. The AOR shall require that the language of this certification be included in any award documents for all subawards at all tiers.

CERTIFICATION PAGE - CONTINUED

Certification Regarding Organizational Support

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that there is organizational support for the proposal as required by Section 526 of the America COMPETES Reauthorization Act of 2010. This support extends to the portion of the proposal developed to satisfy the Broader Impacts Review Criterion as well as the Intellectual Merit Review Criterion, and any additional review criteria specified in the solicitation. Organizational support will be made available, as described in the proposal, in order to address the broader impacts and intellectual merit activities to be undertaken.

Certification Regarding Federal Tax Obligations

When the proposal exceeds $5,000,000, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal tax obligations. By electronically signing the Certification pages, the Authorized Organizational Representative is certifying that, to the best of their knowledge and belief, the proposing organization:
(1) has filed all Federal tax returns required during the three years preceding this certification;
(2) has not been convicted of a criminal offense under the Internal Revenue Code of 1986; and
(3) has not, more than 90 days prior to this certification, been notified of any unpaid Federal tax assessment for which the liability remains unsatisfied, unless the assessment is the subject of an installment agreement or offer in compromise that has been approved by the Internal Revenue Service and is not in default, or the assessment is the subject of a non-frivolous administrative or judicial proceeding.

Certification Regarding Unpaid Federal Tax Liability

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Federal Tax Liability:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has no unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

Certification Regarding Criminal Convictions

When the proposing organization is a corporation, the Authorized Organizational Representative (or equivalent) is required to complete the following certification regarding Criminal Convictions:

By electronically signing the Certification Pages, the Authorized Organizational Representative (or equivalent) is certifying that the corporation has not been convicted of a felony criminal violation under any Federal law within the 24 months preceding the date on which the certification is signed.

Certification Dual Use Research of Concern

By electronically signing the certification pages, the Authorized Organizational Representative is certifying that the organization will be or is in compliance with all aspects of the United States Government Policy for Institutional Oversight of Life Sciences Dual Use Research of Concern.

AUTHORIZED ORGANIZATIONAL REPRESENTATIVE	SIGNATURE	DATE
NAME Kelley Schuler	Electronic Signature	Aug 24 2016 4:14PM

TELEPHONE NUMBER	EMAIL ADDRESS	FAX NUMBER
	kschuler@usf.edu	

PROJECT SUMMARY

Overview:

New or renewal REU: New
Project Title: "REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences"
Principal Investigator: Jennifer Collins
Submitting Organization: University of South Florida (USF)
Main/sub-fields of research: Geosciences, social sciences, atmospheric and ocean sciences
Location: University of South Florida
Number of undergrad participants per year: 10
Summer or academic year: Summer
Week per year: 9
International or RET component: No
Contact for student applications: Jackie Hayes, (813)974-8188, jnhayes@usf.edu
URL: www.lib.usf.edu/undergraduate-research/external-experiences

This 9-week REU program focuses on engaging under-represented students in interdisciplinary research related to weather, climate and society (WCS) and the physical and social interactions. Our pedagogical approach, which incorporates a myriad of learning opportunities, will enhance the experience of participants and facilitate their development of scientific skills. The development of knowledge/skills will encourage undergraduates (UGs) to enter STEM fields, particularly atmospheric sciences or a related discipline, and prepare them for basic and applied research at upper levels and later in graduate school. The program, which draws from an interdisciplinary panel of mentors, is designed to achieve these objectives: 1) Deliver an intensive research experience for 10 UGs/year with an emphasis on under-represented groups; 2) Provide participants with research experiences to aid their recruitment into a STEM UG major, particularly the atmospheric sciences or a related discipline, and graduate programs; 3) Promote participants' skill development through a program of mentored research (which follows a project from conception to dissemination of results), experiential learning, professional development workshops, remote seminars that offer interaction with national and international scientists, trainings in social and physical research techniques and interdisciplinary perspectives on the social and physical aspects and impacts of severe weather and climate and related disasters; 4) Increase awareness of ethical issues related to working with scientific data and communicating the results; and 5) Provide UGs access to a mentoring network that will support them throughout their career.

Intellectual Merit :

In 2014, the American Meteorological Society issued a Professional Guidance Statement regarding strengthening social sciences in the weather-climate enterprise. The AMS statement advocates a "clear and compelling need to enhance the utility of weather and climate research, observations, and information-- from short-fused tornado warnings to longer-term regional climate model output-- using knowledge from the social sciences about how individuals and society interact with weather and climate". To this end, the REU will address the AMS statement by producing weather and climate research which integrates the social sciences in its design and execution.

Broader Impacts :

Our program is designed to prepare the next generation of UGs to pursue STEM fields and become successful future graduate students and researchers. The REU will broaden participation of under-represented groups by recruiting participants primarily from local non-research institutions, particularly the 28 members of the Florida College System, from Florida Hispanic Serving Institutions, and Florida Historically Black Colleges and Universities. Focusing on rising sophomores, this REU program draws students into the STEM disciplines early in their career. Research projects will explore a range of issues, with each project having the potential to directly benefit USF's west central Florida community, as well as disaster-vulnerable communities in other extreme weather-affected areas. USF's WCS REU will become a model for interdisciplinary-based research performed by UGs through dissemination of project results and presentations by REU students and faculty.

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For font size and page formatting specifications, see GPG section II.B.2.

*Proposers may select any numbering mechanism for the proposal. The entire proposal however, must be paginated. Complete both columns only if the proposal is numbered consecutively.

(a) Overview: Objectives. The University of South Florida (USF) seeks funding for three years to support a nine-week summer Research Experience for Undergraduates (REU) with a focus on integrating physical and social science research related to weather and climate and their effects on society. This REU will draw participants primarily from local non-research institutions, particularly the 28 members of the Florida College System, Florida Hispanic Serving Institutions (HSI), and Florida Historically Black Colleges and Universities (HBCU). Our goal is to empower and inspire rising sophomores through undergraduate research (UR) activities designed to engage students early in their college trajectory. We strive to build an experience that motivates students to pursue Science, Technology, Engineering, and Math (STEM) disciplines with an aim to acquire key fundamental research skills. The primary goal of this research is to leverage faculty expertise and institutional resources across physical and social science departments (atmospheric and marine sciences, geosciences, anthropology, sociology, education, geography, communications, psychology, and health), to promote STEM education through research and program opportunities related to weather, climate and society (WCS). Key objectives are to

- Deliver an intensive research experience for 30 undergraduate (UG) students (10 per year) with an emphasis on increasing the number of researchers from under-represented groups.
- Provide research opportunities that examine the behavior of the earth's atmosphere and interaction with other components of the earth, particularly the ocean and the human activities that contribute to these interactions.
- Use mentored research projects to bridge natural and social sciences through methodological approaches and applied learning that transcends disciplinary boundaries on the causes and impacts of climate change, severe weather, and related disasters.
- Provide participants with a network of mentoring to aid their recruitment into and consideration of STEM UG majors and graduate programs, particularly in the atmospheric sciences, sustainability sciences, environmental social sciences, and related disciplines.
- Increase awareness of ethics related to working with scientific data and communicating results.

Targeted Student Participants. Our intended audience consists of UGs with diverse backgrounds and experiences from institutions in the Southeastern U.S., particularly Florida. We will attract UGs to our REU program who might not otherwise consider STEM majors and careers, and as such, aim to target students at early stages in their college experience -- rising sophomores. We have contacts with institutions from the Florida College System which serves 81% of freshman and sophomore minority students in public higher education in the state through its 28 colleges. Of these institutions, a large percentage are first generation college students. Several participants may come from larger institutions such as Florida International University, a HSI with >60% Hispanic students. Our partnership with the Florida-Georgia Louis Stokes Alliance for Minority Participation (FLSAMP) as well as direct interaction with HBCU and HSI will allow us to actively recruit minority and under-represented students.

Intellectual focus. Florida is an ideal location for WCS-related research with its variable weather, climate changes, and increasingly vulnerable populations. Compared to other states, Florida is statistically more susceptible to lightning deaths and injuries (Paxton et al., 2008), experiences more tornado activity per square kilometer (Collins et al., 2000), and has more tropical cyclone activity with a hurricane striking every 2 years on average (Malmstadt et al., 2009). Hail storms, heat waves, cold spells, and flooding also pose concerns. Examining factors such as the frequency and intensity of storms represents only the physical dimensions of the event; the real hazard facing Florida and other weather-threatened locations is the vulnerability, and ultimately, the losses and recovery associated with a complex web of social, economic, and political forces (Wisner et al., 2004). If we are to comprehend extreme weather and climate hazardousness at a time when exposure and sensitivity to atmospheric hazards are increasing around the world, research must focus on integrating the physical and human dimensions. Florida has an estimated population of 19.6 million people, up from less than three million in 1950, all of whom are exposed to the vicissitudes of Florida's weather. The state's vulnerability is exacerbated by its demographic traits; it has the highest proportion of elderly population; 9.5% of its people live in mobile homes; and many individuals are disadvantaged or marginalized (US Census Bureau 2009, 2010).

All hazard problems are multidimensional and require an interdisciplinary focus; they incorporate geo-physical processes along with social forces and policy implementation, all placed within an historical context so

that the scope of social science research relevant to the weather and climate arena is broad and multifaceted. Theories and knowledge from social science disciplines are relevant to the intersections between WCS and the development of more effective policies and decision making around climate change and extreme weather events. This REU, therefore, seeks to expose students to some of these issues and actively engage them in on-going research projects focusing on extreme weather and climate hazards, which will provide more useful scientific, technical, and applied information that promotes novel scientific insights and enhanced decision making. The outcome will be a cohort of emerging scientists trained in STEM, with a strong atmospheric science background, who will understand and confront the challenges of hazardous environments, as well as translate findings for multiple audiences and consider the role of sociopolitical context behind the science. Such an integration of social sciences in the weather and climate enterprise will be further strengthened, contributing to a safer and more sustainable future. This goal of strengthening social sciences in the weather–climate enterprise was emphasized recently in an American Meteorological Society (AMS) Professional Guidance Statement released in February (AMS, 2014).

Organizational Structure. Figure 1 shows the organizational structure of the WCS REU, which highlights the multiple layers of mentoring.

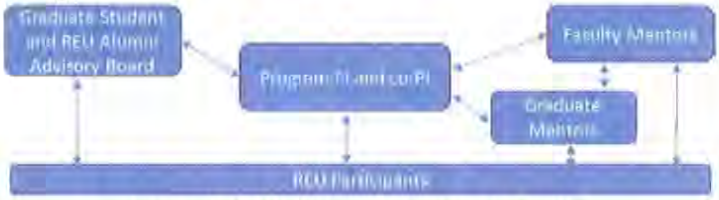

Figure 1: WCS REU organizational structure

The REU is an interdisciplinary program coordinated with other REUs by the USF Office of Undergraduate Research (OUR), which facilitates and creates research opportunities throughout the university. The REU program is directed by PI, Dr. Jennifer Collins, School of Geosciences, and co-PI, Dr. Robin Ersing, School of Public Affairs. The faculty and mentors are all outstanding researchers from a variety of disciplinary backgrounds and are integral parts in developing and sustaining this UR program. Some of these researchers have previously served as mentors during the Hurricane REU offered at USF (2007-2013). USF's Natural Hazards Network (NHN) is composed of physical and social scientists at USF and several other Florida institutions with a research interest in natural hazards. Our committed mentors regularly meet as part of the NHN to discuss research questions and opportunities for collaboration, imparting their perspective to the discussion. In 2013, the NHN was asked to brief US Department of Defense Northern Command (NorthCom) and its then-commanding general, General Jacoby, on major hazards likely to afflict the US over the next decade. The group came up with a list of twelve significant hazards. As of mid-2016, two of the twelve had already occurred: major flooding in Houston (April 2016) and the spread of a tropical disease (in this case, Zika) beyond tropical areas, which is due to a combination of airline travel, rapid evolution of the pathogen, and global warming. Other major disasters on the list include hurricane storm surge in Tampa and Miami.

Dr. Collins will oversee the award and reporting functions, coordinate the student recruitment and selection process, and facilitate interaction with university services and programs. She will supervise support staff and graduate student assistants who will attend to logistics such as travel, registration, stipends, social events and other related experiences. Collins will organize and facilitate the Graduate Student/REU Alumni Advisory Board. She will also be responsible for project reporting. With the large interdisciplinary focus, faculty and student team, Dr. Ersing will share the administrative responsibility and serve as coordinator of group-mentored research teams, preparing the mentors and refining the interdisciplinary projects.

The proposed REU comprises an undergraduate-graduate and alumni-faculty triad. Graduate students across departments as well as REU alumni, will have the opportunity to serve on the REU Graduate Student-Alumni Advisory Board (REU-GSAAB), a group that will advise and assist the Directors in many of the facets of the program such as field experiences and the organization of the annual NSF REU Research Day at USF. The

REU-GSAAB will be a tool to recruit, in particular, minority graduate students and REU alumni as assistant mentors to complement the existing diversity of current faculty mentors. These assistant mentors, who will be mentored by faculty, will be role models for UGs and assist faculty with the mentoring of the students. Several early stage PhD students and former alumni from the previous Hurricane REU, some of whom are minorities, have already committed to serve on the Board (see letter of commitment). Their commitment will help promote continuation of interest in research post REU.

Time Table. The REU will run for 9 weeks during the summers of 2017-2019.

August-December	Initiate initial recruitment activities with targeted colleges, universities, and student associations. Communicate with mentors.
January	Receive and review student applications. Select student participants.
February	Notify selected students, circulate lists of potential mentors and their research areas, create student list-serve, initiate contact between mentors and students.
March-April	Finalize travel, housing and other logistics. Present Quick Start readings and materials on-line for student access. Determine Mentor-Mentee matches.
May	Receive students in the last week of May. Begin orientation events and REU activities.
June-July	Start research seminars and workshops, mentorship activities, on-site experiential learning opportunities, and evaluation activities.
August	Coordinate student research poster sessions at Community Symposium.
Fall	Coordinate with co-mentors from students' institution/local AMS chapter. Continue mentor-student interactions to finalize papers and presentations.
Spring	Facilitate student presentations at professional conferences or home institution symposia.
Post REU	Provide follow-up/student feedback impact and outcomes at 6, 12, 24 and 36 months.

Participating organizations' commitment to the REU. The REU is supported by the Dean of USF's Office of Undergraduate Research (OUR), an office committed to providing UGs with substantive research opportunities, training, and professional development. In 2015, USF hosted 5 NSF-funded REU Site programs, offering workshops and social activities for students and faculty (see research environment, p. 7). The OUR, USF departments and colleges, and Provost's Office have provided significant support towards the success of this project. The proposed project will collaborate closely with USF's new project, "Systemic Transformation of Education Through Evidence-Based Reforms (STEER)". STEER components include collaboration with Hillsborough Community College (HCC) and recruitment and retention of STEM majors. In addition, the National Weather Service (NWS) in Tampa Bay has agreed to partner with this REU as a key external organization.

(b) Nature of Student Activities: REU activities will enhance integration of social science and atmospheric/ocean sciences. According to the Boyer Commission (1998), engaged scholarship includes quality teaching, rigorous research, and meaningful service carried out within a context of community. To this end, the Commission emphasized the importance of inquiry, investigation, and discovery as central to a quality UG education within a research university. The WCS REU consists of six concurrent components, each designed to enhance critical thinking skills: 1) collaborative, mentored research project; 2) research methods seminar including ethics training; 3) remote live-streamed distinguished speaker series; 4) experiential learning field trips; 5) OUR professional development research workshops; and 6) a seminar series on graduate school scholarship and preparation. Students will enroll in a zero-credit course: IDS 4915, Advanced UR. Non-USF students will be able to enroll as "non-degree seeking students" at USF. Components 2-6 together will comprise approximately 15% of the time during the program, with the collaborative mentored research project (component 1) comprising approximately 85% of the participants' time.

REU Component One: Mentored Research Project. Throughout the nine weeks, the core of the REU program will be each student's intensive research experience under the guidance of USF faculty mentors. Best practice supports the use of team projects. Research teams will comprise three or four students and at least two mentors (one physical science and one social science). The collaborative aspect of working with teams of faculty across disciplines develops a synergy that benefits students; allows for greater efficiencies in completing substantive

research; and promotes the development of bonds among the students and between students and mentors emphasizing future graduate-level education opportunities.

Students will research physical and social aspects of weather/climate with the overarching question focused on the impacts from climate change and how individuals, communities, and institutions prepare for, experience and recover from extreme weather/climate. Projects will include aspects of natural and social sciences emphasizing the interplay between the two sciences and the application of mixed method approaches demonstrated in activity 2. One proposed project will allow the students to obtain an understanding of the science behind sea level curves and what this new knowledge means for coastal planning. One impact of climate change affecting coastal communities is variations in sea level. The current trend of global warming is causing sea levels to rise, which will affect both human and natural coastal systems. This trend can be modified at the local level by other factors. In order to understand how coastal cities must respond to and plan for sea level rise impacts, students will investigate the complex interaction of drivers that affect local sea level change within the context of global trends, such as sedimentation, subsidence, tectonics, and heat distribution. Then, using examples from Florida, students will examine and compare historic sea level trends from tide gauge records. They will investigate how major planning agencies, such as the Army Corps of Engineers (ACE) and the National Oceanic and Atmospheric Administration (NOAA), use historical records and predicted trends to forecast future sea level rise for a given location. Using local factors, students will utilize the NOAA and ACE quadratic models to generate predicted sea level curves based on variations in inputs (greenhouse gas emissions, land subsidence rates). They will then take on the roles of urban and environmental planners and apply the results of their sea level curves to scenarios at standard temporal planning horizons. Projects such as infrastructure, residential and commercial building, and environmental lands will be classified by their vulnerability and risk tolerance within the context of future sea level rise. Students will then develop planning strategies for adaptation, mitigation, and resilience to accommodate built and natural systems for future planning horizons. Upon completion of this project, students will be able to: 1) identify major drivers of sea level change that influence projections; 2) assess the social, economic, and environmental vulnerabilities of coastal regions to sea level rise; and 3) develop strategies to adapt and mitigate sea level rise impacts.

Participation in another proposed project to understand how climate change may influence human migration patterns will allow students to understand the economic, environmental, and socio-political push and pull factors which influence human population migration. Moreover, as migration between and within nations, as well as within U.S. states, is shaped by a combination of push and pull factors that are driven by economic, environmental, and socio-political changes that in turn modify individual behavior, this proposed project will help students understand how these factors influence the net in-migration to Florida. Furthermore, students gain more knowledge that demonstrates the link between climate change imposing an additional mechanism affecting these changes and influence and the push and pull factors that drive patterns of migration. In order to understand how these factors may influence Florida's population – both its total and its spatial distribution – students will compile lists of factors that can cause both in- and out-migration and classify them as economic, environmental, and/or socio-political. Students will then generate a list of climate change impacts (such as sea level rise and changes in precipitation), and speculate how these may generate push and pull factors that affect migration to and from Florida. Then, students will use data from the Florida Climate Center, the U.S. Census, and NOAA's National Climatic Data Center to analyze historic migration patterns for Florida (change by county) compared to historic changes in key climate indicators, such as temperature and precipitation, as well as to current conditions, such as drought. Students will speculate how migration patterns may change or develop as a result of future changes to climatic factors in the context of other factors that may be overriding (e.g. the economic pull to areas that are prone to drought). Upon completion of this project, students will be able to: 1) identify socio-political, economic, and environmental push- and pull-factors that influence migration; 2) explain how climate change influences the above push- and pull-factors and thus affects migration; and 3) develop predictive scenarios based on expected climate change impacts.

