Toward a Geospatially Integrated University

Geospatial Task Force
University of Florida

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Geospatial Task Force
at the University of Florida
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Acknowledgements

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1. Executive Summary

The University of Florida hosts a wealth of geospatial expertise across 40 academic units from 14 colleges. Geospatial information is taught in nearly 270 courses, accounting for over 12,000 student credit hours each academic year, primarily at the upper division undergraduate and graduate levels. In fall 2014, geospatial technology was involved in approximately 20% of UF's $700 million total active sponsored projects. With additional University support and investment, UF is poised to become a global leader in the geospatial field.

The 40+ academic units engaging in their own research, teaching, and service do so without centralized infrastructure to support geospatial software, hardware, and data distribution. Increasing demands for geospatial services and knowledge, coupled with continued funding opportunities in the field prompted the creation of this task force charged with development of a plan to make UF a geospatially-integrated university. To achieve this, geospatial science, thinking, and visualization must be applied across disciplines and supported through readily accessible, high capacity computing infrastructure, training, and expertise. The plan identifies the following priority needs:

- *Support staff throughout campus to enhance and facilitate existing geospatial activities, address technical issues*
- *A 5 year plan for replacement of retiring faculty with geospatial expertise*
- *A preeminence cluster to enhance geospatial research*
- *Access to high capacity computing and visualization infrastructure*
- *A geospatial governance structure that represents, coordinates, and promotes University geospatial interests*
- *Centralized institutional storage and management of data*
- *Training courses for faculty, staff, and students*

The task force proposes to use the following strategies to address the needs and guide planning:

- *Leverage existing capabilities and resources*
- *Employ a distributed organizational model*
- *Enhance communication and visibility*
- *Capitalize on current University initiatives*

The task force asks for:

1) Authorization to create the University Geospatial Coordinating Committee (UGCC), to develop a detailed work plan and supporting budget for the next five years and to continue as a coordinating body for geospatial issues at UF
2) A Year One budget of $20,000 (UCGIS membership, site license support & data acquisition).

A coordinated campus effort to leverage existing investments in concert with the existing geospatial expertise will enhance and attract increased geospatial-related research dollars and propel UF to the top tier in training for the geospatial industry.

2. Introduction

In Fall 2014, Elias Eldayrie, Vice President and Chief Information Officer and David Norton, Vice President for Research formed the Geospatial Information Task Force and provided the following:

a) Charge

To develop a strategy to place the University of Florida in the forefront of research universities that create, disseminate and apply geospatial information. To develop that strategy we encourage the task force to:

- approximate the current dollar amount of research that employs geospatial data and analysis
- approximate the current and projected number of students who are taking courses in geographic information systems and how many student credit hours currently are and might be generated in the future by these students
- explore the role, if any, that geospatial information creation, management, and dissemination should play within the proposed Informatics Institute
- determine what if any organizational structure is needed to coordinate the creation, management, and dissemination of geospatial information
- identify short term and long term investments that are needed to optimize the creation, management, and dissemination of geospatial information, organized into a 5 year plan, and
- provide tangible examples of the ways geospatial information has been and will be used in the future to describe and solve pressing problems for the State of Florida, the Nation, and the World.

The task force held its first meeting on 24 September, 2015 and its final meeting on April 20, 2015. One of the first acts accomplished by the group was the adoption of statements for vision, mission statement and goals, supported by a brief background statement:

b) Vision Statement

To enhance and promote research, learning, extension, outreach, service, and clinical activities at the University of Florida through the creation of a geospatially-integrated university.

c) Mission Statement

To develop a plan to make UF a geospatially-integrated university, where geospatial science, thinking, and visualization are broadly applied across disciplines and are supported through readily accessible and high capacity computing infrastructure, training, and expertise.

d) Goals

The task force comprises faculty, staff, and researchers who are developing a plan to promote and enhance geospatial activities at the University of Florida. The task force is inventorying current UF geospatial research, expertise, and curriculum, assessing campus geospatial needs, and exploring partnerships in an effort to better understand how to achieve our vision. A geospatially-integrated university supports research, learning, extension, outreach, service, and clinical activities through implementation of the following goals:

- Easy access to software and data
- Relevant curriculum across disciplines
- Access to computational infrastructure
- Access to expertise for assistance
- A permanent steering committee to represent the geospatial interests from across the University community and facilitate the work of faculty, staff and students through a framework for collaboration

e) Background

UF holds a wealth of expertise in Geospatial Science and Technology.[1] Over the past 30 years the geospatial field has grown from a highly specialized technology in a few departments to a field widely applied across the University. The use of the geospatial technology for spatial analysis, critical thinking, and informed decision making has proven valuable to tackle current issues across disciplines. Geospatial technology is used in over 40 academic units from 14 colleges, as well as UF Information Technology, UF Administrative Units (Campus Planning, UPD, Office of Institutional Planning and Research, and the UF Foundation Research Department), UF Libraries, and the Florida Museum of Natural History. The growth of the geospatial field at UF has correlated with the growth of the geospatial industry at-large. Geospatial technology is listed by the U.S. Department of Labor as one of its 14 high-growth, high-demand industries.

Geospatial work at UF is widespread, but decentralized, with each of the 40+ academic units engaging in their own geospatial research, teaching, and service. There is currently no centralized infrastructure to support geospatial software, hardware, and data distribution.

The University of Florida has already chosen to make a phenomenal investment in information technology hardware, software, and human resources. With that investment as the foundation, we think we are poised to become a global leader in geospatial science. Nonetheless, we need to marshal our resources and capabilities in an integrated and purposeful way. A few key initiatives within UF Information Technology offer the campus geospatial community possible collaboration and support for their IT infrastructure needs:

- Research Computing: provide high capacity computing, physical hosting for data storage, visualization, and distribution.

- UFApps: provide global access to geospatial software, with no need for desktop installation. Assist with site license costs and administration.

The ability to optimize the use of these existing UF IT initiatives could save individual researchers tens of thousands of dollars in hardware purchase and maintenance costs and IT personnel to manage the infrastructure. A coordinated campus effort to leverage existing geospatial knowledge, data, services, and software would enhance and attract geospatial-related research dollars and encourage UF to become a leader in training for the geospatial industry.

f) Tangible Examples

Following are brief descriptions of recent coursework and sponsored projects at UF that include creation, analysis, and/or dissemination of geospatial information. These are examples of the vast amount of geospatial activity underway at the University of Florida.