Another project, already underway at USF, focuses on water resources and climate change, where scientists, policy makers, organizations, and other stakeholders will be interviewed about the likely local and regional impacts of climate change, current models of sea level rise and other impacts, as well as how to communicate this information to the public. REU students will be involved with this research as they participate in

interviews with residents in vulnerable communities about their perceptions of climate change and their concerns about potential risks from climate change impacts such as increased frequency of severe flooding or damage to coastal infrastructure. REU students will develop materials for a public workshop series. One example topic is examining demographic shifts as a result of sea level rise and severe storm events. In addition, they will create short films about residents' experiences with severe storms and recovery and whether or not they are concerned about future events. They may also document other areas of potential concern, such as environmental change (loss of species or habitat). Another team of students will be involved with data collection on the way disaster-serving organizations are incorporating issues of climate change into their practice. Students will use focus groups to collect qualitative data from agencies to understand how they have (or if they have) adjusted their policies and practices based upon an adaptation approach to climate change. Upon completion of this project, students will be able to: 1) conduct interviews for the purpose of identifying perception of risk to climate change within vulnerable communities; 2) identify gaps between climate science and peoples' understanding of climate change impacts; and 3) develop public communication resources, that bridge the gap between climate science and the public, for use by disaster-serving organizations in public outreach.

Based on these potential projects, students and faculty will work together to refine and develop individual Learning Contracts before the end of the second week. The contract will articulate the group's research question; objectives for individual students; resources needed to complete the research project, including funding requirements; anticipated timeline, including a schedule for meetings and completion of phases of the project; potential outlets for publication and presentation of results; and activities that will support students' UG and graduate education aspirations. Each student will also meet with the program director to discuss his/her goals for UG major selection and graduate education. Funds for research expenses will be reserved, and student groups will have the opportunity to apply for these funds through the REU.

REU Component Two: Research Methods Seminar. REU students will become familiar with a range of basic interdisciplinary quantitative and qualitative research methods that can be used in studying weather and climate phenomena as well as the dynamic impact weather events and climate have on individuals, social and geographic communities, and institutions. We will draw on examples and data from the physical and social sciences using Florida, the U.S. and global locations to discuss project applications. The goal is to help students become early consumers and designers of research with an emphasis on methodology, data analysis and management, literature reviews, research ethics, and cultural issues in research. The REU ethics component will address the protection of human subjects to avoid the exploitation of vulnerable populations and marginalized communities. Resources from USF's Division of Research Integrity and Compliance will be incorporated into the seminar so students will 1) complete the CITI online certified training in human participant protections education. This meets the university's requirement as a mandatory foundation course for all researchers; 2) participate in a class on research ethics conducted by the USF IRB chair to gain first-hand knowledge of ethical issues discussed by the IRB. This seminar offers a forum for students to discuss progress on their research projects and provide a venue for interaction with faculty scholars engaged in their own WCS-related research.

Based on evidence from two previous successful REUs, the Research Methods seminar will meet eight times in the first two weeks of the program and at least one time each week thereafter. Our goal is to help students develop a basic foundation and appreciation of the complexities in conceptualizing a research project using a variety of interdisciplinary lenses. Faculty instructors will engage students in comparing, contrasting, and blending research designs, including the use of basic qualitative, quantitative, and mixed methods prominent in many academic disciplines. This approach has proven successful in past REUs as young researchers from different disciplinary backgrounds realize the value inherent in collaborative research. Students will also receive introductory training in Geographic Information Systems (GIS) as an analytical tool for understanding spatial dimensions of social problems. GIS has become an important component of the research protocol for understanding many applied weather and climate phenomena used by physical and social scientists. Faculty mentors will guide students in the basic application of GIS as part of the mentored research project. This seminar will also include the use of web-based data resources to access secondary data. The tools shown in the research seminar will be applied in the students' research project. This model has been successfully applied in our previous Hurricane REU to non-STEM students.

REU Component Three: A Remote Live Streamed Distinguished Speaker Series. This component consists of four 30-40 minute presentations (biweekly beginning in the 1st week of the REU) by distinguished national and international scientists followed by a communal lunch. Research on innovative applications of physical, geographic, and climate data will be presented and will encompass a variety of topics on integrating weather and climate data and analysis into decision support systems and societal applications. To emphasize the interdisciplinarity of the REU, speakers will be invited from a range of disciplines and will address such issues as 1) understanding what we should take away from a cold winter on a tiny part of the world and how this relates to climate change; 2) assessing the performance of a vulnerability index during oppressive heat; 3) discerning the hockey stick and the climate wars. In addition, there will be a presentation on climate and careers focusing on the rising importance of societal considerations in the field of weather and climate. Students will be required to prepare a written response to one of these presentations. In addition to the REU mentors, several distinguished speakers have already committed to this speaker series over the course of the three years, including Past-President of the AMS, Dr. Marshall Shepherd (UGA); Dr. Michael Mann (PSU); Dr. Susan Cutter (University of. South Carolina); Dr. Rebecca Morss (UCAR); Dr. Betty Morrow (FIU); Kenny Broad (RSMAS/MAF); Baruch Fischhoff (Carnegie Mellon University); Robert Meyer (Wharton University of Pennsylvania); and Maureen Fordham (Northumbria University, UK). While one of the USF mentors will kick off the speaker series in person at USF, other speakers will join us remotely, using Skype for Business to share their presentations and communicate with the audience. Students will be able to interact with guest speakers and other members of the "remote" audience, including REU groups at other universities, and local AMS chapters as well as other university, organizational and public audiences, including international audiences. The series will be advertised on a number of list-serves and social media and is expected to be highly motivational not only to our students, but to others world-wide.

REU Component Four: Experiential Learning Field Trips. Students will visit the NOAA hurricane hunters and the NWS, Tampa Bay, where they will be SKYWARN certified. They will also visit the Tampa Bay Estuary Program, a regional non-government organization recognized by the EPA as an award winning non-profit program that improves conservation outcomes in Tampa Bay.

REU Component Five: Office of Undergraduate Research (OUR) Workshops. A series of up to 8 didactic workshops with interactive components and a suite of activities will be offered weekly to engage students in the research process and provide a number of skills. These workshops take a holistic approach to teach students how to be deductive and provide an opportunity for students to interact with other REU groups on campus. All REU students will be required to participate in the first workshop on *Getting started in research – skills to help "work the problem" using a problem-based learning approach* offered in week 1 as it will facilitate their transition into the intensive research program. Then students will choose at least 2 of the remaining 7 workshops offered in subsequent weeks. Students will network to gain knowledge from each other and the workshops they attended along with a full set of handouts from the entire workshop series. Also included in this component is a Conference Professional Development Series, to teach skills on writing an impactful research abstract and effective conference networking; and a Professional Development Series, which will help to demystify the publication process and include writing for success.

REU Component Six: Graduate School, Scholarship Preparation, and other UG Opportunities. Because an important component of any REU Program is preparing students for such opportunities as post-baccalaureate education, a six week seminar will be held with the overarching objectives of defining academic and professional goals as well as demystifying the graduate school admission process and the writing of scholarship applications. We will encourage and mentor students in their selection of an undergraduate major in STEM, specifically the atmospheric sciences or a related area. Seminar topics include developing mentoring relationships, obtaining letters of recommendation, managing anxieties that may arise while navigating the application process, establishing timelines, and breaking large tasks into manageable steps. Products produced by students will include resumes, cover letters, and personal essays. Students will engage in role play activities to practice networking at conferences, delivering a brief statement of their research interests (e.g., "the elevator speech"), and participating in a pre-admission interview. Resources, professional organization information, and techniques for preparing for graduate school entrance examinations will be shared by faculty and graduate student mentors. Students will meet with the Graduate School Dean and faculty from graduate programs aligned with the goals of REU participants.

Scholarships will be discussed with the USF Director of the Office of National Scholarships. Students will meet individually with the PI on a weekly basis to discuss academic and career goals.

Expectations and Outcomes. By the end of the 9-week program, each research group will have compiled pilot data and conducted ample preliminary analysis to present at the REU's concluding university-community poster symposium. Each student will present on his or her research activities. The symposium will be organized in conjunction with USF's Office of Community Engagement with community leaders, stakeholders, and university members in the audience. Funds have been budgeted for conference-travel expenses post-REU to stimulate continuation of research and dissemination of REU research results. As students work with their mentors to develop learning contracts, they will identify regional, state, and national conferences for paper submission and discuss the possibility of joint publications. Each student will be expected to submit an abstract to at least one of the following: Conferences and events sponsored by UR associations (e.g., National Conference on Undergraduate Research, NCUR); Professional organizations (state, regional, or national conferences) that host student papers or posters (e.g., Florida Governor's Hurricane Conference or the AMS National Meeting where the AMS hosts several social science sessions and has developed partnerships with disciplinary organizations in the social sciences); Public workshops and community information-sharing sessions to share results with the public; Peer-reviewed journals (e.g., *Weather, Climate, and Society* or *Disasters)* which publish cutting-edge social and physical science research.

Cohort-Building, Student-Student, and Student-Faculty Interactions. Approaches and activities to facilitate interactions and foster a sense of community include: 1) Student-student and student-faculty academic interaction through research teams of three or four students and at least two mentors (one physical science and one social science) to promote interdisciplinary collaboration. 2) Student-faculty weekly lunches at the distinguished speaker series and weekly group meetings with the program director to discuss progress and concerns. 3) Faculty-student collaboration to develop the Learning Contract. 4) Faculty will participate in field trips. 5) Students will interact with the OUR Director to learn about professional development opportunities and engage with students in other NSF-funded REUs at USF. To further student-student and student-faculty social interaction, REU students can correspond with each other and with the mentors through an email listserv prior to their arrival on campus, throughout the summer, and beyond the REU's formal conclusion. Activities such as count-down to hurricane season and information about current weather and major weather anniversaries will be included. Student participants will be invited by REU alumni to participate in the WCS Facebook group. On arrival day, we will host an informal welcome dinner. The first full day is an orientation, including a campus tour, ice-breaker activities, and program overview, followed by a reception for all mentors, participants, and former participants. Students will be given WCS REU t-shirts to signify their membership in the REU cohort particularly useful for fieldwork. Organized social events for participants and mentors will be scheduled (at no cost to NSF). REU students will also interact with USF students in other NSF-funded REUs who will be housed in the same dormitory. "Pan-REU" social events include a welcoming pool party (with a bingo game designed to encourage cross-disciplinary conversation) and an open mike coffee house.

All personnel involved with the REU will offer on-going guidance and support throughout the program. Student-faculty research teams will be expected to maintain contact beyond the 9-week period as students prepare their research for presentation and publication as well as consider their future academic plans, including UG major selection and graduate school application.

(c) The Research Environment: Description of USF. USF is a metropolitan research-intensive university founded in 1956 on the central west coast of Florida that serves the urban Tampa Bay area with over 4 million in population. The university has an annual budget of $1.5 billion and an economic regional impact of $4.4 billion. USF ranks among the nation's top 40 public research universities awarded more than $413.6 million in research contracts and grants during the 2013 fiscal year. USF takes pride in its emergence as a research university that is also committed to serving the community in which it lives. Both characteristics are recognized in USF's rating by the Carnegie Foundation for the Advancement of Teaching (2013) as a community-engaged university with "very high research activity."

With a collegiate community of more than 48,000 students recruited from all 50 states and 130 countries, USF ranked 17th for diversity by the Princeton Review. More than 42% of the student body is minority, and a high percentage of USF students are the first in their families to attend college. Pell grants were awarded to 41% of USF students in 2013-2014. USF awarded 9591 Bachelor degrees in 2013/14. Of these, 2061 or 21.5% were in the

STEM areas (Natural Science, Mathematics, and Engineering) and students under-represented in STEM included 180 African-American, 338 Hispanic, and 462 Caucasian female students. USF has been named one of the top 50 Colleges Advancing Women in STEM by The Online College Database (2014). A majority of USF students enter as transfers from local community colleges. Approximately two-thirds of UG degrees are awarded to such students.

University Facilities. The Tampa Campus has multiple clinics and hospitals, including the Moffitt Cancer Center; a major mental health research institute; two public broadcasting stations that feature a radio reading service for sight-impaired individuals; and several hurricane shelters, including one designated for special needs. Students will be housed in furnished four-bedroom apartments in University Housing within walking distance of all research laboratories at the Tampa Campus. All the REU participants will live in the same residence hall as the other REUs on campus, thus facilitating additional participant-participant interaction to increase research networks and enrich their experience. The OUR typically hires a summer Residence Hall Assistant to work solely with REU Students. Each student will have use of the University bus system (BullRunner). Campus meal plans will be available during the summer program or students may patronize the many restaurants and grocery stores within walking distance of campus.

Although the research teams may work with mentors in their specific labs or offices, all students will have access to a common lab which has both meteorological and social science software installed on the computers (the Weather Lab, see facilities statement). Each student will receive a USF ID card, which will provide each with library privileges and computer lab access. The USF Library system contains ~ 2.5 million volumes (including approximately 585,000 E-books). The Tampa Campus Library, the Library System's research center, is a state-of-the-art facility with over 300 public access PCs, open-access student computer labs, networked teaching labs, wireless access throughout and lap tops/iPads for checkout, full-text electronic resources, and the state's first full-text electronic reserve. The on-line catalog provides access to research databases and the other State University System library catalogs. A "learning commons" with tutoring and writing assistance is available for free on the library's second floor. In addition to in class training by university reference librarians, REU participants will have real-time (8a.m. to midnight) and email (24 hour) access to trained reference staff members via links in CANVAS to the Library site and relevant subject guides.

USF is also a subscriber to Skype for Business (formerly known as Microsoft Office Lync), a real-time virtual classroom environment designed for distance education and collaboration. This technology will enable external participation by numerous groups to the distinguished speaker series and will facilitate student-mentor interactions beyond the program's formal conclusion. Presentations and communications can take place using audio, video, PowerPoint, tablet PC and private or public text-messaging; students and/or faculty can "meet" in virtual break-out rooms for individual conferences while application sharing allows faculty and students to share applications, a desktop region, or an entire desktop.

UR at USF. USF is committed to the enhancement of UR, as documented in a two-year study entitled *Inspire: Infusing and Nurturing the Skills and Practice of Inquiry and Research in Education* (USF, 2005). As a result of this report, and as one of two "Quality Enhancement Plans" of the university's 2005 reaccreditation process, an OUR, with an annual budget of over $500,000, was established by the provost to foster research opportunities for all USF's UGs and to encourage and support faculty mentorship of students. The Office is responsible for UR throughout the university, has a full-time staff of three (the director, a research advisor, and an academic specialist), one half-time associate director (a professor of computer science), and four student assistants. The goals of this office include pairing students with faculty mentors for substantive research experiences (approximately 1500 students per year); providing students with research skills through workshops and training; working with departments and faculty to develop sustainable academic-year and summer UR experiences; supporting faculty by ensuring that the students who work with them have appropriate research skills and understand expectations; affording opportunities for UGs to meet, hear presentations, and read works by outstanding researchers; and creating a UR community at USF. Much of the Office's funding goes to the dissemination of results through an annual UR Symposium and departmental symposia, an UR journal *(Conjure),* publication in peer-reviewed journals, and student presentations at NCUR and professional conferences. As noted in Section b (component 5), OUR will facilitate the professional development series. An important feature of USF's UR program is its emphasis on formal "Research Experience for Undergraduate" programs.

Record of Involvement with UG research for PI, Co-PI, and other faculty involved. This REU will be led by two female faculty, both Associate Professors: Jennifer Collins (School of Geosciences) and Robin Ersing (School of Public Affairs). Collins (Ph.D. University College London) has had 16 years of experience teaching and mentoring UGs and incorporates UR into regularly-offered courses, including at the introductory level. Her research lies at the intersection between meteorology and geography. She focuses on both physical and social aspects of severe weather, which is evident from her recent book in press on Florida's weather and climate. Her hurricane research has examined the influences of variations in hurricane activity and she has also worked on a team (with the Co-PI), examining the role of social networks in people's decisions to evacuate. She served as senior personnel on the NSF Hurricane REU Site Program, funded from 2007-2012 and was involved with this program from its inception. Collins is currently co-organizing an international hurricane summit, bringing together physical and social scientists to focus on risk and impacts. She currently serves as President of the West Central Florida Society of the AMS and served as an officer, including Chair of the Climate Specialty Group of the Association of American Geographers (AAG), for the past six years. As the Education Committee Chair for the South East Division of the AAG (SEDAAG), she developed the UG Poster Competition and rubric for evaluation. Collins has presented widely on successful practices in UR and active learning. She is also a member of NCUR. Collins has served as a major professor or committee member on many PhD, masters, and UG honors thesis committees, mentoring students, and conducting independent research projects. Collins was recognized with the Kosove Graduate Teaching and Service Award (2015), a USF UG Teacher of the Year Award (2008), Outstanding Student Organization Advisor (2008), the SEDAAG Excellence in Teaching Award (2010), and selected as the Faculty Fellow for the USF Academy for Teaching and Learning Excellence, 2013-2015. Almost half of her publications are with graduate and undergraduate researchers.

Co-PI, Dr. Robin Ersing (Ph.D. SUNY/Buffalo), brings excellent experience to include six-years as Co-PI/PI for our previous NSF-funded Hurricane REU, where she developed the curriculum on research and disasters. Ersing has authored numerous publications on disaster resilience and community development, including a co-edited book on the role of social networks in disasters. Ersing's work on disaster vulnerability is part of a multinational funded study with colleagues in Pakistan, India, Australia, Canada, and Taiwan. Her teaching has been honored with the USF UG Teaching Award (2007) and National Association of Social Work Teaching Excellence Award in Florida. She has mentored numerous UG students and has supported students in presenting their work at nationally recognized conferences, including NCUR and the American Association of Behavioral Social Scientists (AABSS).

The mentors for this REU are outstanding researchers from a variety of disciplinary backgrounds and all have a strong record being involved in UR. Like the PIs, they have worked with the diverse student body at USF on their research projects. Below are descriptions of six mentors:

- Mya Breitbart, Associate Professor of Marine Science (http://www.marine.usf.edu/genomics), performs research on microbial ecology, with specific interests in the effects of climate variability and extreme weather events on microbiology and public health. She has served as the UG honors thesis advisor for 2 students and provided 18 UG students with research opportunities in her laboratory, 7 of whom have been co-authors on peer-reviewed publications and 1 a lead-author. Breitbart is committed to mentoring and has received the 2009 "Each One Teach One" Phenomenal Woman Mentoring Award from USF.
- Dr. Mark R. Hafen, Asst. Director & Sr. Instructor, School of Public Affairs, is the program director for the Master of Urban & Regional Planning (MURP) program. He teaches courses for the MURP program with an emphasis on climate change impacts. He has co-authored a forthcoming book *Sea Level Rise in Florida: Science, Impacts, and Options*, penning a chapter on urban planning and policy responses to rising seas. He co-created the undergraduate Campus Plant Species Catalog project (http://arborist.forest.usf.edu) and serves on the Tampa Bay Climate Science Advisory Panel.
- Dr. Mark E. Luther, Associate Professor and Director of the Ocean Monitoring and Prediction Lab (http://ompl.marine.usf.edu), performs research on the combination of real-time ocean observations with numerical models of ocean currents and their application to problems ranging from maritime safety and security, water quality in estuaries, to variability in large-scale ocean circulation and climate change. His primary focus is Tampa Bay and surrounding coastal waters, using data from COMPS and the NOAA/NOS Tampa Bay Physical Oceanographic Real-Time System to address issues of concern in collaboration with the

local maritime community and environmental interests. He has hosted UG interns every summer since 1999, providing hands-on field research experience.

- Dr. Margarethe Kusenbach is an Associate Professor of Sociology. Her research areas include disaster vulnerability and resilience and the sustainability of coastal communities. Her particular interests lie in risk perception, housing vulnerability, and social theories of disasters. She has published several articles and book chapters on disasters and is currently co-editing a special issue of the *International Journal of Mass Emergencies and Disasters* (IJMED) on disaster vulnerability and resilience among socially marginal populations. Kusenbach has supervised numerous disaster-related research projects by honors and M.A. students as a faculty mentor and committee member. She regularly teaches a research experience and research methods course to both graduate and undergraduate students.
- Dr. Rebecca Zarger, Associate Professor of Anthropology, is a sociocultural anthropologist who carries out research in environmental anthropology, which is focused on human-environment relationships. Through NSF-funded research in the Tampa Bay area, Dr. Zarger and her graduate and undergraduate students interviewed key stakeholders, local and regional planners and policy makers, and climate scientists with a goal to support informed decision making about risks and evaluate opportunities to enhance resilience. She has mentored six USF undergraduate honors thesis research projects. She also teaches the required course in Qualitative Research Methods in the Anthropology Department each year and offers two service learning courses that incorporate undergraduate research.
- Mentoring from the National Weather Service (Tampa Bay Office) includes Dr. Paxton (Science and Operations Officer). Paxton's research focuses on climate issues and a myriad of severe weather and its impact on Florida. He has published several articles with USF faculty and students.

Mentor Training. Mentors (faculty, NWS, and graduate mentors) have extensive experience teaching and mentoring minority students, specifically UGs at USF. The mentors, along with REU alumni, will meet monthly during spring to review and make adjustments to projects, review and make selections from the applicant pool, and prepare for the summer program. In the month prior to the start date, mentors will meet with the PI to discuss mentoring strategies and receive the CUR publication, *How to Mentor Undergraduate Researchers* (Temple et al., 2010). All mentors, including the Graduate-Alumni Advisory Board, will obtain specific training on working with minority students and co-mentoring from the OUR and the Office of Human Resources at USF which provides professional development diversity training and will customize a training module for our team focused on advising today's multicultural student. Additional support services at USF include the Office of Multicultural Support Safezone training for mentoring the LGBT community and training for mentoring undocumented persons; and all faculty mentors have recently completed Title IX training. External resources available for training include materials given at the Association of American Geographers Diversity Clearinghouse website as well as the AAG publication "Diversity Bibliography" (Solis and Ng, 2010). The PIs will work with each student's institution, as well as his/her local AMS chapter, to identify suitable co-mentors to facilitate on-site mentoring when the student returns to his/her institution.

(d) Student Recruitment and Selection: The REU will use a multi-faceted approach for student recruitment from a range of disciplines and specifically target minorities and those from under-represented groups who have not declared a major. Qualified STEM majors will not be excluded but will not be actively enlisted in line with the recruitment plan. Recruitment strategies will:

- Target under-represented students from institutions with limited research resources. We will focus on UGs from Community and State Colleges, identifying a pool of students attending the 28 institutions of the Florida College System (http://www.fldoe.org/cc/colleges.asp). We have partnerships with several community colleges (e.g., HCC and St. Petersburg College), which have committed to working with us to recruit students and co-mentor student participants upon their return to the home institution, an initiative that will ensure students' success. In addition, we will conduct state and regional (Southeast) recruitment efforts to attract college students with diverse backgrounds and experiences. To accomplish this, we have partnered with Florida-Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP; www.fglsamp.com), a coalition of 12 institutions in Florida and one in Georgia-research institutions, minority serving institutions, and community colleges, with Florida A&M University (an HBCU) as the lead institution. A letter of

collaboration from Mr. Byron Greene, FGLSAMP Program Manager is attached. Besides assisting us with recruitment (dissemination of recruiting materials among member institutions and identification of potential REU participants), Mr. Greene has agreed to advise Directors in all aspects related to creating an environment that is effective at attracting minorities and under-represented groups and in leading them to success within and beyond the program.

- Contacts will be made with UR Program Divisions Directors, and REU faculty will communicate with their professional contacts in the community.
- Jim Brey from the AMS Education department will distribute information through its educational outreach and contact faculty at schools which have diverse student bodies.
- Information about the REU will be disseminated by posting on the NSF website, and distributing brochures at professional conferences and meetings attended by our faculty, particularly within the state as well as at NCUR.
- At USF, we will provide recruitment material via student organizations; College Deans and department Chairs; announcements posted in the OUR and Honors College newsletters, the OUR website (http://ur.usf.edu); and through the UR Facebook page.

Application Process. The application requires information on citizenship status, academic information (major [if selected], GPA from first semester, hours completed toward degree, expected graduation date, and AP classes taken in high school, particularly those in the sciences). An academic letter of reference and a brief statement of any research experience are also requested. Students will be required to write a 500 word statement of interest in WCS research, indicating in which project they wish to participate and why (a consideration factor when assigning student groupings) and describing how this REU will propel the pursuit of his/her educational and career goals. Because students come from diverse backgrounds offering different opportunities, the selection criteria will be reviewed in totality, with the greatest emphasis on the statement of interest. We may use a brief video conference interview to finalize acceptance decisions. Participation will be limited to ten students per summer, and no more than two students per year will be from USF. We will strive for equal male/female participation.

(e) Project Evaluation and Reporting: USF's investment in STEM education was enhanced by the establishment of the Coalition for Science Literacy (CSL) in 1995, a university-funded center that collaborates in STEM education efforts across colleges. The Coalition has led or partnered in more than $35,000,000 funded projects and has provided numerous evaluations, including those for other REUs. CSL will provide the evaluative component for the overarching objectives of this REU, determining overall project success. CSL will also advise project leadership and Jackie Hayes (the designated department support staff point person) as they develop and administer additional internal evaluative pieces. The overall measure of the effectiveness of the REU will be achieved by the extent to which students move into, or are retained in, a STEM discipline, particularly one related to the atmospheric sciences. This comprehensive evaluation will include both process and outcome components. Evaluation data will be used formatively to modify and improve REU curriculum, materials, instructional strategies, and experiential activities. Summative data will be used to determine the extent to which participation in the program leads to changes in students' knowledge, attitudes, and behaviors. Students' satisfaction with various components of this 9-week program also will be obtained. The basis for this evaluation, developed by Kirkpatrick (1959, 1975, 1994) remains a widely-used model for evaluating training and educationally-based programs (Medsker & Roberts, 1992). The framework involves evaluation activities conducted on four levels:

Level 1	Measuring Reactions: assessment of students' perceived effectiveness
Level 2	Measuring Learning: changes in students' knowledge, skills, and attitudes
Level 3	Measuring Behavior: changes in students' behavior in terms of performance
Level 4	Measuring Results: the long-term impact of these changes on REU participants

Evaluation questions will focus on the degree to which 1) students from under-represented groups were successfully recruited; 2) the WCS curriculum, instructional materials, and experiential activities were effective; 3) students' knowledge of and attitudes toward research and WCS-related issues and practices have changed; 4) students' transfer of acquired knowledge in subsequent academic pursuits; 5) students' completion of their research projects, presentation of their papers at conferences, and publication in peer-reviewed journals; and 6) student participation in the program has impacted their major choice and academic goals. An evaluation report

summarizing the findings and recommendations will be produced annually. Project investigators and mentors will conduct a post-program review to scrutinize the evaluation results and to identify programmatic areas in need of revision so continual improvements can be made each year. Additionally, follow-up data on quantitative indicators such as student conference presentations, papers published, and enrollment in and completion of bachelors programs in the STEM disciplines, particularly focusing on the atmospheric sciences or related disciplines, and subsequent graduate programs will be collected through surveys mailed/emailed to students. In total, seven measures will be developed and used in this evaluation.

(1) REU Application. Data from the application will provide demographic and academic information about the applicant pool. Students' personal statements about their previous research experiences, current research interest, and awareness of how participation in the REU will assist them in pursuing a major and graduate education will be content analyzed to obtain a profile of students interested in the program.

(2) Student Demographic Questionnaire. Student demographic information will be obtained through the Student Demographic Questionnaire (SDQ), administered at the start of the program. These data will be used to describe the characteristics of REU students and will be useful in determining the extent to which various recruitment strategies were successful in attracting the desired student target audience.

(3) Knowledge Assessment. To assess the extent to which the REU students gain knowledge about the methodological and ethical concerns associated with WCS-related issues, a Knowledge Assessment (KA), consisting of 30 true-false questions will be administered during the first class and at the end of the last class. A table of specifications will be developed to ensure each question is linked to a specific program objective, thereby improving the validity of the assessment (Chase, 1999). This component relates to Evaluation Level 2, i.e., measuring participant learning (Kirkpatrick, 1994).

(4) Attitude Assessment. Given the importance of the applied social aspects of this REU, students' attitudes toward severe weather preparedness, response, and recovery will be assessed both at the start and end of the program to determine the extent to which their attitudes have changed. A 20-item Attitude Assessment will be developed to which students will respond using five-point Likert-type scales. This component is also related to Evaluation Level 2, i.e., measuring participant learning.

(5) Post Course Evaluation. At the end of the 9-week program, students will complete a Post-Course Evaluation (PCE) to elicit opinions and reactions to various programmatic, logistic, and social aspects of the program, including the quality of time spent with the faculty and research mentors, the extent to which REU program objectives were met, and the effectiveness of instructional materials, strategies, and activities. Students' overall evaluation of the REU will be obtained, including whether the REU met their expectations and if they would recommend the program to other students. Specific recommendations will be solicited from students on strengthening the experiential and logistical aspects of the program. This component is related to Evaluation Level l, i.e., measuring participants' reactions to the learning experience (Kirkpatrick, 1994).

(6) Follow-up Survey. Our goal is that participation in the REU will significantly and positively affect subsequent research interests and will encourage the pursuit of STEM related disciplines. It is expected that students will fully examine the ethical, methodological, and social and physical considerations associated with WCS research and will incorporate changes in knowledge, skills, and attitudes into their own research activities. Ultimately, the aim is that students will pursue research careers that directly or indirectly enhance our knowledge of weather and climate. To assess these outcomes, students will complete a Follow-up Survey (FUS). At the end of the REU, students will be asked to identify two specific insights or skills they have learned during the program and how they might use these insights/skills in subsequent work. Six months later, the FUS will be emailed to students to determine if their expectations were met and to identify any problems they encountered using this information. We will also track student dissemination activities, both formal and informal, such as whether they shared instructional materials with other students or conducted any class presentations about their REU experience. This component relates to Evaluation Level 3, i.e. measuring changes in students' behavior (Kirkpatrick, 1994).

(7) Mentor Evaluation Form. Mentors will be asked to complete a Mentor Evaluation Form (MEF) at program completion to assess the extent to which the research experience met the program's objectives. The MEF relates to Evaluation Level l, i.e., measuring reactions to the learning experience (Kirkpatrick, 1994). The MEF will focus on a number of domains such as (1) student/mentor relationships, (2) quality of research experience, and (3) the

identification of factors that contributed to or frustrated completion of the project. The primary evaluation question is the following: Did the mentored research experience provide students with a unique and rewarding research experience? These data will be helpful in determining methods to better assist REU mentors and to ensure that students receive the highest quality mentored research experience possible. The results of the evaluation activities will be used to enhance and improve the REU as it develops. In addition, the evaluation results will be used to prepare articles and presentations to disseminate effective practices developed through the REU.

Measure	Content Domains to beAssessed	Primary Questions	When
REU Application	Research Interests and Experiences.	The ways in which REU will assist applicants in attaining future goals?	Prior to the REU
Student Demographic Questionnaire	Demographics; Future educational/career goals; Goals and expectations for the REU; How they learned about the REU; Reason(s) for attending the REU.	Were the target audiences reached?	Start of the REU
Knowledge Assessment	Knowledge and skills of research methods and ethical issues within social and physical science contexts.	In what ways did students gain new knowledge and/or skills? What are the students' applied research experiences? (Level 2)	Start and end of REU
Attitude Assessment	Attitudes toward extreme weather preparedness, response, and recovery.	Did students' attitude change during the REU? (Level 2)	Start and end of REU
Post Course Evaluation	Degree to which course objectives were reached: Relevance and structure of course content; Effectiveness of instructional strategies; Practical usefulness and applicability of course materials; Quality of instructors and mentors; Logistics (housing, food, travel, etc.) Overall course evaluation.	Were the instructional design and materials effective? (Level l)	End of REU
Mentor Evaluation	Student/Mentor relationships; Quality of research experience; Factors that contributed to or limited research project completion.	Did the mentored research provide students with a unique and rewarding research experience?	End of REU
Follow-Up Survey	Degree to which students applied REU concepts; Barriers encountered; Degree to which curriculum and instructional materials were shared with others.	Did students' behavior change? Did knowledge dissemination occur? (Level 3)	Six months after the REU
Objective Indicators	Frequency with which students' research projects were published or presented at conferences; Impact of the REU on student selection of UG major, course selection and Bachelors' graduate education.	How frequent are students' REU projects presented at conferences and/or published? Does the REU impact students' decisions to select a STEM major, attend graduate school and/or what courses they take? (Level 4)	At six month intervals after the REU for first year and then annually thereafter

Long-Term Tracking of Students. Impact of the REU on students will be measured through long-term follow-up on student progress and will be used to inform students of funding opportunities related to their research project; support their applications to graduate school; and track completion of baccalaureate and graduate degrees and selected major. The PI will maintain a database to track participants as they complete their baccalaureate degrees, enroll in graduate school, and enter careers. We will announce student accomplishments and continue dialogue through a Facebook site. Former participants will be used in recruitment and as peer mentors or student assistants in subsequent summers.

(f) Broader Impacts: The WCS REU is designed to increase research competence and better prepare the next generation of UG students who select STEM fields and continue as graduate student researchers. We will accomplish these impacts through a structured program that includes mentored group research projects; fostering a scholarly community among students and between students and faculty; seminars with national and international speakers; professional development workshops; research methods trainings in the physical and social sciences as

well as ethics research considerations; and experiential learning activities. A long-term evaluation procedure will track participants' UG major and subsequent application to and participation in graduate programs in relevant disciplines and areas. The WCS REU program will complement and synergize current interdisciplinary and applied research activities at USF. The REU will broaden participation of under-represented groups by recruitment of students from local non-research institutions (such as the Florida College System), from Florida International University and HIS, and Florida A&M University and Bethune-Cookman College (HBCUs).

We strive to build an experience that offers its participants access to research they would otherwise not have at their home institutions as well as research that takes them beyond the development of mere technical competence in sophisticated lab techniques and procedures. Focusing on rising sophomores, this REU program draws students into the STEM disciplines, particularly in the atmospheric sciences or related fields, early in their careers. We propose a program that views participants as apprentices of researchers and promotes participants' interest in becoming scientists and scholarly leaders. UGs may reap unique benefits when mentored by graduate students in the context of an UG-graduate and alumni-faculty triad. Likewise, graduate mentors develop mentoring skills that will impact their future careers as they encounter opportunities to enhance self-awareness and metacognitive abilities. We believe all these mentoring opportunities are a path to extend the gains and benefits of such a summer program into the future.

This project is consistent with our institution's commitment to prepare a workforce of future leading scientists by supporting participation at all levels of the educational pipeline. Both the students and the faculty will contribute to the dissemination of knowledge and broader societal impact. Research projects will explore a range of issues and each project will have the potential to directly benefit both USF's west central Florida community and other extreme weather and climate change-affected areas through a better understanding of the weather phenomena and climate state, together with potential impacts and successful practices. Students will participate in a project from conception to presentation and dissemination of results. UGs will therefore be involved in all aspects of research, including field work, sample processing in the laboratory and data analysis, and manuscript preparation. USF's WCS REU will become a model for interdisciplinary-based research by UGs both through dissemination of results and presentations by REU faculty and students. One of the top priorities of the REU program and a measure of success is student publications in scientific journals and student presentations at local (USF and their home institutions), regional, and national conferences. Social media will be used by the students to enhance dissemination of results. The students will "tweet" and/or blog about their research experience and they will create a scoop.it page for relevant literature.

(g) Results of previous NSF REU funding: Between 2007-2010 and 2010-2013, USF received two cycles of NSF funding to administer an REU on the Social Aspects of Hurricanes with Vulnerable Populations (Hurricane REU). Ersing served as Co-PI and transitioned to PI in the final year of the program. Collins served as senior personnel and a mentor throughout the duration of funding. This experience provided valuable lessons in optimizing the development and implementation of the REU program, many of which have been incorporated into this proposal. A brief description of successful recruitment efforts and highlights of outcomes follow.

Recruitment and enrollment. We were highly successful in achieving full enrollment with 49 UGs from a variety of disciplines participating in the Hurricane REU (25 in 2007-2010; 24 in 2010-2013). Our efforts to recruit nationally, including an emphasis on under-represented populations, achieved a diverse composition of student participants including: 33% from Primarily UG Institutions (PUI), 33% First Time in College (FTIC), 72% female, and 37% racial/ethnic minorities (e.g. African American, Hispanic, Native American). Post-REU monitoring shows several students have been accepted into doctoral programs at high intensive research universities, a majority of participants entering graduate school in their related disciplines, and several others who applied for competitive internship positions, study abroad programs, and Fulbright opportunities to continue the study of natural hazards in Australia and New Zealand. Other students who have completed graduate school already have jobs working in areas related to their REU research, including an environmental science and policy graduate who is an Emergency Manager, a criminology graduate who conducted research on sexual offenders now working for the FBI, and a geography major working as a meteorologist for the Navy.

Representative research projects and findings. The Hurricane REU students, from a variety of non-STEM and STEM fields, were given intensive introductory instruction in research methods and some research tools such as

GIS and SPSS. They worked on mentored research projects focusing on social aspects of hurricanes throughout the program and during the last week participated in a university-community research symposium, each presenting a paper and poster detailing their projects, results, and implications for future research. Post-REU, a majority of students presented their findings at state and national conferences including AABSS, NCUR, and the AMS. Several students and mentors published peer-reviewed papers. Two examples are provided:

Hurricane Preparedness: Perceptions of Responsibility and Risk among Hillsborough County Residents: The aim of this project was to understand how individuals in Hillsborough County perceive their own responsibility during the preparedness and recovery phases of hurricanes and how these perceptions relate to evacuation readiness. Under the mentorship of three interdisciplinary faculty members, a team of four students collected data from 344 respondents using the Tampa Bay Hurricane Questionnaire. Preliminary results suggest 1) the majority of respondents felt primarily responsible during each phase of a hurricane (preparedness, response, recovery); 2) perceptions of risk are correlated with perceptions of responsibility to prepare for hurricanes; and, 3) evacuation preparedness was correlated with risk perception but not to perceptions of responsibility. Research in the area of personal responsibility in the event of a disaster continues to emerge, and exploratory studies such as this one are important to build the knowledge.