Geomatics Certificate on Mapping with Unmanned Aerial Systems
Geomatics Program, School of Forest Resources and Conservation
College of Agriculture and Life Sciences

The Geomatics program in the School of Forest Resources and Conservation has recently designed a 3-course (9-credits) certificate on mapping with unmanned aerial systems or drones. UAS offer a new means of acquiring geospatial data at an unprecedented resolution and temporal scale. This Certificate caters to many different disciplines and fields across campus, including agriculture, forestry, natural resources and wildlife management, mining, infrastructure planning and monitoring, urban planning and design, and disaster management.

Assessing Health Care for Underserved and Vulnerable Populations
Principal Investigator: Jaclyn Hall, Department of Health Outcomes and Policy, and the Institute for Child Health Policy within the Institute for Clinical and Translational Sciences.
College of Medicine

This research focuses on health care access for underserved and vulnerable populations, including those who have experienced historic health disparities as well as people in rural areas and urban/suburban areas of lower socioeconomic levels. All health care systems that participate in Medicaid must ensure health care professionals are in proximity to Medicaid enrollees in underserved areas. Annually, this project analyzes millions of locations of enrollees and the driving time distance to health care providers to identify health care systems that are not compliant with the accessibility terms of their contracts and to determine areas where new community health care centers should be located.

Florida Ecological Greenways Network
Principal Investigator: Tom Hoctor, Department of Landscape Architecture

College of Design, Construction and Planning

The Florida Ecological Greenways Network is a connected system of natural areas needed to support and protect native species habitats, wetlands, and ecological connectivity. The greenways network was modelled using complex geospatial analysis to map important natural areas statewide and identify connections between these areas. The network has been used by state agencies and local governments to establish priorities for land acquisition and has been recognized internationally for protection of biological diversity and rare and endangered species.

iDigBio: Integrated Digitized Biocollections
Principal Investigator: Larry Page
Florida Museum of Natural History

In this project, data and images for millions of biological specimens are being digitized and made available for the research community, government agencies, students, educators, and the general public. iDigBio involves the development of a permanent and powerful cloud computing infrastructure to link biological data from collections across the U.S. into a single unified web interface. These data promote integrative biological research on living and fossil species and provide an immense resource for agricultural science and land use management, human health, and assessing the impacts of climate change, invasive species, and other natural resource management issues.

Geospatial Modeling of Tropical Cyclones to Improve the Understanding of Rainfall Patterns
Principal Investigator: Corene J Matyas, Department of Geography
College of Liberal Arts and Sciences

In this project, geospatial modeling is used to more accurately depict the geographical distribution of the rainfall of tropical cyclone rain fields. Geographic Information System (GIS) analyses are employed to quantify the extent and locations of rain-producing regions of tropical cyclones, including heavy rainfall regions as defined by radar reflectivity returns. This research will contribute to improving rainfall forecasting, both through the quantification of tropical cyclone rain fields and the improved ability to identify the location of flood-producing rainfall.

Participatory Mapping and Landscape Among an Indigenous Population
Principal Investigator: Michael J Heckenberger, Department of Anthropology
College of Liberal Arts and Sciences

Participatory mapping, sometimes referred to as community-based mapping, is a mapping method to document location-based knowledge of local communities. In this project, researchers used participatory mapping to gather local knowledge about areas of historical occupations and land-use among indigenous communities in Guyana.

Signal Four Analytics

Principal Investigator: Ilir Bejleri, Department of Urban and Regional Planning
College of Design Construction and Planning

Signal Four Analytics is a web-based geospatial analytical system designed to support the needs of Florida's government agencies that have a stake in improving traffic safety. This is an operational system that supports over 1,600 registered users in about 250 agencies in law enforcement, traffic engineering and transportation planning, school transportation, research institutions, injury prevention and private consultants. S4 Analytics allows users to have timely access to Florida crash records, traffic violations and roadway facility information as well as analytical functions e.g. ability to determine high crash locations. This information is ultimately used to target funding and resources for traffic safety enhancements.

3. The Current Situation

In addition to examples of ongoing geospatial research at UF described above, the task force conducted a survey of courses, research and existing entities on campus providing some coordination of geospatial activities. The results are summarized here.

a) Learning

The task force developed a survey to inventory geospatial information courses offered at UF. Courses were classified into four categories:

1. courses where geospatial techniques are taught
2. courses where digital geospatial data are applied
3. courses using maps but not doing spatial analysis
4. courses using digital spatial info, but without geo-reference

The results of the inventory are summarized in Table 1, the majority are upper division undergraduate or graduate courses. These data can be roughly extrapolated to calculate the number of student credit hours generated in these courses. If each section of each course is assumed to be 3 credits with approximately 15 students, more than 12,000 student credit hours are generated in any academic year in geospatial information courses. When viewed in this way it is evident that geospatial coursework is an important subset of UF's teaching mission. The complete survey can be found in Appendix A.

Table 1. Summary of Geospatial Information Courses taught at UF, Fall 2014

Course Type	Number of colleges offering courses of this type	Total courses offered of this type
1. geospatial techniques are taught	8	84
2. digital geospatial data are used	12	71
3. maps are used, without spatial analysis	14	107
4. digital spatial information is used, but without geo-reference	1	6
Total courses		268

b) Research

Roughly 20 percent of the $700 million active total sponsored projects involved the creation, analysis, and dissemination of geospatial information. The task force secured these estimates by identifying 96 principal investigators from across campus using geospatial technologies in their research and taking a snapshot of their active grants in

Fall 2014. Unquestionably geospatial information is critical to the research mission of our institution. The complete list of principal investigators and their projects can be found in Appendix B.

Table 2. Summary of Geospatial Research Dollars at UF, Fall 2014

Geospatial Principal Investigators	UF Geospatial Active Research Dollars	Total UF Active Research Dollars	Geospatial as Percentage of Total UF Research Dollars
96	$137 million	$700 million	20%

c) Extension

The UF Institute of Food and Agricultural Sciences (IFAS) implements the University's Extension mission, which is to provide scientific knowledge and expertise to the public. This mission is accomplished via extension faculty and staff located within 16 on-campus academic departments and schools, 12 Research and Education Centers located throughout the state, and UF/IFAS Extension offices in all 67 counties. Nearly two-thirds of the principal investigators (PIs) who work with geospatial information (see 3.b. Research) are members of one of these UF/IFAS units. Some PIs have an extension appointment and others who do not often collaborate with extension faculty. To gauge the extent that geospatial software, data, and methods are used by UF/IFAS faculty/staff for their extension activities, emails were sent to IFAS lists (IFAS-FACULTY-L; IFAS-EXTENSION-L; SEAGRANT-FACULTY-L; CED-ALL-DISTRICTS-L@LISTS.IFAS.UFL.EDU; CENTER-DIRECTORS-L@LISTS.IFAS.UFL.EDU) and to unit leaders. The results, which provide only a glimpse into the use of geospatial technology within UF/IFAS Extension, indicate that extension personnel incorporate geospatial technology into a variety of their activities and use it with a range of clientele/stakeholder groups. A sampling of activities include pinpointing species locations; marking water quality sampling stations; gopher tortoise monitoring; mapping stormwater ponds; bird monitoring transects; LAKEWATCH training; identifying food deserts; mapping cattle grazing lease areas; scallop restoration transects; finding and removing derelict crab traps; providing agricultural users with climate information; and ground truthing and mapping artificial reefs.