Women's Experience during Disaster Recovery: A Look at Progress Village, Florida: This qualitative study explored the obstacles that low-income women face during recovery from a natural disaster. Thirteen adult females, all African American and ranging in age, participated in a one hour focus group held in the local community. All the women were survivors of an EF-1 tornado. The impact and loss varied across participants, but each was affected by the recovery process. Several important implications were noted: 1) participants discussed feelings of closeness, trust, and unconditional support within their neighborhood and some felt that the tornado benefitted them by bringing their community closer together; 2) most of the women were appreciative of outside organizations and volunteers who provided infrastructural aid in the weeks after the disaster, though the majority of participants also agreed that contractors and other groups from outside of Progress Village made the recovery process more difficult; and, 3) there was a consensus that residents still need assistance from outside of their community, particularly in regards to emotional well-being well beyond the disaster event. Qualitative accounts of direct experiences are important to more fully understand both the psychological and sociological factors in building resilience to disaster events.

The Hurricane REU not only produced a new generation of young scholars committed to interdisciplinary inquiry, but also prepared them as engaged citizens through certification by the American Red Cross to assist in the event of a natural disaster. Other REU features such as table-top exercises and interaction with first responders enabled students to experience first-hand how their research could be applied in the field. The outreach component of the REU helped us to develop emerging scholars who not only have grown in their understanding of the research enterprise, but who understand the importance of applied research to address pressing needs within a community.

References

American Meteorological Society (AMS), posted 2014: Strengthening Social Sciences in the Weather–Climate Enterprise: A Professional Guidance Statement of the American Meteorological Society. [Available online at http://www.ametsoc.org/policy/2014socialscience_weather-climate_enterprise.html.]

Boyer Commission on Educating Undergraduates in the Research University, 1998: *Reinventing undergraduate education: A blueprint for America's research universities.* Stony Brook, NY: State University of New York at Stony Brook.

2013. Carnegie Foundation for the Advancement of Teaching. http://classifications.carnegiefoundation.org/ Accessed Dec. 2013.

Chase, C., 1999: *Contemporary assessment for educators.* New York: Longman.

Collins, W. G., C. H. Paxton and J. H. Golden, 2000: The 12 July 1995 Pinellas County, Florida, Tornado/Waterspout. *Weather and Forecasting*, **15** (1), 122-134.

Kirkpatrick, D. L., 1959: Techniques for evaluating training programs. *Journal for the American Society of Training Directors,* **131** (9), 21-26.

Kirkpatrick, D. L., 1975: *Techniques for evaluating programs: Parts 1, 2, 3 and 4. Evaluating Training Programs.* Alexandria, VA: American Society for Training and Development.

Kirkpatrick, D. L., 1994: *Evaluating Training Programs.* San Francisco, CA: Berrett-Koehler Publishers, Inc.

Medsker, K. L. and D. G. Roberts, 1992: *ASTD trainer's toolkit.* Alexandria, VA: American Society for Training and Development.

Malmstadt, J., K. Scheitlin, and J. Elsner, 2009: Florida hurricanes and damage costs. *Southeast. Geogr.* **49**, 108–131.

Online College Database, 2014: Directory of U.S. Colleges. [Available online at http://www.onlinecollegesdatabase.org/best-online-colleges/].

Paxton, C. H., J. Coleson and N. Carlisle, 2008: Florida lightning deaths and injuries 2004-2007. *Third Conference on Meteorological Applications of Lightning Data.* American Meteorological Society.

Solis, P and A. Ng, 2010: Diversity bibliography. Association of American Geographers. 27pp.

Temple, L., T. Q. Sibley, A. J. Orr, 2010: Council on Undergraduate Research: *How to mentor undergraduate researchers: elements of mentoring expectations practical information.* Council on Undergraduate Research.

U.S. Census Bureau, 2009: American Community Survey B25024. Units in Structure; using American FactFinder.

U.S. Census Bureau, 2010: Census of Population, Public Law 94-171 Redistricting Data File. [Available online at http://factfinder2.census.gov].

University of South Florida (USF), 2005: Inspire: Infusing and Nurturing the Skills and Practice of Inquiry and Research in Education.

Wisner, B., P. Blaikie, T. Cannon, and I. Davis, 2004: At Risk: Natural Hazards, People's Vulnerability and Disasters (2nd edition). New York: Routledge.

BIOSKETCH
Jennifer M. Collins

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Professional Preparation
Lancaster University, United Kingdom, Geography B.Sc. with Environmental Science Minor, 1997
University College London, United Kingdom, Physics Ph.D., 2001

Appointments
2013-present Associate Professor, School of Geosciences, University of South Florida
2011-present Associate Professor and Graduate Coordinator: Department of Geography, Environment and Planning, University of South Florida
2005-2011 Assistant Professor: Department of Geography, University of South Florida
2003-2005 Assistant Professor: Department of Geography and Geosciences, Bloomsburg University
2000-2003 Assistant Professor: Natural Science Department, Plymouth State University

Products (selected). Names in Italics are my students. Name with * is undergrad, ** is post-doc.

- *Ercolani, C.,* J. Muller, **J. Collins,** M. Saverese and L.Squiccimara, 2015: Intense Southwest Florida Hurricane Landfalls over the Past 1,000 Years. *Quaternary Science Reviews.* **126,** *17-25.*
- **Collins, J.M.,** *A.N. Williams*, C.H. Paxton,* R.J. Davis and N.M. Petro, 2009: Geographical, Meteorological, and Climatological Conditions Surrounding the 2008 Interstate-4 Disaster in Florida. *Papers of the Applied Geography Conferences,* **32**, 153-162.
- **Collins, J.M.,** *C.H. Paxton and A.N. Williams*,* 2009: Precursors to Southwest Florida Warm Season Tornado Development. National Weather Association's *Electronic Journal of Operational Meteorology*, **EJ12.**
- **Collins, J.M.,** *D. R. Roache, E.W. Kopp IV*,* and D. Lunsford, 2015: Seasonal Trends in Antarctic Temperature Reanalysis. In: Rohli, R.V. and T.A. Joyner (eds.), *Selected Readings in Applied Climatology*, Cambridge Scholars Publishing, Ltd., Newcastle-upon-Tyne, UK, pp. 74–87, 978–1–4438–7562–2, 361 pp. (SELECTED for special edition).
- *Hinkel, D.M*.* and **J.M. Collins**, 2007: Assessment of Hurricane-Vulnerable Populations in Ybor City, Tampa, Florida. *Papers of the Applied Geography Conferences*, **30**, 307-313.

Other significant products / publications (selected)

- Yoo, J.**, **J.M. Collins** and R. Rohli, 2015: An Investigation of the Tropical Cyclogenesis of Arlene (2005) Using the ERA-Interim Reanalysis and the WRF Model Simulation. *The Professional Geographer*, 67, 396-411. DOI: 10.1080/00330124.2014.987197
- **Collins, J.M.** and P. Flaherty, 2014: Keeping an 'Eye' on Tropical Research Data: The NOAA Hurricane Hunters, Their Missions and Their Recent Work with the University of South Florida to Archive Historical Information. *The Florida Geographer,* 45, 14-27.

- Lazarus, S, **J.M. Collins**, M.A. Baxter, A. T. Case Hanks, T. M. Whittaker; K. R. Tyle; S. F. Cecelski; B. Geerts; M. K. Ramamurthy, Ph. D 2012: 2012 Unidata Users Workshop Navigating Earth System Science Data. *Bulletin of the American Meteorological Society* (Accepted, 2013).
- **Collins, J.M.**. 2014. "Climatology." In Oxford Bibliographies in Geography. Ed. Barney Warf. New York: Oxford University Press.
- **Collins, J.M.**, 2011: Temperature Variability over Africa. *Journal of Climate, 24, 3649-3666.*

Synergistic Activities

(a) President of the West Central Florida Chapter of the American Meteorological Society (current). We have been awarded Chapter of the Year by the national American Meteorological Society, or on the Honor Roll, for several consecutive years largely relating to our community outreach through our Teach the Teacher workshops which the Chapter offers.

(b) Participation (invited panel member and moderator) at the Association of American Geographers (AAG) Department Leadership Workshop which focused on diversity, sponsored by the NSF funded AAG ALIGNED project, June 2012.

(c) Mentor for undergraduate students, symposium coordinator and leader of the professional development course for the NSF funded Hurricane Research Experience for Undergraduates (REU) program. We particularly reach out for students of minority schools to apply.

(d) Created and led a USF faculty-led study abroad course for graduate and undergraduate students focusing on the physical geography and environmental science of the United Kingdom (2013).

(e) Faculty Fellow for Academy for Teaching and Learning Excellence (ATLE) and member of STEM Faculty Learning Community.

BIOGRAPHICAL SKETCH

Robin L. Ersing

Professional Preparation

State University of New York at Buffalo	Interdisciplinary Social Sciences	BA, 1985
State University of New York at Buffalo	Social Work	MSW, 1991
State University of New York at Buffalo	Social Welfare	PhD, 2000

Appointments

2009 – present	University of South Florida, Tampa, Florida - Associate Professor
2003 – 2009	University of South Florida, Tampa, Florida - Assistant Professor
1999 – 2003	University of Kentucky, Lexington, Kentucky - Assistant Professor

Selected Publications

Ersing, R.L., Sey Ayivor, J., Alhassan, O., & Caruson, K. (2016). Ecological social work in a developing nation. In Mckinnon, J., & Alston, M. (Eds.). *Ecological social work: Towards sustainability:* Hampshire, UK: Palgrave.

Ersing, R.L., Alhassan, O., Sey Ayivor, J., & Caruson, K. (2015). Enhancing hazard resilience among impoverished urban communities in Ghana: The role of women as catalysts for improvement. In Filion, P., Skidmore, M., & Sands, G. (Eds.), *Planning for and Recovering from Urban Disasters.* Michigan: Ashgate Press.

Drolet, J., Dominelli, L., Alston, J., Ersing, R., Mathbor, G., & Wu, H. (2015). Women rebuilding lives post-disaster: Innovative community practices for building resilience and promoting sustainable development. *Gender & Development, 23*(3), 433-448.

Caruson, K., Alhassan, O., Ayivor, J.S., & Ersing, R.L. (2014). Disaster and development in Ghana: Improving disaster resiliency at the local level. In Kapucu, N. & Liou, K. T. (Eds.), *Disaster & development: Examining global issues and cases.* New York, NY: Springer.

Ersing, R.L., & Kost, K.A. (Eds.). (2012). *Surviving disaster: The role of social networks.* New York: Lyceum Press.

Ersing, R.L. (2012). Using social networks to build disaster resilient communities: The strategy of CODE ONE. In R.L. Ersing & K.A. Kost (Eds.), *Surviving disaster: The role of social networks.* New York: Lyceum Press.

Ersing, R.L., & Kost, K.A. (2012). Approaching practice: What we've learned about social networks in the context of disasters. In R.L. Ersing & K.A. (Eds.), *Surviving disaster: The role of social networks.* New York: Lyceum Press.

Ersing, R.L. (2010). Building disaster-resilient communities: Advancing social work knowledge and skills. In D.F. Gillespie & K.Danso (Eds.). *Disaster concepts and issues: A guide for social work education and practice.* Alexandria, VA: CSWE Press.

Ersing, R.L. (2009). Responding to natural catastrophes and pandemics: Challenging opportunities for employee assistance programs to help. In M.A. Richard, W.G. Emener, & W.S. Hutchison (Eds.), *Employee assistance programs: Wellness/enhancement programming,* (4th ed.). Springfield, IL: Charles C. Thomas.

Synergistic Activities

1. Served as Principal *Investigator on Empowerment of women to promote disaster risk reduction in the U.S. and Ghana* from 2012-2013 and *Community Emergency Response Team (CERT) distance learning training evaluation* from 2011-2012 as well as co-Principle Investigator on *Rebuilding lives post-disaster: Innovative community practices for sustainable development* from 2012-2015 and NSF REU *USF Hurricane Research Experience for Undergraduates* from 2007-2013.

2. Provided curriculum development and instruction for Introduction to Community Disaster Response and Recovery (2009), Council on Social Work Education, infusing disaster planning, preparedness and response content into Undergraduate and Graduate Social Work curriculum (2007), Hurricane Humanitarian and Social Interventions (NSF-REU 2006-2011), Hurricane Research Methods (NSF-REU 2006-2011), and Community Resource Assessment and Disaster Preparedness (2007).

3. Supervised over 30 undergraduate students in funded research projects totaling $75,000.

4. Served as a faculty mentor with student research accepted at National Conference of Undergraduate Research (NCUR),

5. Have served as an IRB Scientific Reviewer for the USF School of Social Work since 2003 and previously served as an alternate-member of the USF Social-Behavioral Institutional Review Board from 2003-2009.

MYA BREITBART

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(a) Professional Preparation

Florida Institute of Technology	Biology	B.S. 2000
University of California San Diego/ San Diego State University	Cell and Molecular Biology	Ph.D. 2006

(b) Appointments

Professor at the University of South Florida	2016-present
Associate Professor at the University of South Florida	2012-2016
Assistant Professor at the University of South Florida	2006-2012

(c) Selected Products (* indicates undergraduate student author)

(i) Five Products Related to Proposal

Breitbart, M., B. Benner, P. Jernigan, K. Rosario, L.M. Birsa, R.C. Harbeitner, S. Fulford*, C. Graham*, A. Walters, D.B. Goldsmith, S.A. Berger, J.C. Nejstgaard (2015) Discovery, prevalence, and persistence of novel circular single-stranded DNA viruses in the ctenophores *Mnemiopsis leidyi* and *Beroe ovata*. Frontiers in Microbiology. 6:1427.

Rosario, K., Y.M. Seah, C. Marr, A. Varsani, S. Kraberger, D. Stainton, E. Moriones, J.E. Polston, S. Duffy, **M. Breitbart** (2015). Vector-enabled metagenomic (VEM) surveys using whiteflies (Aleyrodidae) reveal novel begomovirus species in the New and Old Worlds. Viruses. 7: 5553-5570.

Symonds, E.M., M.M. Cook, S.M. McQuaig, R.M. Ulrich, R.O. Schenck, J.O. Lukasik, E.S. Van Vleet, **M. Breitbart** (2015). Reduction of nutrients, microbes, and personal care products in domestic wastewater by a benchtop electrocoagulation unit. Scientific Reports. 5: 9380.

Symonds, E.M. and **M. Breitbart**. (2015). Affordable enteric virus detection techniques are needed to support changing paradigms in water quality management. CLEAN - Soil Air Water. 43: 8-12.

Symonds, E.M., M.E. Verbyla, J.O. Lukasik, R.C. Kafle, **M. Breitbart**, J.R. Mihelcic (2014). A case study of enteric virus removal and insights into the associated risk of water reuse for two wastewater treatment pond systems in Bolivia. Water Research. 65: 257-270.

(ii) Five Other Significant Products

Hopkins, M, S Kailasan, A Cohen*, S Roux, KP Tucker, A Shevenell, M Agbandje-McKenna, **M Breitbart**. (2014). Diversity of environmental single-stranded DNA phages revealed by PCR amplification of the partial major capsid protein. ISME Journal. 8: 2093-2103.

Burghart, SE, L Van Woudenberg*, CA Daniels, SD Myers, EB Peebles, **M Breitbart** (2014). Disparity between plankton fish egg and larval communities as indicated by DNA barcoding. Marine Ecology Progress Series. 503: 195-204.

Dwivedi, B, B Xue*, D Lundin, RA Edwards, **M Breitbart** (2013). A bioinformatics analysis of ribonucleotide reductase genes in phage genomes and metagenomes. BMC Evolutionary Biology. 13: 33.

Ng, TFF, S Duffy, JE Polston, E Bixby*, GE Vallad, **M Breitbart** (2011). Exploring the diversity of DNA plant viruses and their satellites using vector-enabled metagenomics on whiteflies. PLoS ONE. 6: e19050.

Padilla-Rodriguez, M*, K Rosario, **M Breitbart** (2013). Discovery of a novel cyclovirus found in a Florida Woods Cockroach (*Eurycotis floridana*). Archives of Virology. 158: 1389-1392.

(d) Synergistic Activities

1. Science, Technology, Engineering, and Mathematics (STEM) outreach, focused on women. I currently serve as a leadership team member for the Florida Girls Collaborative Project, an organization committed to informing and motivated girls to pursue careers in STEM fields. I organized three major Girl Scout Marine Science and Technology Workshops, serve as a faculty mentor for the annual Oceanography Camp for Girls and built a fully-equipped Marine Science Laboratory at the local Girl Scout Camp Wai Lani.
2. Leadership in local scientific organizations. Regional branches of the American Society for Microbiology (ASM) are a grass-roots organization focused on providing opportunities for undergraduate and graduate students to give oral presentations in a conference setting, and allow for networking of local microbiologists. I have served as an officer of the Florida Branch ASM since 2006 and am currently serving as the Florida Branch Councilor.
3. Leadership in national and international scientific endeavors. I currently chair the Circoviridae subgroup of the International Committee on the Taxonomy of Viruses (ICTV) and have served as an elected member of the ICTV Executive Committee. I am currently chair of Division M (Bacteriophage) for the American Society for Microbiology. I am an editor for the journals Aquatic Microbial Ecology and Scientific Reports.
4. Outreach to the local community. I am very involved in the Tampa Bay, Florida community. Currently I serve on the Florida Aquarium's Conservation and Research Advisory Committee, and I am a founding member of the Tampa Bay ARCS (Achievement Rewards for College Scientists) Foundation.
5. Outstanding mentor. Since beginning my faculty position in 2006, I have served as the major advisor for 20 graduate students and mentored 19 undergraduate students and 3 post-docs. I have mentored 4 minority students and am a member of the advisory board for a university scholarship program to encourage minorities in the sciences. In 2013, I received Honorable Mention for the University of South Florida's Outstanding Graduate Mentor Award and in 2009 I was awarded the "Each One Teach One" mentoring award.

Kelli S. Burns, Ph.D.

EDUCATION

Vanderbilt University	Nashville, Tenn.	Mathematics	B.A. 1992
Middle Tennessee State University	Murfreesboro, Tenn.	Mass Communication	M.S. 1998
University of Florida	Gainesville, Fla.	Mass Communication	Ph.D. 2003

ACADEMIC APPOINTMENTS

University of South Florida **Tampa, Fla.**

Associate Professor	2011-present
Associate Program Director and Director of Undergraduate Studies	2012-2014
Assistant Professor	2006-2011

Elon University **Elon, N.C.**

Assistant Professor	2003-2006
Instructor	2002-2003

Middle Tennessee State University Murfreesboro, Tenn.

Instructor	2001-2002

PRODUCTS

Burns, K.S. (2016). How the top social media brands use influencer and brand advocacy campaigns to engage fans. In Amber Hutchins & Natalie Tindall (Eds.), *Public relations and participatory culture: Fandom, social media, and community engagement*. New York, NY: Routledge.