Importantly, geospatial technology continues to become increasingly more accessible to those who are non-experts (nor want to be), but who recognize the importance of spatial thinking, reasoning, and visualization. This trend is evidenced in UF/IFAS Extension by the use of such tools as GPS, Google Earth, web mapping applications (e.g., ArcGIS online), and smartphone mapping apps. However, there is a general sense that extension faculty who are using geospatial tools had discovered them on their own. This suggests the need for a concerted effort or strategy by UF/IFAS to inform its faculty/staff (particularly those outside of Gainesville) about the geospatial resources available to them and to provide them with support and training. For example, the availability of ArcGIS to CALS students, faculty and staff via the Virtual Desktop computer lab, http://virtual.ifas.ufl.edu, is not widely known.

d) Clinical Activities

Tomorrow's health care is increasingly information-intensive. Health geography combines powerful software with clinical databases to provide insights that improve individual and community health. Geospatial technologies can integrate and analyze clinical data to determine clusters of poor health outcomes, measure health disparities and variation in access to care, and identify where to implement and evaluate health interventions. Geospatial technologies provide the tools to make complex relationships more quickly and easily understood by policy makers, clinicians, and community health teams. Public health uses of GIS include tracking child immunizations, identifying at-risk communities, conducting health policy research, establishing service provision areas, and identifying provider coverage gaps. At the University of Florida, GIS is currently being used in the Department of Health Outcomes and Policy for analyses to estimate the demand for medical and health related services and to evaluate provider density and health service accessibility, as well understanding how geography impacts emergency department utilization and drug seeking behavior.

There is great potential to develop innovative applications that apply real time analytic mapping in the primary care setting that can be readily comprehended by clinicians and used to benefit patient care in real-time. UF Health could be on the forefront of these innovations through endeavors within institutes such as Clinical and Translational Sciences. GIS allows clinicians to arrive at insights through utilizing Electronic Health Records, a rich source of electronically accessible discrete patient data which includes demographic, residential address, and health outcomes information.

e) UF entities engaged in interdisciplinary geospatial activities

A survey of interdisciplinary standing committees and coordinating entities was conducted to provide the task force with an understanding of existing governance and oversight structures. Four groups, described below, were identified that met the standard of University-wide interdisciplinarity: the Research Computing Advisory Committee, the Data Management and Curation Task Force, the Interdisciplinary Concentration in Geographic Information Systems, and the Informatics Institute. Additionally there are multi-disciplinary research centers and institutes across campus, which serve one or more colleges and are actively involved with geospatial information efforts. Representatives from these groups will be important participants in an effort to enhance campus geospatial activities. (Please see section 3.f.vi for a description of some of these centers and institutes).

Research Computing Advisory Committee
http://www.it.ufl.edu/governance/advisory-committees/research-computing

The Research Computing Advisory Committee is part of the UFIT governance structure. The committee is charged as follows:

- Make recommendations to create a sustainable and appropriate research computing environment.

- Enable UF researchers to conduct leading edge research.
- Enable UF researchers to compete for resource allocations within UF and from external sponsors.
- Encourage state, national and international partnerships with other research institutions.
- Ensure that information resources that support research are up to date.

Data Management & Curation Task Force
http://cms.uflib.ufl.edu/datamgmt/

This group is charged to assess needs, make recommendations, and develop support for the role of the Libraries in campus-wide data management and curation.
Specific advisory activities include:

- Formally assess, through surveys, interviews, and focus groups, campus-wide data management needs and current support resources and activities
- Review and consider the best practices and models of peer institutions
- Develop recommendations for the Libraries' campus-level role in support of data management and curation
- Propose a corresponding framework and resources for library support of the data life cycle
- Recommend the role of the institutional repository and research computing in storing, finding, and accessing working and final data, and linking publications to supporting data
- Recommend a framework for liaisons and subject specialists to incorporate data instruction and consultation into their workflows
- Specific operational activities include:
- Develop materials and sessions for training of liaisons, subject specialists, and other library staff to prepare them to support campus data management services
- Develop training and outreach materials to be used by liaisons, subject specialists, and other library staff in their work with clients
- Develop means to enhance and expand the librarian liaison model with the goal of making librarians partners in research activities
- Develop and implement templates and support training and services for the DMPTool (Data Management Plan Tool) and other resources

Interdisciplinary Concentration in Geographic Information Systems
http://www.uflib.ufl.edu/icgis

This group provides oversight for the Interdisciplinary Concentration in Geographic Information Systems (ICGIS) offered for master and PhD students. The concentration requires the completion of a five-category curriculum that will allow graduate students to become experts in the creation, study, and use of geographic information, that adds several courses to the standard master or Ph.D. requirements, and results in official recognition on a student's transcript of completion of the concentration.

Participating Academic Units

- Department of Agricultural and Biological Engineering, College of Engineering and College of Agriculture and Life Sciences
- Department of Geomatics, College of Agriculture and Life Sciences
- Engineering School of Sustainable Infrastructure & Environment, College of Engineering
- Department of Geography, College of Liberal Arts and Sciences
- Department of Landscape Architecture, College of Design, Construction and Planning
- Department of Urban and Regional Planning, GeoPlan Center, College of Design, Construction and Planning
- School of Forest Resources and Conservation, College of Agriculture and Life Sciences
- Department of Soil and Water Science, College of Agriculture and Life Sciences
- Department of Wildlife Ecology and Conservation, College of Agriculture and Life Sciences
- School of Natural Resources and Environment, College of Agriculture and Life Sciences
- Department of Anthropology, College of Liberal Arts and Sciences

Informatics Institute
https://informatics.research.ufl.edu

The Institute is newly-formed and reports to the VP for Research. It will be physically located in the CSE building. It has as its mission to serve as a facilitating/coordinating entity among research centers and institutes from across campus.

Preliminary Thrust Areas identified for the Institute are:

- Informatics Techniques and Technologies: Research into the hardware, software, algorithms, and mathematical approaches needed to develop the next generation techniques and technologies for Big Data. Includes supporting infrastructure for computation, bandwidth, and storage.
- Biomedical and Life Science Informatics: Use of informatics to address fundamental questions in genetics, genomics, biodiversity, environment, agricultural science, as well as its application for improved human health outcomes. This area is closely aligned with the Genetics Institute and Clinical & Translational Science Institute (CTSI).
- Informatics for Engineered Systems and the Physical Sciences: Application of intense computation and complex informatics to understanding and designing complex engineered systems, and for uncovering the fundamental nature of our physical world and universe.
- Informatics in Social Science, Humanities, and Education: Leveraging the explosion of data in understanding people, culture, political development, education, and human behavior.

f) Support

A number of entities on campus serve a supporting role in University-wide geospatial activities, in particular:

i. UF Libraries

Map & Imagery Library

The Map & Imagery Library contains a vast paper and digital map collection for use by students, faculty, and staff. The library has six computer workstations, some of which have scanners attached for scanning of paper maps.

GIS Spatial Information Service Unit

The GIS Librarian, Joe Aufmuth, is available to consult with faculty, staff and students on all aspects of spatially referenced data and GIS software. The librarian can also provide specialized GIS lectures, and related web pages. Large format plotting services are available for U.S. Government electronic maps and images such as 2000 Census maps, Nautical Charts, USGS DRG topographic maps and USGS DOQs.

ii. GeoPlan Center

For over 25 years, the GeoPlan Center has administered the Esri campus site license, which provides a suite of Esri software for UF related education purposes, research, and administrative uses. The site license costs $25,000 per year; a portion of which is covered in the state software budget, and the remainder is covered by the units that use the software. The GeoPlan Center developed a pricing structure based on level of use, collects the license contributions, pays the license fee, and distributes license files to users.

For UF research purposes, the Esri campus license serves:

- Over 40 academic units (including IFAS extension offices) from 11 colleges
- UF Information Technology (Research Computing and Academic Technology)
- UF Administrative Units (Campus Planning, University Police Department, Office of Institutional Planning & Research, and the UF Foundation Research Department)
- Libraries and Museums (Florida Museum of Natural History, Map & Imagery Library)
- UF Health

For UF education purposes, the Esri campus license serves:

- Students and faculty from 9 colleges
- At least 25 faculty members with curriculum that incorporates GIS
- Over 700 students a year, including Masters and PhD students, who routinely use GIS software in their research
- Esri Virtual Campus (700-900 courses activated yearly)

Since 1998, the GeoPlan Center has compiled, maintained, and distributed the Florida Geographic Data Library, a statewide library of geospatial data. GIS data is distributed

free of charge via a website www.fgdl.org. The GeoPlan Center compiles and creates GIS data from various state, federal and other agencies into a single library using a standard format, where the data can easily be discovered and ready to use. Data distributed via FGDL supports a wide variety of UF geospatial research and teaching efforts. The GeoPlan Center is in the process of developing a new website for FGDL to improve the access to the data library.

iii. Research Computing

Research Computing and the GeoPlan Center have been working together to develop a model to efficiently host, serve, and process geospatial data and maps utilizing Research Computing hardware. Geospatial components have become very common in research projects, particularly in disciplines such as design and planning, geography, wildlife ecology, agriculture and life sciences, social sciences, epidemiology, medicine, and engineering (civil, coastal, environmental and agricultural and biological).

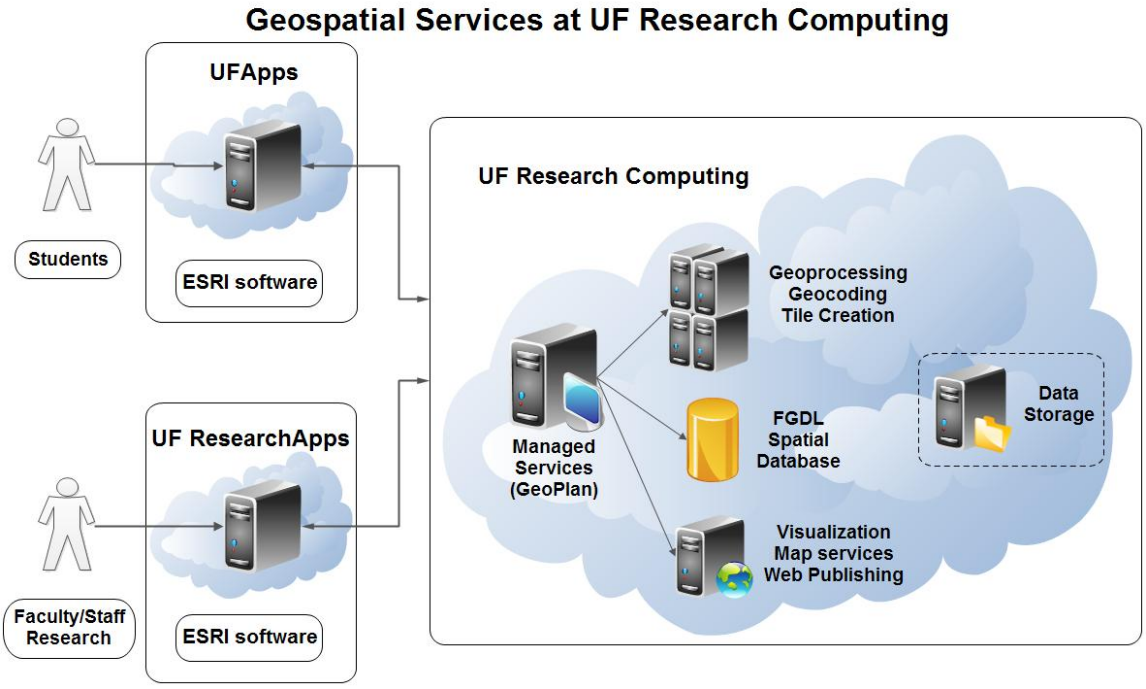
As projects increase in geographic scope and data resolution, the ability to process and host large datasets will become critical to answering geospatial research questions. Furthermore, the need to visualize and distribute geospatial data over the web has become an essential part of geospatial research. Online data visualization and distribution serves a variety of purposes such as communicating finished products and analyses; displaying intermediate data for collaboration, feedback, and/or public participation; and offering a centralized place to store data products and analyses which can then be utilized by other researchers.