Burns, K.S. "Identifying the influencers who flooded Twitter during the #ALSicebucketchallenge." Paper presented at the Social Media & Society Conference, London, June 2016.

Whytas, K. J., & Burns, K.S. "Impact of a brand crisis on nation branding: An analysis of tweets about VW's emissions crisis." Paper presented at the International Relations Research Conference, Miami, March 2016.

Burns, K.S. (2013). Checking-in or checking-out?: Self-presentation and privacy considerations of Foursquare users. In Kathleen M. Cumiskey & Larissa Hjoth (Eds.), *Mobile media practices, presence, and politics: The challenge of being seamlessly mobile*. New York, NY: Routledge.

Burns, K.S. (2011). Teaching research methods with social media. In Michael Thomas (Ed.), *Digital education: Opportunities for social collaboration.* New York, NY: Palgrave Macmillan.

SYNERGISTIC ACTIVITIES

Frequent media source for local, national, and international media on stories related to social media.

USF Online Course Development Grant: Summer 2015, $5,500.

Texifter Data Grant, second place (August 2014), 500,000 historical tweets from a five-day period and six months of enterprise access to DiscoverText.

USF Innovative Learning-Centered Grant, Center for 21st Century Teaching Excellence: Funds supported applications of technology to the practice of research, $4,000, 2009-2010.

Name: Mark R. Hafen, Ph.D.
Position: Asst. Director & Sr. Instructor
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Tampa, FL 33620-8100

Email: mhafen@usf.edu
Telephone: (813) 974-7982

Professional Preparation

Pennsylvania State University	University Park	Business Logistics	B.S. 1980
Univ. of South Florida	Tampa	Geography	M.A. 1992
Univ. of South Florida	St. Petersburg	Marine Science	Ph.D. 2001
Univ. of South Florida	St. Petersburg	Marine Geophysics	Post Doc 2001

Appointments

- 2014-present: Asst. Director & Sr. Instructor (Instructor II): School of Public Affairs, USF-Tampa
- 2011-2014: Instructor II: School of Geosciences, USF-Tampa
- 2003-2011: Instructor I: Department of Geography, Environment, and Planning, USF-Tampa
- 2001-2003: Visiting Instructor: Dept. of Environmental Science & Policy, USF-Tampa

Products

Hafen, M.R. (in press, 2016). "Responding to and Planning for Sea Level Rise," *In*, A.C. Hine, D.P. Chambers, T.D. Clayton, M.R. Hafen, and G.T. Mitchum (eds.), Sea Level Rise in Florida: Science, Impacts, and Options, University Press of Florida: Gainesville, FL.

Tampa Bay Climate Science Advisory Panel (2015). Recommended Projection of Sea Level Rise in the Tampa Bay Region.
http://pinellas.ifas.ufl.edu/marine/documents/CSAP_SLR_Recommendation_FINAL.pdf

Brinkmann, R., Hafen, M. R., & van Beynen, P. (2010). Paleosinkholes and Modern Sinkholes in the Brooksville Ridge Region of Florida, USA: Clues to Landscape Genesis. *In*, Proceedings of the 2nd International Workshop on Sinkhole Phenomena. ISPRA-Geological Survey of Italy.

Dwivedi, O.P. and Hafen, Mark R. (2008). "Religions of India: Their Particularity and Universality for Environmental Protection." *In*, Tremblay, Reeta C. (ed.), Asia: Local and Global Perspectives. Canadian Asian Studies Association: Montréal, Canada, pp. 32-51.

Mallinson, D., Locker, S., Hafen, M., Naar, D., Hine, A., Lavoie, D., and Schock, S. (1997). A high resolution geological and geophysical investigation of the Dry Tortugas carbonate depositional environment. *Geo-Marine Letters*, 17:237-245.

Hafen, M.R. and Brinkmann, R. (1996). Analysis of lead in soils adjacent to an interstate highway in Tampa, Florida. *Environmental Geochemistry and Health*, 18(4):171-179.

Synergistic Activities

2014-present: Member of Tampa Bay Climate Science Advisory Panel (IFAS/Florida Sea Grant) http://pinellas.ifas.ufl.edu/marine/ClimateChangeandSeaLevelRise.shtml

2013-present: Co-creator and faculty advisor, Tampa Campus Plant Species Catalog Project, with USF Herbarium: http://arborist.forest.usf.edu (database and interactive map)

2014-2015: Pinellas County RESTORE Act Working Group: http://www.pinellascounty.org/restore/default.htm

2010: Envisioning Climate Change Using a Global Climate Model. Earth Exploration Toolbook. Author group: Betsy Youngman, Mark Chandler, Linda Sohl, Mark Hafen, Tamara Ledley, Steve Ackerman, and Steve Kluge: http://serc.carleton.edu/eet/envisioningclimatechange/index.html

Membership on 24 Graduate and Undergraduate Thesis Committees including as thesis director and supervising faculty member.

Margarethe Kusenbach
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University of South Florida
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Tampa, FL 33620
(813) 974 2595
mkusenba@cas.usf.edu

NSF Biographical Sketch

a) Professional Preparation

1989	Bachelor of Arts (equivalent), University of Cologne, Germany (Sociology & History)
1992	Master of Arts, University of Constance, Germany (Sociology)
1994	Master of Arts, University of California, Los Angeles (Sociology)
2003	Doctor of Philosophy, University of California, Los Angeles (Sociology)

b) Appointments

2009—current	Associate Professor, Sociology, University of South Florida
2012—2015	Graduate Director, Sociology, University of South Florida
2011	Visiting Scholar, Georg Simmel Center, Humboldt University, Berlin, Germany
2010	Fulbright Scholar, Technical University, Berlin, Germany
2003—2009	Assistant Professor, Sociology, University of South Florida
2001	Part-time Faculty, Sociology, California State University, Dominguez Hills
2000	Teaching Fellow, Sociology, University of California, Los Angeles

c) Publications

(i) five products most closely related to the proposed project

Simms, J. L., M. Kusenbach & G. A. Tobin (2013). "Equally Unprepared: Assessing the Hurricane Vulnerability of Undergraduate Students." *Weather, Climate & Society* 5 (3): 233–243.

Kusenbach, M. & G. Christmann (2013). "Understanding Hurricane Vulnerability: Lessons from Mobile Home Communities." Pp. 61-84 in: N. Kapucu, C. Hawkins & F. Rivera (editors), *Disaster Resiliency: Interdisciplinary Perspectives.* New York: Routlege.

Kusenbach, M. & C. K. Taylor (2011). "Hurricane Evacuation among Mobile Home Residents in Florida: The Complex Role of Social Networks." Pp. 63-83 in: Ersing, R. & K. A. Kost (Eds.), *Surviving Disaster: The Role of Social Networks*. Chicago: Lyceum.

Kusenbach, M., J. L. Simms, & G. A. Tobin (2010). "Disaster Vulnerability and Evacuation Readiness: Coastal Mobile Home Residents in Florida." *Natural Hazards* 52: 79-95.

Kusenbach, M. (2009). "Salvaging Decency: Mobile Home Residents' Strategies of Managing the Stigma of 'Trailer Living'." *Qualitative Sociology* 32 (4): 399-428.

(ii) five other significant products

Kusenbach (forthcoming 2015). "'Look at My House!'—Home-Making and Identity among Latino/a Owners of Mobile Homes." *Journal of Housing and the Built Environment.*

Kusenbach, M. & K. Paulsen (editors), (2013): *Home: International Perspectives on Culture, Identity, and Belonging.* Frankfurt am Main, Germany: Peter Lang Academic Publishing.

Kusenbach, M. (2008). "A Hierarchy of Urban Communities: Observations on the Nested Character of Place." *City & Community* 7 (3): 225-249.

Kusenbach, M. (2006). "Patterns of Neighboring: Practicing Community in the Parochial Realm." *Symbolic Interaction* 29 (3): 270-306.
Kusenbach, M. (2003). "Street Phenomenology: The Go-Along as Ethnographic Research Tool." *Ethnography* 4 (3): 449-479.

d) Synergistic Activities

2016-2019	Editorial Board Member of *Social Psychology Quarterly*
2014-2015	President of the *Society for the Study of Symbolic Interaction* (SSSI)
2014-2016	Vice President for North America and Board Member of Research Committee 21 (Sociology of Urban and Regional Development) of the International Sociological Association (ISA)
2013	USF Outstanding Faculty Award
2000-current	Reviewer for *NSF, Canadian Research Council, University of Chicago Press, Oxford University Press, NYU Press*, as well as 22 academic journals

BIOGRAPHICAL SKETCH OF MARK E. LUTHER

Professional Preparation

Institution	Field of Study	Degree	Date
University of North Carolina at Chapel Hill	Mathematics and Physics	A.B.	1976
University of North Carolina at Chapel Hill	Physical Oceanography	M.S.	1980
University of North Carolina at Chapel Hill	Physical Oceanography	Ph.D.	1982
The Florida State University	Ocean-Atmosphere Prediction Studies	Postdoc	1982-1985

Appointments

1990-Present	Associate Professor, College of Marine Science, University of South Florida
1982-1990	Postdoctoral Fellow and Research Associate, Center for Ocean-Atmosphere Prediction Studies (formerly the Mesoscale Air-Sea Interaction Group), The Florida State University
1977 (summer)	Research Technician, Department of Marine Science and Engineering, North Carolina State University
1976-1982	Graduate Research Assistant, Curriculum in Marine Sciences, University of North Carolina at Chapel Hill

Products

Wilson, M., S.D. Meyers and M. Luther 2006. Changes in the Circulation of Tampa Bay Due to Hurricane Frances as recorded by ADCP measurements and reproduced with a Numerical Ocean Model. *Estuaries and Coasts*, 29(6A), 914-918.

Luther, M. E., C. Merz, S. Baig, J. Pralgo, S. Gill, and G. Hovis, 2007. Water level measurements for storm surge. *J. Mar. Tech.*, 41(1), 35-43.

Meyers, S., M. Luther, M. Wilson, H. Holm, A. Linville, and K. Sopkin, 2007. A Numerical Simulation of Residual Circulation in Tampa Bay. Part I: Low-Frequency Temporal Variations. *Estuaries and Coasts,* 30(4), 679-697.

Meyers, S. D., and M. E. Luther, 2008. A Numerical Simulation of Residual Circulation in Tampa Bay. Part II: Lagrangian residence time. *Estuaries and Coasts*, 31, 815-827.

Havens, H. H., M. E. Luther, S. A. Meyers, and C. Heil, 2010. Lagrangian particle tracking of a toxic dinoflagellate bloom within the Tampa Bay estuary. *Marine Pollution Bulletin*, 60(12), 2233-2241.

Arnott, K. D., A. Valle-Levinson, and M. E. Luther, 2012. Friction-dominated exchange in a Florida estuary. *Estuarine, Coastal and Shelf Science*, 113, 248-258.

Meyers, S., A. J. Linville, and M. E. Luther, 2013. Alteration of residual circulation due to large-scale infrastructure in a drowned riverbed estuary. *Estuaries and Coasts*, doi:10.1007/s12237-013-9691-3.

Wahl, T., F. M. Calafat, and M. E. Luther, 2014. Rapid changes in the seasonal sea level cycle along the US Gulf coast from the late 20th century. *Geophys. Res. Lett.*, 41, doi:10.1002/2013GL058777.

Meyers, S., M. C. Wilson, and M. E. Luther, 2015. Observations of Hysteresis in the Annual Exchange Circulation of a Large Micro-Tidal Estuary. *J. Geophys. Res. Oceans, 120,* doi: 10.1002/2014JC010342.

Wahl, T., S. Jain, J. Bender, S. D. Meyers and M. E. Luther, 2015. Increasing risk of compound flooding from storm surge and rainfall for major US cities. *Nature Clim. Change,* doi: 10.1038/nclimate2736.

Synergistic Activities:

Alliance for Coastal Technologies, Founding Partner, 2001-present; Board Member, 2002-2010, Chairman, 2006-2010.

Department of Homeland Security Area Maritime Security Committee of Western Florida, 2015-present

NOAA Tampa Bay Physical Oceanographic Real-Time System (GTBMAC-PORTS, Inc.), Local Operator, 1995-present

Tampa Bay Regional Planning Council Agency on Bay Management, Member, 1996-present

Tampa Bay National Estuary Program Technical Advisory Committee, Member, 1991-present.

BIOGRAPHICAL SKETCH: REBECCA E. MORSS
(LEGAL NAME: REBECCA E. ELLIS)

Mesoscale and Microscale Meteorology Laboratory
National Center for Atmospheric Research
P.O. Box 3000
Boulder, CO 80307
Phone: 303-497-8172
email: morss@ucar.edu

(a) Professional Preparation

Undergraduate institution		
The University of Chicago, Chicago, IL	Chemistry	BA, Jun 1993
Graduate institution		
Massachusetts Institute of Technology, Cambridge, MA	Atmospheric science	PhD, Feb 1999
Postdoctoral institutions		
Massachusetts Institute of Technology, Cambridge, MA	Atmospheric science	1999
National Center for Atmospheric Research, Boulder, CO	Weather and society	2000-2001

(b) Professional Appointments

2015–present	Senior Scientist and Deputy Director; Mesoscale and Microscale Meteorology Laboratory; National Center for Atmospheric Research; Boulder, CO
2009–2015	Scientist III; NCAR
2005–2009	Scientist II; NCAR
2002–2005	Scientist I; NCAR
2008–present	Faculty Affiliate; Department of Environmental Studies; University of Colorado Boulder, Boulder, CO
2000–2001	Post-doctoral Fellow; Advanced Study Program; NCAR
1994–1999	Graduate Research Assistant & Post-doctoral Associate; Program in Atmospheres, Oceans, and Climate; Massachusetts Institute of Technology; Cambridge, MA

(c) (i) Selected Relevant Products

Anderson, J., M. Kogan, M. Bica, L. Palen, K. Anderson, K. Stowe, R. Morss, J. Demuth, H. Lazrus, O. Wilhelmi, and J. Henderson, 2016: Far far away in Far Rockaway: Responses to risks and impacts during Hurricane Sandy through first-person social media narratives. *Proceedings of the Conference on Information Systems for Crisis Response and Management (ISCRAM 2016)*, in press.

Morss, R. E., K. J. Mulder, J. K. Lazo, and J. L. Demuth, 2016: How do people perceive, understand, and anticipate responding to flash flood risks and warnings? Results from a public survey in Boulder, Colorado, USA. *Journal of Hydrology*, in press.

Bostrom, A., R. E. Morss, J. K. Lazo, J. L. Demuth, H. Lazrus, and R. Hudson, 2016: A mental

models study of hurricane forecast and warning production, communication, and decision making. *Weather, Climate, and Society*, **8**, 111-129.

Morss, R. E., J. L. Demuth, J. K. Lazo, K. Dickinson, H. Lazrus, and B. H. Morrow, 2016: Understanding public hurricane evacuation decisions and responses to forecast and warning messages. *Weather and Forecasting*, **31**, 395-417.

Lazo, J. K., A. Bostrom, R. E. Morss, J. L. Demuth, H. Lazrus, 2015: Factors affecting hurricane evacuation intentions. *Risk Analysis*, **35**, 1837-1857.

(c) (ii) Other Significant Products

Demuth, J. L., R. E. Morss, B. Hearn Morrow, and J. K. Lazo, 2012: Creation and communication of hurricane risk information. *Bulletin of the American Meteorological Society*, **73**, 1133-1145.

Morss, R. E., O. V. Wilhelmi, G. A. Meehl, and L. Dilling, 2011: Improving societal outcomes of extreme weather in a changing climate: An integrated perspective. *Annual Review of Environment and Resources*, **36**, 1-25.

Morss, R. E., 2010: Interactions among flood predictions, decisions, and outcomes: A synthesis of three cases. *Natural Hazards Review*, **11**, 83-96.

Morss, R. E., J. L. Demuth, and J. K. Lazo, 2008: Communicating uncertainty in weather forecasts: A survey of the U.S. public. *Weather and Forecasting*, **23**, 974-991.

Morss, R. E., O. V. Wilhelmi, M. W. Downton, and E. Gruntfest, 2005: Flood risk, uncertainty, and scientific information for decision-making: Lessons from an interdisciplinary project. *Bulletin of the American Meteorological Society*, **86**, 1593–1601.

(d) Synergistic Activities

Co-chair, Science Steering Committee, VORTEX-SE (Verification of the Origins of Rotation in Tornadoes EXperiment-Southeast) program (2016-present)

Member, U.S. Interim Community Weather Research Planning Committee (2015-present)

Member, American Meteorological Society Committee on Effective Communication of Weather and Climate Information (2014-present)

Member, World Weather Research Program (World Meteorological Organization) Task Team for High Impact Weather Project; Lead, Communications Theme (2013-2014)

Member, American Meteorological Society Council (2009-2012, elected by a vote of the membership)

Beverly G. Ward-Biographical Sketch

Professional Preparation

Vassar College, Psychology and Film/Drama, B. A., 1977
University of Alabama at Birmingham, Public Administration, M.P.A., 1990
University of South Florida, Applied Anthropology, Ph. D., 2000

Appointments

Principal, BGW Associates, LLC, 2008-present
Coordination-United We Ride Ambassador, Federal Transit Administration Region 1, 2007-2012
Associate in Research, University of South Florida, 1991-2008
Assistant Director, Alabama Transit Association, Birmingham, Alabama, 1986-1991
Transportation Director, Office of Senior Citizens' Activities, Birmingham, Alabama, 1984-1986
Social Worker, Food Stamp Program, Department of Human Resources, Birmingham, Alabama, 1980-1984
Director of Special Projects, Family and Child Services, Birmingham, Alabama, 1977-1980

Selected Publications

Ward, B. G. (with Jeffrey Buxbaum, et alia), TRB Special Report 303: Equity of Evolving Transportation Finance Mechanisms, http://onlinepubs.trb.org/onlinepubs/sr/sr303.pdf.

Ward, B. G. (with Clemente Gwede, et alia), Application of Geographic Information Systems (GIS) and Asset Mapping to Facilitate Identification of Colorectal Cancer Screening Resources, Online Journal of Public Health Informatics (OJPHI), 2(1), 2010.

Ward, B.G., (with David Aimen, et alia), Practical Approaches for Involving Traditionally Underserved Populations in Transportation Decisionmaking, NCHRP Program Report 710, National Cooperative Highway Research Program (NCHRP), Transportation Research Board, Washington, DC: 2012.

Ward, B.G., (with Deborah Matherly, et alia), Communication with Vulnerable Populations: A Transportation and Emergency Management Toolkit, TRB Report 150, Transit Cooperative Research Program (TCRP), Transportation Research Board, Washington, DC: 2011

Ward, B. G., Disaggregating Race and Ethnicity: Toward a Better Understanding of the Social Impacts of Transport Decisions. Public Works Management & Policy, April 2009, 13(4):354-360.

Ward, B. G., (with Susan Greenbaum et alia). Displacement and Deconcentration in Tampa Anthropology News, 2008, 49(9):10 14.

Ward, B. G. Catastrophic Events and Persons Living in Low-Income Households: What We Know from Activities of Daily Living (ADL). Peer-reviewed paper presented at the National Conference on Disaster Planning for the Carless Society, 8 February 2007, New Orleans, LA.

Ward, B. G. Public Health and the Travel Behavior of People in Low-Income Households. *TDM Review*, Issue One 2005.