Both of these aforementioned geospatial research needs are being addressed through GeoPlan's partnership with Research Computing. Leveraging the power of Research Computing hardware will enable researchers to analyze and display geospatial data more efficiently and quickly while saving costs. Utilizing Research Computing hardware can save individual researchers tens of thousands of dollars in hardware purchase and maintenance costs, and IT personnel to manage the infrastructure.

iv. UFApps and UFApps for Research

UFApps and UFApps for Research are working to provide access to Esri GIS Software and geospatial data for on-campus and online courses. With this model, UFApps and Research Computing hardware will be utilized to run GIS software and process geospatial functions, without the need to install Esri GIS software on personal computers. Leveraging the power of Research Computing hardware will enable students, faculty and researchers to analyze geospatial data more efficiently and quickly than they otherwise could on their PCs. Below is a diagram that illustrates the developing partnership between the GeoPlan Center, UFApps and Research Computing and suggests a model for expansion of geospatial services.

Figure 1. Geospatial Services Model



v. Colleges

Six of UF's sixteen colleges are currently heavily involved in the creation, analysis and dissemination of geospatial information. A brief description of the activities of each and support provided by the colleges follows.

Agriculture and Life Sciences/Institute of Food and Agricultural Sciences

CALS and IFAS are engaged in geospatial teaching, research and service through extension. Both provide support for these activities by covering the salaries of faculty and staff, IT personnel needed to support geospatial hardware and software, providing space for teaching labs, offices for teaching, research and extension faculty, and on occasion by subsidizing the acquisition of hardware and software for geospatial activities.

Design, Construction, and Planning

DCP has faculty and staff actively engaged in geospatial teaching, research and service. The College supports these activities by covering the salaries of faculty and staff, IT personnel, providing space for teaching labs, offices for teaching, research and extension faculty, and on occasion by subsidizing the acquisition of hardware and software for geospatial activities.

Engineering

ENG has faculty and staff actively engaged in geospatial teaching, research and service. The College supports these activities by covering the salaries of faculty and staff, IT personnel, providing space for teaching labs, offices for teaching, research and extension faculty, and on occasion by subsidizing the acquisition of hardware and software for geospatial activities.

Liberal Arts and Sciences

CLAS has faculty and staff actively engaged in geospatial teaching, research and service. The College supports these activities by covering the salaries of faculty and staff, IT personnel, providing space for teaching labs, offices for teaching, research and extension faculty, and on occasion by subsidizing the acquisition of hardware and software for geospatial activities.

Medicine

COM has faculty and staff actively engaged in geospatial research and clinical practice. The use of geospatial technologies in COM is relatively new, but its exponential growth is anticipated. The College supports these activities by covering the salaries of faculty and staff, IT personnel, providing space for research labs, and on occasion by subsidizing the acquisition of hardware and software for geospatial activities.

Public Health and Health Related Professions

PHHP has faculty and staff actively engaged in geospatial research and clinical practice. The use of geospatial technologies in PHHP is relatively new, but its exponential growth is anticipated. The College supports these activities by covering the salaries of faculty and staff, IT personnel, providing space for research labs, and on occasion by subsidizing the acquisition of hardware and software for geospatial activities.

vi. Other Research Centers and Institutes

Below is a sample of 15 research centers and institutes involved in the creation, analysis and dissemination of geospatial information. Some like the Water Institute, have been created at the University level, others among and within colleges and still others in schools or departments. The Florida Climate Institute is a multi-university research consortium.

Bureau of Economic and Business Research. Located in CLAS, BEBR's mission is to collect, analyze and generate economic and demographic data on Florida and its local areas; conduct economic and demographic research that will inform public policy and business decision making; and distribute data and research findings throughout the state and the nation.

Center for Remote Sensing. Located in IFAS, the CRS plays a major role in helping to improve agricultural production and conserve natural resources in Florida, through research and application of remote sensing and related technologies.

Citrus Research and Education Center. Located in IFAS, CREC discovers and delivers innovative solutions that empower citrus and other agricultural interests to conduct responsible and profitable business. CREC fosters scientific excellence and efficient use of resources.

Digital Humanities Working Group. Based in CLAS, DHWG, a group of scholars who meet to monthly to discuss current topics and projects in the digital humanities.

Florida Climate Institute. FCI is a multi-disciplinary network of national and international research and public organizations, scientists, and individuals concerned with achieving a better understanding of climate variability and change comprised of seven member universities, FAU, FIU, FSU, UCF, UF, UM, and USF.

Genetics Institute. Comprised of faculty from 7 colleges, UFGI seeks to promote excellence in the areas of genetics and genomics at the University of Florida by: building community, facilitating collaboration and creating opportunities for intellectual exchanges among investigators working in diverse taxonomic systems but with a common set of approaches in genetics and genomics; supporting recruitment and retention of outstanding faculty in the areas of genetic and genomics; supporting graduate education in the areas of genetics and genomics; and enhancing the ability of researchers at the University of Florida to compete for multidisciplinary research grants in the area of genetics and genomics.

Quantitative Spatial Ecology, Evolution, and Environment - Integrative Graduate Education and Research Traineeship. The QSE^3 IGERT is an NSF-funded program at UF that started in Fall 2008. It involves students and faculty from 10 programs and departments at UF (Biology, Mathematics, Statistics, Wildlife Ecology & Conservation, Geography, Fisheries & Aquatic Sciences, Forest Resources & Conservation, Agricultural & Biological Engineering, Infectious Diseases & Pathology [Veterinary Medicine], Computer & Information Science & Engineering) and outside clients from state, federal and international agencies. The program focuses on the critically important and conceptually unifying theme of spatial dynamics, covering topics such as evolution and spread of emerging pathogens; the causes and consequences of shifting species distributions; and conservation of species in patchy habitats.

I-Cubed, Innovation through Institutional Integration. I-Cubed at UF is a five-year project funded by the NSF to foster integration of all student-based research and

training programs in STEM (Science, Technology, Engineering, Mathematics), including SBE (Social, Behavioral & Economics), disciplines.

Land Use and Environmental Change Institute. Based in CLAS, LUECI facilitates interdisciplinary research and teaching on complex interactions among climate, humans, and the environment.

Program for Resource Efficient Communities. Based in IFAS, PREC integrates and applies UF's educational and analytical assets to promote the adoption of best design, construction, and management practices that *measurably* reduce energy and water consumption and environmental degradation in new residential community developments.

Public Utility Research Center. Based in the Warrington College of Business Administration, PURC is an internationally recognized academic center dedicated to research and to providing training in utility regulation and strategy, as well as the development of leadership in infrastructure policy.

Spatial Epidemiology & Ecology Research Laboratory. SEER Lab is jointly housed in the Emerging Pathogens Institute and the Department of Geography. It is focused on questions addressing the ecology and spatio-temporal patterns of diseases. Research is focused primarily on bacterial zoonoses, those bacterial diseases that affect both animals and humans.

Shimberg Center for Housing Studies. Based in DCP, Shimberg conducts research into housing policy and planning, with a special focus on housing affordability for Florida residents. It provides data and applied research to state agencies, local planners, the housing industry, non-profits, and others involved in shaping housing policy in Florida.

UF Transportation Institute. Based in ENG, UFTI aims to advance state-of-the-art transportation design and planning, disseminate research results, and provide educational opportunities. It was created in 2013 as an umbrella organization housing several other transportation-related centers within the University of Florida.

UF Water Institute. The overarching goals of the research, education, and outreach programs are to: improve basic knowledge of the physical, chemical, and biological processes in aquatic systems (rivers, lakes, oceans, estuaries, wetlands, soil, and ground waters); enhance understanding of the interactions and interrelationships between human attitudes and activities, and aquatic systems; develop and promote the adoption of improved methodologies for water management and policy (including quantity, quality, and ecosystem services) based on a foundation of science, engineering, management, and law.

4. Needs

The task force developed the Geospatial Needs matrix (Appendix C) to categorize infrastructure needs by activity type – learning, sponsored research or extension/ outreach. Task force members surveyed their respective academic units to gather feedback.

Geospatial Activity Types**:**

- *Learning* – Includes activities associated with students and curriculum.
- *Sponsored Research* – Includes sponsored research activities and clinical investigation and discovery, as defined by the College of Medicine.
- *Extension/ Outreach* – Includes IFAS extension activities and service learning as undertaken by various units on campus.

Infrastructure Categories:

- *Hardware* – Hardware (servers, disk storage, network) needed to support geospatial activities.
- *Software* – Software applications needed to support geospatial activities.
- *Data* – Commercial and public data sets needed to support geospatial activities.
- *People* – Personnel and support staff needed to support geospatial activities.
- *Institutional/ Organizational* – Governance structure to support geospatial activities.

The following core needs to support all geospatial activity types became evident:

- Support staff to enhance and facilitate existing geospatial activities. Geospatial activity is occurring in most colleges, yet specialists are not consistently available to address technical issues. Geospatial specialists that are also subject matter experts are needed throughout campus to address the technical issues that arise in each disciplines geospatial research and applications. Support staff could offer much needed technical assistance and advisement on geospatial projects and help implement best practices to enable better coordination and resource sharing.
- A 5 year plan for replacement of retiring faculty with geospatial expertise. Many of the core faculty from across campus who began on the ground floor of geospatial theory and technologies are aging. It will be important to find representatives of the new generation who can pick up the torch and move UF ahead.
- A preeminence cluster hire to enhance geospatial research. A coordinated effort to hire faculty to enhance UF's current capabilities in geospatial research would advance the feasibility of a geospatially integrated university.
- Access to high capacity computing and visualization infrastructure to support geospatial data processing, storage, and visualization. This includes access to

server space for data processing and storage, access to high capacity computing resources for complex data processing, access to web servers for visualization, and access to high speed networks for data transfer.

- A geospatial governance structure to represent and coordinate University geospatial interests. The structure would establish best practices for the University geospatial community, promote the existing wealth of geospatial expertise at UF, and foster growth in this expanding field.
- Centralized institutional storage and management of data. Geospatial data management activities are ad-hoc and decentralized across campus. As a result, data and resources follow the traditional stove pipe model, with no centralized storage location or systematic method for accessing data products from previous work.
- Training courses for faculty, staff, and students to keep our geospatial expertise at the forefront of rapidly changing technologies.

The task force did not find that geospatial activities themselves need to be centralized at the University, but rather that centralized support services (computing infrastructure, technical support personnel, data management, governance structure) were needed as a foundation from which existing activities could be leveraged and strengthened. The sections below will detail the infrastructure needs by Geospatial Activity Type.

a) Learning

Hardware Needs for Learning

Hardware needs for geospatial learning activities largely include disk space to accommodate short and long term data storage. Intermediate data products created during course work and graduate research projects can take up a significant space, and hence, shared, centralized storage is needed. Shortly after any class is completed, the data can be deleted. This capability is coming online through existing UF IT infrastructure, but not all who teach geospatial courses are using it and in the short term it is unlikely that all courses could be supported. Shared, centralized storage for final master and doctoral research results supported by metadata is also needed so the data and results can be shared with others interested in continuing the work or engaging in related research efforts. UF's Institutional Repository may be suitable for this storage, with a possible division readily accessible results and archived results.

Software Needs for Learning

The primary software need to support geospatial learning is providing increased access to ArcGIS software via UFApps. Approximately 750 student copies of ArcGIS are annually requested from the GeoPlan Center that administers the software campus site license. UFApps has begun serving Esri ArcGIS software for student use, which saves student time (no install necessary) and GeoPlan staff time. Currently, UFApps is able to support 225 concurrent users accessing all available software packages. With the growth of geospatial technology use, UF should continue to monitor the use of ArcGIS

software use and increase capacity as needed. A business model to cover software costs is needed.

Another identified need is for a GUI to interface courses with HiPerGator to enable faster processing of complex spatial analyses. Current access is through a non-GUI interface for submitting batch processing jobs.

Finally, there is a need to explore other relevant geospatial software. While Esri ArcGIS software is the industry leader and most commonly used GIS software package, many other software packages are available for geospatial data processing and should be explored, acquired, and made available for UF users.

Data Needs for Learning

Data needs to support geospatial learning revolve around acquisition and access to geospatial data sets. A budget for acquisition and maintenance of commercial data sets for shared use is needed. One example is a commercial streets database ("StreetMap Premium for ArcGIS"), which is more accurate than the free and publicly available streets databases. A high accuracy streets database is required for geocoding, the process of assigning geographic coordinate locations based on addresses, as well as for applications that involve routing by location. Geocoding is a primary way that data is spatially enabled, making it available to be mapped. There is also a need for a centralized data portal through which UF users can access both public and commercially acquired data layers and web and feature map services. The data portal would need to administer data access based on any licensing agreements. Additional data needs include training on proper data management procedures for all courses involving geospatial data. Policies from the Campus Data Management & Curation Task Force could serve as a model for developing training and procedures for data storage and management.