Synergistic Activities

Co-Principal Investigator on several projects including: Strengthening Qualitative Research Through Methodological Innovation and Integration: Community Resources and [Hurricane] Disaster Resilience (2008-2010), REU Site: Socials Aspects of Hurricanes--Preparation, Response and Recovery with Vulnerable Populations (2007-2012), Graduate Field Studies in Sustainable Community Research, Interdisciplinary Summer Research Experiences for Graduate Students (2007), Public Housing and Sustainable Communities, Humanities and Social Sciences Focus (2007-2008), and Assessing the Impacts of Relocation in Two Urban Neighborhoods (2003-2005).

United We Ride-Coordination Ambassador, FTA Region 1, National Resource Center for Human Service Transportation Coordination, 2007-2012.

Affiliate faculty for the University of South Florida's, College of Arts and Sciences' Urban Planning Program, Department of Africana Studies, and Institute on Black Life (consultant).

Curriculum development and instruction for the Interdisciplinary Initiative on Sustainable Community (IISC) in the Humanities and Social Sciences (USF, 2007), Hurricane and other Hazards Research Methods for NSF-REU (USF, 2006-present), GIS and Anthropology (USF 2003 & 2005), and Transportation and Society for the Department of Civil and Environmental Engineering (USF, 2003-2004).

National Academy of Sciences, Transportation Research Board member including as Women's Issues in Transportation's Mobility Subcommittee co-chair (2000-2013), Social and Economic Factors in Transportation (2006-2012), Environmental Justice in Transportation (2004-Present), and Committee on Equity Implications of Alternative Transportation Finance Mechanisms.

Rebecca K. Zarger, Ph.D.

a. Professional Preparation

Wake Forest University	Anthropology and English	B.A., *cum laude*, 1995
University of Georgia	Anthropology	Ph.D. 2002

b. Appointments

2013-present Associate Professor, Department of Anthropology, *University of South Florida* (USF) Tampa, Florida

2006-2013 Assistant Professor, Department of Anthropology, *University of South Florida* (USF) Tampa, Florida

2003-2006 Assistant Professor, Department of Environmental Studies and Department of Sociology and Anthropology, *Florida International University*, Miami, Florida

2003 Christine Mirzayan Science and Technology Policy Fellow, *National Academies of Science*, National Research Council, Committee on Human Dimensions of Global Change, Washington, DC

c. Selected Recent Products

1) Wells, E. C., R. K. Zarger, L. M. Whiteford, M. Cairns, E. Koenig, J. Mihelcic. 2014. "Impacts of tourism development on perceptions and practices of sustainable wastewater management on the Placencia peninsula, Belize." *Journal of Cleaner Production*. http://dx.doi.org/10.1016/j.jclepro.2014.08.050

2) Wright Wendel, Heather E., Rebecca K. Zarger, and James R. Mihelcic. 2012. Accessibility and usability: Green space preferences, perceptions, and barriers in a rapidly urbanizing city in Latin America. *Landscape and Urban Planning*. http://dx.doi.org/10.1016/j.landurbplan.2012.06.003

3) Whiteford, L. M., M. Cairns, R. K. Zarger, and G. M. Larsen*. 2016. "Water, Environment, and Health: The Political Ecology of Water," In *A Companion to Environmental Health: Anthropological Perspectives,* Edited by Merrill Singer. Wiley Publishers.

4) Zarger, Rebecca K. 2011. "Learning Ethnobiology: Creating Knowledge, Skills and Practice about the Living World," In *Ethnobiology*, Edited by Eugene Anderson, Eugene Hunn, Deborah Pearsall, and Nancy Turner. Wiley and Sons Publishers.

5) Zarger, Rebecca K. 2009. Mosaics of Maya Livelihoods: Readjusting to global and local food crises. *Annals of Anthropological Practice* Vol. 32:130-151.

Other Relevant Products

1) Baines, Kristina and R. K. Zarger. 2012. "Circles of Value: Integrating Maya Environmental Knowledge Into Belizean Schools," In Helen Kopnina, Ed., *Anthropology of Environmental Education*. Nova Science Publishers.

2) Zarger, Rebecca K. and J. R. Stepp. 2004. "Persistence of Botanical Knowledge Among Tzeltal Maya Children." *Current Anthropology,* vol. 45, no 3:413-418.

3) J. R. Stepp, E. Jones, D. Casagrande, M. Pavao-Zuckerman, and Rebecca K. Zarger. 2003.

Unique and Remarkable Properties of Human Ecosystems. *Conservation Ecology*. Vol. 7, no. 3. Special Issue, Human Ecosystems: Toward the Integration of Anthropology and Ecosystem Sciences.

4) Stepp, J. R., F. S. Wyndham, and Rebecca K. Zarger, Eds. 2002. *Ethnobiology and Biocultural Diversity.* 720 pp. Athens: University of Georgia Press.

5) Zarger, Rebecca K. 1998. Conceptualizing Prehistoric Water Scarcity in the Central Maya Lowlands: the Influence of a Critical Resource on Settlement Patterns and Political Economy. *Journal of Ecological Anthropology*, vol. 2, pp.69-84.

d. Five Synergistic Activities

1) 2012-2015 Rebecca Zarger, (PI), David Bruce Lewis (Co-PI), Shawn Landry (Co-PI), Fenda Akiwumi (Co-PI): *"RAPID: Assessing Vulnerabilities from Climate Change: Impacts of Water Provision, Power Relations and Perceptions of Risk on Ecohydrology in the Tampa Bay Region Socioecosystem* [**National Science Foundation Award** BCS 1251653]" Total Amount: $88,766.

2) 2012-2017 James Mihelcic (PI), Camille McKayle, Maya Trotz, Christian Wells Co-PIs, Senior Personnel: Rebecca Zarger, Sarina Ergas, Linda Whiteford, Daniel Yeh, Qiong Zhang, Frank Muller-Karger, Yogi Gaswami, Delcie Durham, Allan Feldman, Bernard Batson. "Partnerships for International Research and Education (PIRE): Context Sensitive Implementation of Synergistic Water-Energy Systems." **National Science Foundation**. Total Amount: $3.9 million.

3) 2010-2013 David Bruce Lewis (PI), Rebecca Zarger (Co-PI), Tom Crisman (Co-PI), Mark Rains (Co-PI), Fenda Akiwumi (Co-PI): "*ULTRA-Ex: Urban Development, Power Relations, and Water Redistribution as Drivers of Wetland Change in the Tampa Bay Region Ecosystem."* **National Science Foundation Urban Long-Term Research Area (ULTRA) Exploratory Awards**. Total Amount: $289,352.

4) 2008-2012 Douglas Kennett (PI), Rebecca Zarger, (Co-PI), Keith Prufer (Co-PI), Bruce Winterhalder (Co-PI) and Kevin Cannariato (Co-PI): "*Development and resilience of complex socioeconomic systems: A theoretical model and case study from the Maya Lowlands*." **National Science Foundation, Human Social Dynamics Program Collaborative Grant.** Total Amount: $900,000. Zarger, PI for USF collaborative portion: $62, 086.

5) 2005-2008 Consultant,*"Gender and Integrated Water Resource Management in the Mara Basin, Kenya and Tanzania,"* a component of **Global Water Management and Sustainability (GLOWS),** three year collaboration between USAID, the World Wildlife Fund, and FIU.

SUMMARY PROPOSAL BUDGET

YEAR 1

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
University of South Florida

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Jennifer Collins

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-months CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Jennifer M Collins - Principle Investigator**	0.00	0.00	1.00		
2. **Robin L Ersing - Co-PI**	0.00	0.00	0.50		
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.50		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		
3. (**1**) GRADUATE STUDENTS					
4. (**0**) UNDERGRADUATE STUDENTS					
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. (**0**) OTHER					
TOTAL SALARIES AND WAGES (A + B)					
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT					
E. TRAVEL 1. DOMESTIC (INCL. U.S. POSSESSIONS)					
2. FOREIGN					
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $					
2. TRAVEL					
3. SUBSISTENCE					
4. OTHER					
TOTAL NUMBER OF PARTICIPANTS (**10**) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES					
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER					
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)					
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Indirect Costs (F&A) (Rate: 49.5000, Base: 27942)**					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					
K. SMALL BUSINESS FEE					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					
M. COST SHARING PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT $				

PI/PD NAME
Jennifer Collins

ORG. REP. NAME*
Kelley Schuler

FOR NSF USE ONLY INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

1 *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

SUMMARY PROPOSAL BUDGET

YEAR 2

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
University of South Florida

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Jennifer Collins

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-months CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Jennifer M Collins - Principle Investigator**	0.00	0.00	1.00		
2. **Robin L Ersing - Co-PI**	0.00	0.00	0.50		
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.50		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		
3. (**1**) GRADUATE STUDENTS					
4. (**0**) UNDERGRADUATE STUDENTS					
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. (**0**) OTHER					
TOTAL SALARIES AND WAGES (A + B)					
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT					
E. TRAVEL 1. DOMESTIC (INCL. U.S. POSSESSIONS)					
2. FOREIGN					
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $					
2. TRAVEL					
3. SUBSISTENCE					
4. OTHER					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES					
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER					
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)					
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Indirect Costs (F&A) (Rate: 49.5000, Base: 30864)**					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					
K. SMALL BUSINESS FEE					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					
M. COST SHARING PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT $				

PI/PD NAME
Jennifer Collins

ORG. REP. NAME*
Kelley Schuler

FOR NSF USE ONLY INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

2 *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

SUMMARY PROPOSAL BUDGET

YEAR 3

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
University of South Florida

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Jennifer Collins

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-months CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Jennifer M Collins - Principle Investigator**	0.00	0.00	1.00		
2. **Robin L Ersing - Co-PI**	0.00	0.00	0.50		
3.					
4.					
5.					
6. (**0**) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	1.50		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		
3. (**1**) GRADUATE STUDENTS					
4. (**0**) UNDERGRADUATE STUDENTS					
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. (**0**) OTHER					
TOTAL SALARIES AND WAGES (A + B)					
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT					
E. TRAVEL 1. DOMESTIC (INCL. U.S. POSSESSIONS)					
2. FOREIGN					
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $					
2. TRAVEL					
3. SUBSISTENCE					
4. OTHER					
TOTAL NUMBER OF PARTICIPANTS (**0**) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES					
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER					
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)					
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE) **Indirect Costs (F&A) (Rate: 49.5000, Base: 33822)**					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					
K. SMALL BUSINESS FEE					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					
M. COST SHARING PROPOSED LEVEL $	AGREED LEVEL IF DIFFERENT $				

PI/PD NAME
Jennifer Collins

ORG. REP. NAME*
Kelley Schuler

FOR NSF USE ONLY INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

 *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

SUMMARY PROPOSAL BUDGET

Cumulative

FOR NSF USE ONLY		
PROPOSAL NO.	DURATION (months) Proposed	Granted
AWARD NO.		

ORGANIZATION
University of South Florida

PRINCIPAL INVESTIGATOR / PROJECT DIRECTOR
Jennifer Collins

A. SENIOR PERSONNEL: PI/PD, Co-PI's, Faculty and Other Senior Associates (List each separately with title, A.7. show number in brackets)	NSF Funded Person-months CAL	ACAD	SUMR	Funds Requested By proposer	Funds granted by NSF (if different)
1. **Jennifer M Collins - Principle Investigator**	0.00	0.00	3.00		
2. **Robin L Ersing - Co-PI**	0.00	0.00	1.50		
3.					
4.					
5.					
6. ( ) OTHERS (LIST INDIVIDUALLY ON BUDGET JUSTIFICATION PAGE)	0.00	0.00	0.00		
7. (**2**) TOTAL SENIOR PERSONNEL (1 - 6)	0.00	0.00	4.50		
B. OTHER PERSONNEL (SHOW NUMBERS IN BRACKETS)					
1. (**0**) POST DOCTORAL SCHOLARS	0.00	0.00	0.00		
2. (**0**) OTHER PROFESSIONALS (TECHNICIAN, PROGRAMMER, ETC.)	0.00	0.00	0.00		
3. (**3**) GRADUATE STUDENTS					
4. (**0**) UNDERGRADUATE STUDENTS					
5. (**0**) SECRETARIAL - CLERICAL (IF CHARGED DIRECTLY)					
6. (**0**) OTHER					
TOTAL SALARIES AND WAGES (A + B)					
C. FRINGE BENEFITS (IF CHARGED AS DIRECT COSTS)					
TOTAL SALARIES, WAGES AND FRINGE BENEFITS (A + B + C)					
D. EQUIPMENT (LIST ITEM AND DOLLAR AMOUNT FOR EACH ITEM EXCEEDING $5,000.)					
TOTAL EQUIPMENT					
E. TRAVEL 1. DOMESTIC (INCL. U.S. POSSESSIONS)					
2. FOREIGN					
F. PARTICIPANT SUPPORT COSTS					
1. STIPENDS $					
2. TRAVEL					
3. SUBSISTENCE					
4. OTHER					
TOTAL NUMBER OF PARTICIPANTS (**10**) TOTAL PARTICIPANT COSTS					
G. OTHER DIRECT COSTS					
1. MATERIALS AND SUPPLIES					
2. PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION					
3. CONSULTANT SERVICES					
4. COMPUTER SERVICES					
5. SUBAWARDS					
6. OTHER					
TOTAL OTHER DIRECT COSTS					
H. TOTAL DIRECT COSTS (A THROUGH G)					
I. INDIRECT COSTS (F&A)(SPECIFY RATE AND BASE)					
TOTAL INDIRECT COSTS (F&A)					
J. TOTAL DIRECT AND INDIRECT COSTS (H + I)					
K. SMALL BUSINESS FEE					
L. AMOUNT OF THIS REQUEST (J) OR (J MINUS K)					
M. COST SHARING PROPOSED LEVEL $				AGREED LEVEL IF DIFFERENT $	

PI/PD NAME
Jennifer Collins

ORG. REP. NAME*
Kelley Schuler

FOR NSF USE ONLY		
INDIRECT COST RATE VERIFICATION		
Date Checked	Date Of Rate Sheet	Initials - ORG

C *ELECTRONIC SIGNATURES REQUIRED FOR REVISED BUDGET

REU Budget Justification

A. Senior Personnel

Dr. Jennifer Collins, PI, will administer the project. Dr. Collins will meet with the REU students once per week to discuss different aspects of the program and progress on their research, and she will coordinate the seminar presentations with the external keynote speakers. Dr. Collins will also be responsible for post-reporting. As Dr. Collins is on a 9-month salary, one summer person month is requested per year with a 4% cost-of-living increase each year. (Total: [redacted])

Dr. Robin Ersing, co-PI, will serve as co-facilitator of the REU and provide student mentoring. As Dr. Ersing is on a 9-month salary, .5 summer person months per year are requested with a 4% cost-of-living increase each year. (Total: [redacted])

B. Other Personnel

We request only summer salary support, all three years, for a Graduate Assistant (GA) with a 4% cost of living salary increase after the first year. The School of Geosciences will provide academic-year (9-month) salary support and tuition for the Graduate Assistant (GA) for the project as part of its normal practice related to educational projects like these. The GA's effort will include coordinating and accompanying the students on the experiential learning opportunities at MacDill Air Force Base, the National Weather Service in Ruskin and others. They will also have the responsibility to communicate with students before and after the REU. The GA will serve as part of the graduate and REU alumni advisory board. The GA will assist the students in paper writing and conference presentation during the academic year. The GA will also serve as a mentor and coordinate social activities (at no cost to the REU grant). Ideally the GA will be a PhD student able to assist during the entire 3-year term of the project. (Total: [redacted])

C. Fringe Benefits

Fringe benefits are calculated at 17.73% for senior personnel and 0.3% for the graduate assistant including insurance costs. (Total: [redacted])

D. Equipment

No equipment is requested.

E. Travel

Faculty domestic travel is requested at [redacted]/year for the PI or Co-Pi to present with the students at a national meeting. (Total: [redacted])

F. Participant Support Costs

1. Stipends:

Each of the 10 participants will receive a cash stipend of [redacted] per week for the 9 weeks of the program ([redacted]/year). (Total: [redacted])

2. Travel:

The 10 participants who will be recruited from institutions in Florida other than USF, an

average of [redacted] per participant is budgeted for travel to and from Tampa ([redacted]/year). Travel between USF College of Marine Sciences (St. Petersburg) and USF (Tampa) for the research methods workshop and mentored research is budgeted at [redacted]/year and [redacted]/year for travel to experiential learning sites such as MacDill AFB. [redacted]/year additional mileage for mentors and key stakeholders is budgeted. (Total: [redacted])

3. Subsistence:

USF Tampa on-campus housing for 10 participants is budgeted at [redacted]/week each for 9 weeks; this figure includes a [redacted] linen fee per person. Housing will be provided in single occupancy traditional or suite style on-campus student housing that is made available for event accommodations over the summer. We will encourage all participants to live on campus for a sense of community building. Each of the 10 participants will receive a [redacted] food stipend, [redacted] of which will be placed on a food debit card to be used at any campus eatery. (Total: [redacted])

4. Other:

Participant research cost support: To support the cost to carry out participant research [redacted] per mentor each year and [redacted]/student/year is budgeted towards additional research costs ([redacted]/year). Note that we have secured a wide-mentor base of 10 mentors, several of whom were involved in the previous hurricane REU. There will be a group mentoring format (we expect to team mentor with at least one physical and one social scientist on each team) with 3-4 REU students. Depending on the research topics, some mentors will participate in some years, while others will participate in other years. For a particular year, we expect six mentors will be needed, with the team approach and student groups of approximately three students per team. Our faculty mentors are mostly on 9 month contracts and the nominal cost per mentor further encourages their on campus participation in the summer. Committed mentors include Dr. Mark Luther, Dr. Mya Breitbart, Dr. Mark Hafen, Dr. Rebecca Zarger, Dr. Beverly Ward, Dr. Margarethe Kusenbach, Dr. Kelli Burns, as well as the PI and co-PI. In addition, Rebecca Morss from UCAR has offered to provide additional remote support mentoring.

External Evaluator: Dr. Gerry Meisels will receive [redacted]/year for REU project evaluations.

Conference support: Conference support for participants to present their research is budgeted at [redacted]/student = [redacted] per year. We will also be working with our participants to apply for grants and scholarships (such as a [redacted] award available from the David Sankey Minority Scholarship fund) to supplement this.

Seminar lunches: Bi-weekly seminar presentations by nationally and internationally recognized researchers will include a working lunch for the REU students. The REU symposium will include a luncheon for students, faculty and community stakeholders present. [redacted]/year

Boat costs: The ocean research methods lesson will include a field experience. [redacted] is budgeted for one day (8 hours per day @ 6 gal. per hour @ [redacted] per gal for marine fuel) per year. [redacted]/year.

T-shirts: REU T-shirts are budget at [redacted] per participant ([redacted]/year) to physically display official association with the university and the REU when conducting research such as interviewing the public.

Book costs: Student books are budgeted at [redacted] ([redacted]/student x 10) per year.