People Needs for Learning

The people needs to support geospatial learning activities are not great, as UF already houses highly competent faculty with expertise in applying geospatial science and techniques to a broad array of disciplines. There are, however, a few identified positions that could enhance geospatial learning. First, there is a need for faculty or staff to develop and regularly offer short-training courses about software, data, and hardware for faculty, staff, and students. These courses would be one or multi-day allowing faculty, staff, and students to learn a specialized topic or engage in continuing education activities. There are currently online courses available through Esri campus site licenses and access to those needs to be widened. Additionally there is a need for Geospatial Information Science faculty, who specialize specifically in Geographic Information Science and geospatial techniques. While there are a multitude of faculty utilizing and applying GIS, there are not many who specialize directly in GIS technology and Geographic Information Science. In addition, there is a need for staff to help identify, acquire and administer free and commercial software (as referenced in the

software needs section). Finally, there is a need for dedicated funding for staff to help other faculty and graduate students develop the GIS component of their teaching.

Institutional/ Organizational Needs for Learning

A governance structure, to set forth roles and responsibilities to support University geospatial interests is needed. A central component of the governance structure is a standing committee that would represent and coordinate geospatial activities and set forth best practices. The committee would be comprised of representatives from units engaging in geospatial activities. A governance structure would add stability and stature to the current geospatial activities. Administrative support would be needed to manage the governance structure and offer continuity. Finally, participation in national and international GIS activities and professional organizations would enhance geospatial learning at UF. For example, UF should seek membership in the University Consortium for Geographic Information Science (UCGIS), which offers webinars and continuing education on current GIS topics, collaboration and networking, assistance in GIS curriculum development, and more.

b) Research

Hardware Needs for Research

Hardware needs for geospatial research activities include disk space and servers to accommodate storage and application needs. A centralized repository is needed to store source data that can be accessed by research and learning projects. The Florida Geographic Data Library (FGDL), maintained and housed at the GeoPlan Center, is a collection of over 450 publicly accessible GIS data layers that support numerous research projects on and off campus. The funding for FGDL comes from the Florida Department of Transportation (FDOT), that utilizes the data layers for their environmental review and permitting processes. There are additional data layers not of interest to FDOT and hence not included in FGDL that could be added to support UF's geospatial community.

Shared, centralized storage is also needed for archiving of published research results and data. Geospatial data is often produced in research projects, and while many funding sponsors require a data management plan which details how the resulting data can be accessed, most academic units are not set up for long-term storage and dissemination of these data. A centralized repository could not only serve to host and share the data for other researchers to use, but also could strengthen proposals by offering an institutional method for data management and access. UF's Institutional Repository could be the appropriate location for this.

Hardware also needed for research include server stacks for visualization and interactive web services. Geospatial visualization and communication of data produced is largely done online through interactive web maps, which require web servers and map server software. Many smaller geospatial research projects do not have the funding to purchase their own servers. Shared server space to accommodate multiple

small projects could strengthen proposals and allow researchers to affordably communicate their results via web maps. Additional needs include temporary working storage to support research projects (this is already a fee-based for service via UF IT) and faster network speeds for campus (which is an already a funded UF IT initiative and approximately 50% complete).

Software Needs for Research

Software needs for geospatial research include access to ArcGIS software through UFApps and UFApps for Research. Currently, the Esri ArcGIS campus site license is administered by the GeoPlan Center for both research and student use. The GeoPlan Center collects user fees for the software based on the number of users per academic unit. The ability to access ArcGIS software via UFApps and Research Apps could increase software accessibility for geospatial researchers. The business model for software costs should be investigated, with the concern for keeping costs affordable. Another identified need is a user friendly interface for accessing software and workflow management on UFApps for Research. It is possible that Galaxy could be used here.

Data Needs for Research

The data needs for research are similar to those for learning, which focus on access to and acquisition of data. The task force identified a need to acquire and maintain commercial data sets, which could be shared amongst the UF geospatial community where licensing allows. An annual budget is needed for data acquisition. Another identified need is for centralized data portals, which offer access to commercial and public data, as well as to web and feature map services. These services allow users to view or stream data without the need to download physical copies. Finally, support for PHI and other restricted data via Gator Vault are also needed.

People Needs for Research

To support geospatial research, the task force identified a multitude of people needs, mostly in the form of support staff to facilitate and strengthen existing research initiatives. Support services are strongly needed to assist geospatial projects and implement best practices. Currently, geospatial sponsored research occurs in most colleges, yet specialists are not consistently available to address technical issues. Geospatial specialists that are also subject matter experts are needed throughout campus to address the technical issues that arise in each disciplines geospatial research and applications. This kind of support staff could assist and advise in research projects, strengthen research proposals with tangible expertise, and help review and vet proposals with a geospatial component. A service model, including fees for service needs to be developed for support services. Additionally, staff is needed to help identify, acquire and administer free and commercial software. There are existing units on campus that could assist with this, possibly the ICGIS committee and/or the Map Library.

There is also a need to develop and regularly offer training opportunities for software, data, and hardware for faculty, staff, and students, distinct from semester-long courses. These trainings would be one or multi-day trainings allowing research faculty and staff to learn a specialized topic or engage in continuing education activities. There are currently online courses available through Esri campus site licenses and access to those needs to be widened.

Institutional/ Organizational Needs for Research

Institutional and organizational needs to support geospatial research are similar to those for geospatial learning activities. The primary institutional and organization need is a governance structure to represent and coordinate University geospatial interests. Geospatial research activities are largely ad-hoc at UF, with each academic unit conducting their own research and maintaining their own IT infrastructure to support their respective research activities. A governance structure would enhance and facilitate current geospatial research activities through the establishment of best practices and clear roles and responsibilities to guide activities. Administrative support is also needed to manage the governance structure and offer continuity.

Additionally, there is a need for coordination amongst UF entities engaged in geospatial activities, in order to leverage existing expertise and facilitate collaboration on funding opportunities. In particular, the task force identified the following entities for coordination: Research Computing, Informatics Institute, Data Management & Curation Task Force, ICGIS Committee and UFApps. Finally, participation in national and international GIS activities and professional organizations such as the University Consortium for Geographic Information Science (UCGIS), would enhance geospatial research.

c) Extension/Outreach

The identified infrastructure needs for extension and outreach geospatial activities are similar to those for research. For the sake of brevity, shortened descriptions are provided but there are some unique needs which are spelled out in this section.

Hardware Needs for Extension/ Outreach

One primary hardware need is server stacks for visualization and interactive web services. This need was also identified for research. A unique need for extension and outreach is cloud-based high speed visualization technologies. While campus learning and research have access to a high-speed network (1 gigabit initiative in progress), much extension work is done off-campus, where network speeds are not as fast or as reliable. Cloud-based high speed visualization technologies would speed up display and rendering from the server side (cloud) for more efficient visualization of geospatial data and outputs.