(Total: [redacted])

G. Other Direct Costs:

1. Materials and supplies:
Supplies e.g. binders with planners, flash drives for faculty mentors and PI/Co-PI and other materials are budgeted at [redacted] per year. (Total: [redacted])

2. Publication/Documentation/Dissemination:
REU products, publications, etc. [redacted] is budgeted for printing end-of-REU program, including student abstracts, and mailing it to appropriate academic, community and government institutions; [redacted] is budgeted for materials necessary for recruitment activities, including printing, mailing and postage; [redacted] is budgeted for conference poster-printing for each student. ([redacted]) In years 2 and 3 publication costs are increased to [redacted] per year to accommodate required publication charges in an American Meteorological Society journal. (Total: [redacted])

3. Other:
Data Management Plan: [redacted] is budgeted in Year 3 to complete the data management plan.

Tuition: 6 credits of summer tuition for the GA is budgeted per year at [redacted] per credit hour with a 4% tuition inflation rate after the first year. (Total: [redacted]). Note that academic year tuition is not charged to the project.

H. Total Direct Costs
Total Direct Costs are [redacted]

I. Indirect Costs
Indirect costs are calculated at USF's federally negotiated rate of 49.5% on the modified total direct cost of [redacted] which excludes participant costs and tuition. (Total: [redacted])

J. Total Costs are [redacted]

Cost Effectiveness: While the costs per student are a little more than some other funded REU projects, due to the mentored research component as well as the other components (2 -6) noted in the proposal we find this additional cost necessary and as conservative as possible.

Current and Pending Support- J.M. Collins

Current Funding

Title: Collaborative: RUI: Reconstructing the History of Hurricane Landfalls in Southwest Florida over the past five thousand years.
Agency: National Science Foundation
Award Period: 07/15/2013-06/30/2017
Requested Funds: $74,545
Person Months: 1.0/per year

Pending Funding

Title: REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences (This Proposal)
Agency: National Science Foundation
Proposed Award Period: 05/01/2017-4/30/2020
Requested Funds: [redacted]
Person Months: 1.0 month/year

Title: Hurricanes and Climate Change
Agency: National Science Foundation
Proposed Award Period: 01/01/2017-12/31/2017
Requested Funds: $55,950
Person Months: 1.0 month/year

Current and Pending Support- Robin Ersing

Pending Support:

PIs: J.M. Collins and R. Ersing
Title: REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences (This Proposal)
Agency: *NSF*
Amount requested: [redacted]
Project dates: 5/1/2017-4/30/2020
Location: USF
Person-Months Per Year Committed to the Project.0.5

Current Support:

PI: R. Ersing
Title: GEAR-UP
Agency: U.S. Department of Education
Amount funded: $3.2 million (USF Sub-contract $232,000)
Project dates: 10/01/2014 – 09/30/2020
Location: Hillsborough County Public Schools, USF
Person-Months Per Year Committed to the Project. 0.5

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Mya Breitbart	Other agencies (including NSF) to which this proposal has

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Collaborative Research: AToL: ACCESS DNA Viruses: A Comprehensive Survey of Circular Eukaryotic Single-Stranded DNA Viruses in Invertebrates and Fungi

Source of Support: NSF: Assembling the Tree of Life

Total Award Amount: $995,371 Total Award Period Covered: 12/01/12 – 11/30/17

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad: 0 Sumr: 0.5

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

National Marine Sanctuaries as Sentinel Sites for a Demonstration Marine Biodiversity Observation Network (MBON) (Lead PI Frank Muller-Karger, total award ~$7M)

Source of Support: NOPP (NASA, BOEM, NOAA)

Total Award Amount: $912,314 Total Award Period Covered: 08/01/14 – 07/31/19

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0 Sumr: 0.5

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Quantifying the Recently Discovered, Ubiquitous ssDNA Phage Group and Identifying Their Hosts (note that this grant focuses on the Red Sea and does not overlap in scope)

Source of Support: US-Israel Binational Science Foundation

Total Award Amount: $116,847 Total Award Period Covered: 09/01/15 – 08/31/19

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0 Sumr: 0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Egg and Larval Barcoding for Gulf DEPM Stock Assessments. (Lead PI: Ernst Peebles, total award $129,265)

Source of Support: FIO: Florida Centers of Excellence Research Grants Program

Total Award Amount: $76,307 Total Award Period Covered: 09/01/15 – 08/31/19

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0 Sumr: 0.3

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Role of Phages in Structuring Bacterial Communities: Ciona intestinalis as a Model System (Lead PI: Larry Dishaw, total award $440,300)

Source of Support: NSF: Integrative Organismal Systems

Total Award Amount: $74,071 Total Award Period Covered: 06/01/15 – 05/31/18

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0 Sumr: 0.5

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

(See GPG Section II.D.8 for guidance on information to include on this form.)

The following information should be provided for each investigator and other senior personnel. Failure to provide this information may delay consideration of this proposal.

Investigator: Mya Breitbart	Other agencies (including NSF) to which this proposal has

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title:

Deciphering the Ecology of Aquatic Single-Stranded DNA Phages (Microviridae/Gokushovirinae)

Source of Support: NSF: Division of Environmental Biology

Total Award Amount: $463,714 Total Award Period Covered: 08/01/16 – 08/31/19

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0.0 Sumr: 0.5

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Coastal SEES Collaborative Research: Integration of Human Behavior and Perception into a Risk-Based Microbial Water Quality Management Approach

Source of Support: NSF: Coastal SEES

Total Award Amount: $1,225,904 Total Award Period Covered: 09/01/16 – 08/31/20

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0 Sumr: 0.5

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Spawning Habitat and Early-Life Linkages to Fisheries (SHELF)

Source of Support: Florida Institute of Oceanography: FL Centers of Excellence Research Grants Program

Total Award Amount: $799,999 (total) Total Award Period Covered: 09/01/16 – 08/31/18

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: 0.0 Acad:0.0 Sumr: 0.5

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Cooperative Institute – Gulf of Mexico Connectivity

Source of Support: NOAA Cooperative Institute

Total Award Amount: $872,419 Total Award Period Covered: 10/01/16 – 09/30/21

Location of Project: Texas A&M and University of South Florida

Person-Months Per Year Committed to the Cal: 0 Acad:0.0 Sumr: 0.5

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An Interdisciplinary aproach integrating physical and social sciences

Source of Support:NSF

Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020

Location of Project: University of South Florida

Person-Months Per Year Committed to the Cal: Acad: Sumr: 0

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Current and Pending Support

Investigator: Kelli Burns

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An Interdisciplinary approach integrating physical and social sciences (This Proposal)
Source of Support: NSF
Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020
Location of Project: USF
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr: 0

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Current and Pending Support

Investigator: Mark R. Hafen, Ph.D.

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An Interdisciplinary aproach integrating physical and social sciences (This Proposal)
Source of Support: NSF
Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020
Location of Project: USF
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr: 0

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Current and Pending Support

Investigator: Margarethe Kusenbach

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An Interdisciplinary aproach integrating physical and social sciences (This Proposal)
Source of Support: NSF
Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020
Location of Project: USF
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr: 0

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Support: ☐ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title:
Source of Support:
Total Award Amount: Total Award Period Covered:
Location of Project:
Person-Months Per Year Committed to the Project: Cal: Acad: Sumr:

Current and Pending Support

Investigator: Mark Luther

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: SECOORA - USF COMPS In-Shore Coastal Stations

Source of Support: NOAA – Sub-award from SECOORA

Total Award Amount: $260,286 Total Award Period Covered: 9/12013 thru 5/31/2017

Location of Project: University of South Florida

Person-Months Per Year Committed to the Project: 1.0 Cal: Acad: Sumr: 1.0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: The Alliance for Coastal Technologies: Partnership Activities at the University of South Florida (Phase III)

Source of Support: NOAA (Sub award from Univ. of Maryland

Total Award Amount: $298,350 Total Award Period Covered: 6/1/2011 to 5/31/2017

Location of Project: University of South Florida

Person-Months Per Year Committed to the Project: 1.0 Cal: Acad: Sumr: 1.0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Standardization of Local Data Network Nodes in the GCOOS-RA

Source of Support: NOAA (Subaward from Texas A&M Univ.)

Total Award Amount: $252,901 Total Award Period Covered: June 1, 2011 to May 31, 2017

Location of Project: University of South Florida

Person-Months Per Year Committed to the Project: 1.0 Cal: Acad: Sumr: 1.0

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Tampa Bay PORTS Cooperative II

Source of Support: Greater Tampa Bay Marine Advisory Council-PORTS, Inc.

Total Award Amount: $413,913 Total Award Period Covered: April 9, 2004 to March 6, 2019

Location of Project: University of South Florida

Person-Months Per Year Committed to the Project: 0 Cal: Acad: Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: The response of port facilities and their surrounding communities to extreme weather and climatic change

Source of Support: NOAA

Total Award Amount: $905,227 Total Award Period Covered: Jan. 1, 2016 thru Dec. 31, 2018

Location of Project: University of South Florida, Florida State Univ. and Univ. of Rhode Island

Person-Months Per Year Committed to the Project: 1.0 Cal: Acad: Sumr: 1.0

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An Interdisciplinary approach integrating physical and social sciences (This Proposal)

Source of Support: NSF

Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020

Location of Project: USF

Person-Months Per Year Committed to the Project. Cal: Acad: Sumr: 0

Support: ☐ Current ☐ Pending ☒ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Modeling Long-term Ecological Impacts of DWH Oil in Northeast Gulf of Mexico

Source of Support: NOAA RESTORE

Total Award Amount: $900,000 Total Award Period Covered: Jan. 1, 2017 thru Dec. 31, 2019

Location of Project: University of South Florida

Person-Months Per Year Committed to the Project. 1.0 Cal: Acad: Sumr: 0.5

Date: 8/16/2016

Current and Pending Support

Investigator Name: **Rebecca Morss**

Project Title: REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences

NCAR Prop. No	2016-9999	Program Name:	Research Experiences for Undergraduates (REU)
Sponsor:	NSF (via Univ of S. Florida)	Program No.:	NSF 13-542
Funding:	[redacted]	Program Manager:	REU Geosciences
POP Start Date:	05/01/2017	Prog Mgr Phone:	703-292-8521
POP End Date:	04/30/2020	Prog Mgr Email:	reu.ags@nsf.gov

Cal. Months Per Yr on Project: MonthsFunded: MonthsCoSp: 0.25

Status: PENDING Serving as: Mentor

Project Title: Predicting, Assessing, Managing, and Responding to the Impacts of Multihazards

NCAR Prop. No	2016-0538	Program Name:	Expeditions in Computing
Sponsor:	NSF	Program No.:	NSF 16-535
Funding:	750,000	Program Manager:	Mitra Basu
POP Start Date:	1/1/2018	Prog Mgr Phone:	703-292-8910
POP End Date:	12/31/2022	Prog Mgr Email:	mbasu@nsf.gov

Cal. Months Per Yr on Project: MonthsFunded: 0.50 MonthsCoSp:

Status: PENDING Serving as: Co-PI

In the event that a pending project is awarded and an overlap in effort occurs, the effort on the NCAR Internal Funds will be adjusted accordingly. The award amount for NCAR indicates the internal base funding for the specified project for the current fiscal year.

Date: 8/16/2016

Current and Pending Support

Investigator Name: **Rebecca Morss**

Project Title: Improving Risk Communication and Reducing Vulnerabilities for Dynamic Tornado Threats in the Southeastern U.S.

NCAR Prop. No	2016-0417	Program Name:	FY16 Verification of the Origins of Rotation in Tornadoes
Sponsor:	NOAA	Program No.:	NOAA-OAR-OWAQ-2016-2004838
Funding:	134,871	Program Manager:	Richard Fulton
POP Start Date:	10/01/2016	Prog Mgr Phone:	301-734-1289
POP End Date:	09/30/2018	Prog Mgr Email:	Richard.Fulton@noaa.gov

Cal. Months Per Yr on Project: MonthsFunded: MonthsCoSp: 0.30

Status: PENDING Serving as: Co-PI

Project Title: Refinement and Evaluation of Automated High-resolution Ensemble-based Hazard Detection Guidance Tools for Transistion to NWS Operations

NCAR Prop. No	2015-0338	Program Name:	NOAA USWRP Research to Operations Transition
Sponsor:	NOAA	Program No.:	NOAA Internal Call
Funding:	2,250,000	Program Manager:	John Cortinas
POP Start Date:	8/1/2015	Prog Mgr Phone:	301-734-1198
POP End Date:	7/31/2018	Prog Mgr Email:	John.Cortinas@noaa.gov

Cal. Months Per Yr on Project: MonthsFunded: 0.50 MonthsCoSp:

Status: AWARDED Serving as: Co-I

In the event that a pending project is awarded and an overlap in effort occurs, the effort on the NCAR Internal Funds will be adjusted accordingly. The award amount for NCAR indicates the internal base funding for the specified project for the current fiscal year.

Date: 8/16/2016

Current and Pending Support

Investigator Name: **Rebecca Morss**

Project Title: EaSM-3: Integration of Decision-Making with Predictive Capacity for Decadal Climate Impacts

NCAR Prop. No	2014-1074	Program Name:	EaSM3: Integration of Decision-Making with Predictive Capacity for Decadal Climate Impacts
Sponsor:	NSF	Program No.:	NSF 13-607
Funding:	1,185,000	Program Manager:	Anjuli Bamzai
POP Start Date:	10/1/2014	Prog Mgr Phone:	703-292-8527
POP End Date:	9/30/2019	Prog Mgr Email:	abamzai@nsf.gov

Cal. Months Per Yr on Project: MonthsFunded: MonthsCoSp: 0.48

Status: AWARDED Serving as: Co-PI

Project Title: Hazards SEES Type 2: Hazard prediction and communication dynamics in the modern information environment

NCAR Prop. No	2013-1168	Program Name:	Interdisciplinary Research in Hazards and Disasters (Hazards SEES)
Sponsor:	NSF	Program No.:	NSF 12-610
Funding:	2,992,994	Program Manager:	Brad Smull
POP Start Date:	10/1/2013	Prog Mgr Phone:	703-292-8524
POP End Date:	9/30/2017	Prog Mgr Email:	bsmull@nsf.gov

Cal. Months Per Yr on Project: MonthsFunded: 1.44 MonthsCoSp: 1.44

Status: AWARDED Serving as: PI

In the event that a pending project is awarded and an overlap in effort occurs, the effort on the NCAR Internal Funds will be adjusted accordingly. The award amount for NCAR indicates the internal base funding for the specified project for the current fiscal year.

Date: 8/16/2016

Current and Pending Support

Investigator Name: **Rebecca Morss**

Project Title: NCAR Research Focus Area: Regional Climate & Risk Modeling

NCAR Prop. No	1000-2016	Program Name:	NSF/NCAR Internal Base Funds
Sponsor:	NSF	Program No.:	NSF CA #M0856145
Funding:	553,753	Program Manager:	Sohel Ahmed
POP Start Date:	10/01/2013	Prog Mgr Phone:	703-292-2957
POP End Date:	9/30/2018	Prog Mgr Email:	soahmed@nsf.gov

Cal. Months Per Yr on Project: MonthsFunded: 8.88 MonthsCoSp:

Status: AWARDED Serving as: Senior Personnel

In the event that a pending project is awarded and an overlap in effort occurs, the effort on the NCAR Internal Funds will be adjusted accordingly. The award amount for NCAR indicates the internal base funding for the specified project for the current fiscal year.

Current and Pending Support

Investigator: Beverly G. Ward

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences (This Proposal)
Source of Support: NSF
Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020
Person-Months Per Year Committed to the Project: Cal: 0 Acad: Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: TCRP H-54, Guide to Equity Analysis in Regional Transportation Planning Processes
Source of Support: The National Academies of Sciences, Engineering, Medicine
Total Award Amount: $33,000 Total Award Period Covered: 1/1/2017-12/31/2018
Person-Months Per Year Committed to the Project Cal: 3.6 Acad: Sumr:

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: Earthcare Field Secretary
Source of Support: Southeastern Yearly Meeting
Total Award Amount: $15,600 Total Award Period Covered: 10/1/2016-9/30/2017
Person-Months Per Year Committed to the Project: Cal: 4.8 Acad: Sumr:

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future
Project/Proposal Title: Tampa Byrne Criminal Justice Innovation Enhancement Grant
Source of Support: U.S. Department of Justice
Total Award Amount: $62,000 Total Award Period Covered: 9/1/2013-8/31/2017
Person-Months Per Year Committed to the Project: Cal: .6 Acad: Sumr:

Current and Pending Support

Investigator: Rebecca Zarger	

Support: ☒ Current ☐ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: PIRE: Context Sensitive Implementation of Synergistic Water-Energy Systems

Source of Support: NSF

Total Award Amount: $3.9 million Total Award Period Covered: 8/2012-8/2017

Location of Project: University of South Florida/Belize/USVI

Person-Months Per Year Committed to the Project. 0.0 Cal: 0.0 Acad: 0.0 0 Sumr: 0.2

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: Collaborative Research: NRT-INFEWS: 21st Century Interdisciplinary Synergies for Food Energy Water Systems (CIS-FEWS)

Source of Support: NSF

Total Award Amount: $2.5 million Total Award Period Covered: 9/2016-8/2021

Location of Project: University of South Florida/Belize/USVI

Person-Months Per Year Committed to the Project. 0.0 Cal: 0.0 Acad: 0.5 Sumr: 1.0

Support: ☐ Current ☒ Pending ☐ Submission Planned in Near Future ☐ *Transfer of Support

Project/Proposal Title: REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and so- cial sciences (This Proposal)

Source of Support: NSF

Total Award Amount: [redacted] Total Award Period Covered: 5/1/2017-4/30/2020

Location of Project: Tampa, FL

Person-Months Per Year Committed to the Project. 0.0 Cal: 0.0 Acad: 0.0 Sumr: 0.0

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*If this project has previously been funded by another agency, please list and furnish information for immediately preceding funding period.

Facilities, Equipment, and Other Resources

Laboratories

Several faculty members are affiliated with the USF College of Arts and Sciences which has a number of facilities that will be used by the REU program. The PI has a weather/computer lab in the School of Geosciences. The lab has 20 computers with dual monitors with access to a large-format printer-plotter. The computers have a variety of meteorological, statistical, mapping, data imaging, and GIS software. All REU students will have access to this lab. In addition, two separate GIS labs are housed in the School of Geosciences (also with 20 computers each and dual monitors) across the hallway. The PI also has a weather monitoring station, housed at the nearby USF Botanical Gardens.

Two of the faculty mentors come from the Alliance for Integrated Spatial Technologies (AIST). AIST facilities include technologies relating to the creation of spatial data capture, 3D model creation, and advanced imaging. Equipment includes a range of digitizers, 3D terrestrial laser scanning instruments, global positioning systems equipment, portable 3D scanners, photogrammetry equipment, and 3D printing facilities. AIST's computer teaching lab allows students to work with 3D modeling and data, and share and learn using interactive tables, active touch boards, 3D monitor projection, and high resolution projection systems. The center also has staff and researchers who are experts in 3D data capture, processing and modeling and can also assist with projects involving GIS and aerial LiDAR and remote sensing applications.

AIST's Equipment and software list:

- 4- terrestrial laser scanning instruments
- 1- close range 3D triangulation digitizer
- 2- 3D printers (PLA and ABS materials supported)
- 2- portable laser scanners
- 12- desktop processors for 3D software and GIS applications
- 1- GPS carrier phase survey system
- 2- photo boxes and tents and lighting systems
- 1- professional level camera system and gigapixel photographic system
- 1- interactive teaching table with touch-based capabilities
- 1- active touch based monitor
- 1- active touch-based smart board
- 1- portable 70" 3D monitor

Geomagic 3D software
FARO Scene 3D software
Pointools 3D animation software
Surfer 11 cartographic and modeling software
Voxler 3D geologic modeling software
LiDAR Analyst

Additionally, AIST have ArcGIS and ESRI software products, ReCAP 360, Autodesk 123D photogrammetry software, Cubify Sculpt 3D printing and modeling software, Autodesk site licensing, Google Earth Pro and educational products.

Some faculty mentors (Luther, Breitbart) are in the USF College of Marine Science (CMS). CMS is an interdisciplinary graduate marine science program with an internationally recognized research portfolio, granting degrees at the Masters and Doctoral level. CMS has extensive facilities for work in all traditional oceanographic disciplines; i.e., geological, biological, chemical and physical oceanography. CMS is located in St. Petersburg on an 11 acre waterfront campus on a peninsula in Bayboro Harbor, with deep water dockage on 3 sides of the facility and open access into Tampa Bay and the Gulf of Mexico. The Knight Oceanographic Research Center (KORC) on this campus is a 140,000 sq. ft., $21M joint use facility shared with the Florida Fish and Wildlife Commission. The adjacent Marine Science Laboratory (MSL) is located in a former US Merchant Marine training facility and houses laboratories and offices for CMS faculty and students. In addition, a fully equipped machine shop and two permanent staff are available for fabrication of custom lab equipment and oceanographic gear and a graphics artist is available on a chargeable basis. The USF Center of Ocean Technology is an integral part of the College and provides support for various sampling platforms and sensors, as well as development projects. All resources of CMS will be available to the proposed effort. CMS is co-located with the Florida Institute of Oceanography (FIO) and the Florida Fish and Wildlife Research Institute (FWRI) and is immediately adjacent to the Port of St. Petersburg and the US Coast Guard Sector St. Petersburg headquarters. Research cruise berths on the Florida Institute of Oceanography ships, which are based at the College, are frequently available for collecting samples of opportunity from the Gulf of Mexico. Within CMS, the proposed effort is a collaboration between the Ocean Monitoring and Prediction Lab (OMPL; http://ompl.marine.usf.edu/), directed by Mark Luther, and the Marine Microbiology Laboratories under the direction of Mya Breitbart.

The Luther Lab

OMPL operates and maintains the on-shore component of the USF Coastal Ocean Monitoring and Prediction System (COMPS), consisting of 10 real-time observing sites along the west coast of Florida, collecting water level and meteorological data with records of 12 to 15 years in length. OMPL also operates and maintains the NOAA Physical Oceanographic Real-Time System (PORTS) in Tampa Bay through a series of cooperative agreements. PORTS consists of 4 water level/meteorological stations, 3 Acoustic Doppler Current Profiler (ADCP) stations, and 4 meteorology-only stations, most with data records of 20 to 22 years. COMPS and PORTS are components of both the Southeastern Coastal Ocean Observing Regional Association (SECOORA) and the Gulf of Mexico Coastal Ocean Observing System (GCOOS), regional components of the US Integrated Ocean Observing System (IOOS). All COMPS and PORTS data collection systems will be available to the proposed effort for research experiences. Additionally, OMPL and the Luther lab have a 20 year working relationship with the NOAA National Ocean Service Center for Operational Products and Services and with the Tampa Bay maritime and environmental communities and have access to all their local resources for undergraduate experiences. Small boats are available for field work on the water to view and service the real-time ocean observing systems as part of those experiences.

The Breitbart Lab

The Marine Microbiology Laboratories under the direction of Mya Breitbart at the College of Marine Science occupy ~1100 square feet of laboratory space in the Knight Oceanographic Center building. The space is divided into two physically separate fully equipped molecular biology laboratories. One room is an environmental sample processing area, and the other room is used for

PCR amplification and processing of amplified DNA. The areas are isolated from each other in order to prevent contamination of environmental samples with PCR products. Breitbart occupies a ~100 square foot office space equipped with a computer suitable for bioinformatics analyses and a color laser printer. In addition, ~1200 square foot teaching laboratory equipped for molecular biology instruction is available in the same building.

Instrumentation at the USF College of Marine Science includes: BioRad GS363 Molecular Imager, TM Analytic Liquid Scintillation Counter, Beckman L80 Ultracentrifuge; two floor model Refrigerated Centrifuges, several shaking incubators suitable for culturing marine bacteria and phages, four Eppendorf gradient thermocyclers, Millipore ProFlux12 Ultrafiltration device, two complete GE Healthcare tangential flow filtration apparatuses, Nanodrop Spectrophotometer, Perkin Elmer LS5Fluorescence Spectrophotometer, UV-Visible Spectrophotometer, Olympus B-max Epifluorescence Microscope and Automated Image Analysis System; BioImaging Solutions Field-compatible Epifluorescence and Dissecting Microsopes with Digital Imaging Systems, Hitachi 7100 Transmission Electron Microscope with Digital Imaging System, PE Applied Biosystems Model 7500 Sequence Detection System (real time PCR machine), BioRad CHEFII Pulsed Field Gel Electrophoresis System, GenePics 4000B Microarray Scanner, EasyQ Real Time NASBA Reader, and an Alpha Innotech Gel Imaging System. Bioinformatic capabilities include a TimeLogic CodeQuest system, the Lasergene suite, Sequencher, CODON, and three PCs dedicated to bioinformatics.

Mass Communication Lab
One of the faculty mentors has offered access to equipment in the mass communication lab if needed for any project, or for documenting aspects of the REU which may help with future advertising of the program. Equipment includes: 20 - Panasonic HMC-150 Professional HD field camera kits with Manfrotto tripods, 10 -Lowel 3-light field lighting kits, 2- HD GoPro camera kits, 27-Nikon D50 digital photography cameras, 2 - Completely outfitted functioning television studios with Grass Valley and Echolab video switchers, broadcast Sony DXC-D50 studio cameras, Compix character generators, teleprompting systems, Yamaha and Mackie audio boards, Sony microphones, 17 - Dell Optiplex based video editing suites with Adobe Premiere CC and complete Adobe production bundle, 1-Large studio type room for professional photography with lighting and backdrops.

Computers
All USF faculty and staff have personal desktop computers networked to the University servers with high-speed connections to the Internet and with access to a variety of printers and copiers. Dr. Collins has a color printer in her office. The University's administrative computing department performs daily backup of the entire system, and provides support for the network and desktop computers.

Office
All USF Tampa faculty have separate offices, approximately 120 square feet each. Each faculty has access to clerical staff, facilities, services and support.

Other resources

USF's Office of Sponsored Research provides oversight for all proposal preparation and grant administration, including compliance with federal regulations, state statutes, and university policies, and financial administration of all funded grants. The college employs a full-time grants accountant who Dr. Collins and Dr. Ersing work with on grant related activity. All grant accounts are strictly separate and auditable. All financial records are available for sponsor review at any time. The PI and co-PI and support staff have a P-Card and have received training in compliance. USF has state contracts with various vendors to obtain best possible pricing and the waiver of taxes and shipping and handling charges whenever possible.

The School of Geosciences will provide administrative and academic-year GA support for the project as part of its normal practice related to educational projects like these.

Data Management Plan

Types of Data and Format

The Weather, Climate and Society REU program will produce multiple kinds of data over the course of its three years of operation. In addition to the 30 undergraduate researchers, there will be numerous faculty and graduate mentors engaged in this program. The data, results and findings produced by this collective effort will be disseminated as presented in the Project Description. Venues of dissemination include peer-reviewed journals and scientific conferences (local, regional and national). Furthermore, information generated from the REU program will be readily available through websites of individual faculty mentors, as well as the REU website maintained by the Office of Undergraduate Research.

Data and metadata will be given to the USF library. The library is equipped with the latest GIS and Remote Sensing software. The library will make sure all data are geolocated, mapped, and tagged using keywords and subjects.

This visualization process involves:
1. Creating GIS layers
2. Publishing online map services.

The architecture needed to support the data management plan (ArcGIS servers, ArcGIS Online, and a Geoportal metadata service) is already in place, and is in use at the USF Tampa Library. After the steps of the data management plan are accomplished, interested users will have direct access to all submitted data, associated metadata, published web services, and access to a web mapping application depicting the geographic and subject scope of the research.

In addition, case studies, results, maps and data will be shared on UCAR Unidata's **R**epository for **A**rchiving, **M**anaging and **A**ccessing **D**iverse **DA**ta (RAMADDA). RAMADDA is a freely available open-source content/data management framework.

Due to the interdisciplinary nature of the REU, both physical and social data will be collected; data will be both qualitative and quantitative. Electronic data will be stored on a secure computer on campus at the University of South Florida. In the instance that hard copies of a dataset are required, such as with surveys, they will be stored in a secure and locked file cabinet within the office of the PI or Co-PI. No personally identifiable information will be recorded and we will obtain IRB approval on projects prior to the start of the REU.

USF Office for Undergraduate Research

Inspiring Inquiry and Discovery Across All Disciplines

June 29, 2016

Dear Dr. Collins;

I am pleased to write in support of your site proposal for a Research Experience for Undergraduates (REU) program. The University of South Florida prides itself on its commitment to education and discovery at both the undergraduate and graduate level, and I am happy to offer the support of the Office for Undergraduate Research (OUR) to facilitate this proposed REU program.

USF has hosted numerous very successful NSF-funded REU programs on campus since 2005. In addition, the university has funded research programs for undergraduates in Humanities, Anthropology, Women's Health and other interdisciplinary topics. The OUR has been involved in joint educational opportunities for the REU students including active workshops on poster and oral presentation skills, problem solving, and attending graduate school. We also sponsor a cohort of students as part of our association with the Leadership Alliance, thus have a strong connection to these interdisciplinary programs.

Over the past several years, in meeting with the directors of USF's NSF-sponsored REU programs, the OUR has developed a number of methods to facilitate the sponsorship of REU programs. Support from the OUR includes:

- Consultation on research and training activities
- Recruiting qualified students, including under-served minorities, through the OUR website, OUR training workshops and through our contacts at other institutions and by networking of contacts among the various REU directors.
- Participation in social events for all REU students during the summer
- Utilization of the OUR training classroom
- Participation in the poster session report-outs at the end of the program
- Funding (contingent on availability) in support of graduate and undergraduate students

In addition, the OUR works toward access for all students and can provide training to the REU PIs, mentors and grad-alumni advisory group on working with minority students and co-mentoring. My staff and I look forward to the opportunity of partnering with you and NSF on this interdisciplinary proposal to enrich research experiences for undergraduates.

Sincerely,

Richard S Pollenz, Ph.D.
Professor and Associate Dean for Undergraduate Research
Director, USF HHMI STEM Academy Program
pollenz@usf.edu

Hillsborough Community College

www.hccfl.edu
877.736.2575

June 23, 2016

Jim Wysong
Dean of Associate in Arts
Mathematics & Sciences Division
Hillsborough Community College

To: Dr. Jennifer Collins

Re: Participation and Support of Proposed Activities – NSF Summer Research Experience for Undergraduates (REU) Grant

On behalf of Hillsborough Community College (HCC), I would be pleased to assist and support your proposed project: *"REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences."* I have reviewed the proposal, and I feel that students at HCC would benefit from the opportunities that it presents. Hillsborough Community College is recognized as a Hispanic Serving Institution (HSI) by the Department of Education, and my division is the current recipient of a DOE Title III grant intended to increase the retention and success of Hispanic students in the STEM disciplines. Building on our experience at HCC, and leveraging the long-established relationship we enjoy with the University of South Florida, I see this project as an innovative way to help our students gain valuable and authentic experience and make connections that will allow them to bridge the gap between our institutions. As you are well aware, and cite in your proposal, a large percentage of STEM majors begin their education at FCS institutions, with HCC providing the largest percentage of transfer students to USF.

Given the aforementioned USF/HCC institutional relationship, and the close ties that exist between our faculty members, I feel that this project could be implemented quickly and effectively. Upon my initial review of the proposal, I discussed possible HCC participation with our Academic Vice President – Mr. Craig Johnson, who expressed his support, agreeing that this project is consistent with our intuitional mission.

With the support that we are willing to commit to this effort, it is my sincere hope that you will be successful in obtaining funding. Please keep me posted, and let me know if there are additional things that you require from us at this time.

Sincerely,

National Weather Service
Tampa Bay Area
2525 14th Avenue SE
Ruskin, Florida 33570
813-645-2323

29 June 2016

Dear National Science Foundation Reviewing Officials:

This is a letter of support for the NSF proposal entitled: REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences. The PI is Dr. Jennifer Collins from the School of Geosciences at the University of South Florida.

This collaboration will fit well with our NOAA Weather-Ready Nation initiatives to work with a diverse range of coastal interests in our communities. The NWS (Tampa Bay region) will be able to help provide Dr. Collins and her team with NWS data needed to help ensure a successful project. In addition, we will provide Skywarn training to the REU cohorts. Several of our meteorologists have worked with Dr. Collins and her undergraduate and graduate students.

I currently serve on thesis committees where the students are examining wildfire indices to determine days that wildfires could be more severe and the how pollen is distributed by atmospheric motions. I have also collaborated on several grant projects with Dr. Collins, for which several publications have been published with undergraduate and graduate students. I am happy to continue in this mentoring role for the REU program. I am also a co-author with Dr. Collins on a Florida weather and climate book which has recently been accepted by the publisher.

Although short term prediction is our local forte, we are increasingly involved with climate studies and any details that can add to this understanding particularly for Florida and the Tampa Bay area. This insight will have pronounced utility not just for this office but for other NOAA entities. This research will also build on our existing federal-university partnerships. Ultimately many findings which I expect to come from the research projects over the course of the three years will benefit the economy, safety, efficiency and improved management leading to saved lives and saved money.

It is without reservation that I endorse this proposal that focuses on mentored research for undergraduate students.

Sincerely,

Charles Paxton
Science and Operations Officer
National Weather Service Tampa Bay Area
813-645-2323 x 224

7/5/16

To: NSF Review Panel

We the undersigned acknowledge that we are committed to the proposed project "REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences." through our role on the Graduate Student and Alumni Advisory Board. Together our board has a mix of expertise including those who study social science, those who study physical science, and those who are alumni of USF's previous Hurricane REU (many of whom began in a non-STEM field and graduated in STEM). As alumni, we were inspired to continue research as evidenced by our post REU academic experiences and current careers. We are an advisory board of educational as well as cultural diversity.

Michelle Saunders, PhD student

(completed year 1)

Dissertation topic: public perceptions of weather radar data

Christopher Mehta, PhD student

(completed year 1)

Dissertation topic: hurricane interannual variability

Saurav Chakraborty, PhD student (entering year 1)

Dissertation: TBD related to weather/climate

Lauren Keroack, MPH, Hurricane REU Alumni

Academic Advisor, Department of Psychology

Dustin Hinkel, Hurricane REU Alumni

MS, Environmental Science and Policy

~~Director of the Department of Emergency,~~ County Administrator

Taylor County Board of County Commissioners (FL)

Nick Zweber, Hurricane REU Alumni

BS, Biology

Senior Project Biologist at The Chappell Group Inc., an Environmental Consulting Firm

Sachin Santhakuinar, Hurricane REU Alumni

B.S. Biomedical Engineering, Purdue University

M.D. Candidate 2017, Brown University

Ileana Freyles Ortiz, PhD student

PhD Candidate fall 2016

Dissertation: Understanding the effects of increased temperatures and ocean acidification on coastal ecosystems: from system design to public literacy

USF UNIVERSITY OF SOUTH FLORIDA

Coalition for Science Literacy

July 5, 2016

Prof. Jennifer Collins, Ph.D.
School of Geosciences
University of South Florida
4202 E. Fowler Ave NES 316
Tampa, Florida 33620

Dear Jennifer:

Thank you for asking us to serve as external evaluators of your proposed project "REU Site Proposal: Weather, Climate and Society: An interdisciplinary approach integrating physical and social sciences." Research experience of undergraduate students is an effective way of developing interest in the STEM subject areas and retention of students planning to major in one of the STEM disciplines. In 2013 USF received an NSF WIDER grant to plan institutionalizing promising practices for student retention. NSF now supports the implementation of this plan under the IUSE program through the NSF STEER (Systemic Transformation of Education Through Evidence-Based Teaching, #1525574) awarded to USF in 2015. Strengthening teaching practice is an institutional priority. The proposed project fits well into USF's overall priority, and will coordinate well with USF's new IUSE project.

Conducting the work described in your proposal project on Weather, Climate and Society (WCS) is especially useful because Florida is the state probably most sensitive to the effects of climate change. REU projects with a WCS focus are therefore likely to be meaningful and relevant to students and engage and inspire them quickly.

The Coalition for Science Literacy (CSL) at USF will be pleased to serve as this project's evaluator. We will work with project staff to develop and help administer assessment strategies that will explore and document the degree to which this project: has used evidence-based strategies; increased students' interest in STEM; and increased the retention of STEM majors after completion of their REU experience. CSL is uniquely qualified to evaluate this project because of its prior experience as an evaluator of MSP, Climate Change, Geosciences, and REU projects at USF and of similar statewide projects.

Best wishes for success with your proposal,

Gerry G. Meisels

Gerry G. Meisels, Ph.D.
Professor of Chemistry and Director

Coalition for Science Literacy at the University of South Florida
4202 E. Fowler Avenue/CHE 205, Tampa, Florida 33620
Ph: 813-974-7183 · Fax: 813-974-7128

FGLSAMP *Florida – Georgia Louis Stokes Alliance for Minority Participation*

June 30, 2016

The National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230

The Florida-Georgia Louis Stokes Alliance for Minority Participation (FGLSAMP) Project is pleased to support the Summer Research Experience for Undergraduates proposal titled Weather, Climate, and Society (WCS) being submitted by University of South Florida (USF) to the National Science Foundation. The USF proposal will provide significant research training and education opportunities for historically underrepresented students in STEM. This proposal feature is directly aligned with the overall objective of our NSF-LSAMP priorities, to provide didactic activities for our FGLSAMP participants enabling them to become more competitive within a research environment. Hence, we are delighted to provide our endorsement and support of USF - WCS research and education plan.

The Florida-Georgia LSAMP, a National Science Foundation project (HRD1201981), includes over 500 talented undergraduates and graduates in STEM majors. A coalition of fourteen institutions (HBCU's, HSIs, research universities, and community colleges), including University of South Florida, FGLSAMP has a twofold mission to : 1) increase the production of undergraduates and graduate students of underrepresented population enrolled in STEM disciplines and 2) prepare and train students for careers in a globally-engaged science and engineering workforce. The proposed collaborative activities between WCS and FGLSAMP will prove mutually beneficial for all stakeholders in achieving our respective strategic outcomes.

Toward this objective, we will work closely with Dr. Jennifer Collins and her team to identify and recruit FGLSAMP undergraduates and graduate students for research activities directly supported by the WCS project. We also pledge to assist in future efforts to obtain supplemental funding (if this proposal is successful) for research experiences for the participating undergraduate scholars. I will gladly serve in an advisory capacity with WCS employing FGLSAMP best practices for student success and professional development.

Regards,

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