Software Needs for Extension/ Outreach

The research software needs are echoed here, including access to geospatial software through UFApps/ UFApps for Research and a user friendly interface for accessing software and workflow management on UFApps for Research (Galaxy could potentially be used for this need).

Data Needs for Extension/ Outreach

A primary data need also identified for learning and research is centralized data portals, which offer access to commercial and public data, as well as to web and feature map services. A need that is unique to extension and outreach is cloud-based high speed visualization, data processing, and analytical technology. While campus learning and research have access to a high-speed network (1 gigabit initiative in progress), much extension work is done off-campus, where network speeds are not as fast or as reliable. Cloud-based high speed visualization technologies would speed up display and rendering from the server side (cloud) for more efficient visualization of geospatial data and outputs.

People Needs for Extension/ Outreach

The task force identified three people needs to support extension and outreach. The first is for staff who could offer support services to assist extension work. The second is for training for faculty, staff, and students on software, data, and hardware. The third is for a concerted effort or strategy by UF/IFAS to inform its faculty/staff (particularly those outside of Gainesville) about the geospatial resources available to them and to provide them with support and training. For example, the availability of ArcGIS to CALS students, faculty and staff via the Virtual Desktop computer lab, http://virtual.ifas.ufl.edu, is not widely known.

Institutional/ Organizational Needs for Extension/ Outreach

The primary need is the same as was identified for learning and research: to develop a governance structure to represent, administer, and direct University geospatial interests.

5. Strategies

Four strategic approaches underpin the work and recommendations of the task force:

- ***Leverage existing capabilities and resources***: Bolster existing expertise and resources through centralized support services (computing infrastructure, technical support personnel, and governance structure).
- ***Distributed organizational model***: No central organizing authority or unit for administering geospatial services and activities. Academic units will coordinate and follow best practices according to recommendations and guidelines jointly developed.
- ***Enhance communication and visibility***: Facilitate communication amongst the UF geospatial community to increase awareness of resources, capabilities, and needs. Increase internal and external visibility of geospatial activities through promotion of partnerships with UF IT (HPC, UFApps, UFApps for Research), and collaboration between existing academic units.
- ***Capitalize on Current University Initiatives:*** Seek partnership and participation with current University initiatives including information technology, informatics, and preeminence.

Leverage Existing Resources and Expertise

Geospatial expertise is abundant at the University, as evidenced by the task force inventories of geospatial research. Rather than building something new (like a center or institute), the task force recommends that the University build a better foundation from which existing geospatial expertise and activities can be leverage and strengthened. The needs matrix points to centralized support services forming the base of the foundation. Centralized services include: technical assistance, training, high capacity computing and visualization infrastructure, data management and curation, and best practices. This strategy is the rationale behind the next strategy, which is a distributed organizational model.

Distributed Organizational Model

The task force identified the need for centralized infrastructure to support University geospatial activities, but not a need to centralize the geospatial activities themselves. Geospatial activities are decentralized across campus largely because geospatial techniques are applied differently depending on each discipline and often require subject matter experts to guide assumptions, determine variables, and analyze results in context of their disciplines. As can be seen in Appendix B, List of UF Geospatial Projects, geospatial techniques are heavily applied in diverse units across the University.

Enhance Communication and Visibility

The task force also recommends a strategy to increase communication and visibility amongst the disparate geospatial community, which is needed to facilitate collaboration and coordination. To effectively leverage existing resources and expertise, members of the geospatial community must first be aware of the University capabilities and how to utilize them. The establishment of a governing structure, standing geospatial committee, and best practices would provide a framework for communication and expected roles and responsibilities. The task force recommends increasing the internal and external visibility of geospatial activities and resources through the promotion of partnerships with UF IT (HPC, UFApps, UFApps for Research) and collaboration between existing academic units. A University supported geospatial infrastructure would raise the external visibility of UF geospatial work and likely attract funding from entities that value our commitment to and capabilities for supporting cutting-edge geospatial work.

Capitalize on Current University Initiatives

The University has already made significant investments in key initiatives such as information technology, informatics, and preeminence. Geospatial activities will be strengthened through partnerships and participation with these initiatives. Pilot projects to bolster geospatial initiatives have already begun with Research Computing, UFApps, and UFApps for Research (see Section 3(f)). These pilots will be continued and aided by University funding. Partnership will be sought between geospatial activities and the 27 preeminence topic areas, especially: biodiversity, emerging pathogens, big data, autonomous systems, historical and environmental archaeology, and translational communication research. The fusion of existing geospatial expertise with these preeminence topic areas will further the University's goal of becoming one of the world's top public universities.

6. Next Steps

To address the needs identified in this report, the task force recommends continuing its work through the establishment of a standing university committee and the development of a detailed 5 Year work plan to create a geospatially integrated university.

a) University Geospatial Coordinating Council Formation and Tasks

With endorsement of this report, a standing committee will be formed that can carry forward the work of the task force in more detail. Sub-committees should be formed to focus the work based on geospatial activity type, specifically learning and research/ extension. Sub-committees will investigate and gather data, which will inform a more detailed work plan and budget for subsequent years.

i. Organization/Goal Setting

(1) Creation of University Geospatial Coordinating Committee (UGCC) and subcommittees to carry forward the work of the task force. The UGCC will report annually to the VP-Chief Information Officer and VP for Research. The UGCC will be comprised of task force members, with additional invited members as needed to achieve representation from each college participating in substantial geospatial activities.

Form UGCC subcommittees to focus on geospatial activity types:
Learning Subcommittee – The Learning subcommittee will focus on work plan elements associated with geospatial learning activities. Members of ICGIS committee should be considered for inclusion.

Research/Extension Subcommittee – The Research/ Extension subcommittee will focus on work plan elements associated with geospatial research, extension activities, and clinical investigation and discovery activities.

(2) Build support for the concept of a geospatially integrated university. Meet with Deans, Department Chairs, and Directors of Centers and Institutes.

(3) Submit application for University of Florida to join the University Consortium for Geographic Information Science (UCGIS). Cost: $500 one-time initiation fee and $2,000 Annual Membership Cost. Target completion date: November 1, 2015. Membership applications are considered by UCGIS in May and December. For consideration in December, applications must be completed by November 1, and membership would begin January 1, 2016.

ii. Research/Fact Finding

(1) Addressing Learning Needs. UGCC Learning Subcommittee will investigate the following hardware, software, data, and people needs for geospatial learning. The subcommittee will have six months to develop a report of their findings and brief the UGCC.

(a) Hardware

(i) Investigate UF's Institutional Repository (IR) for suitability of storing finalized masters and doctoral research results.

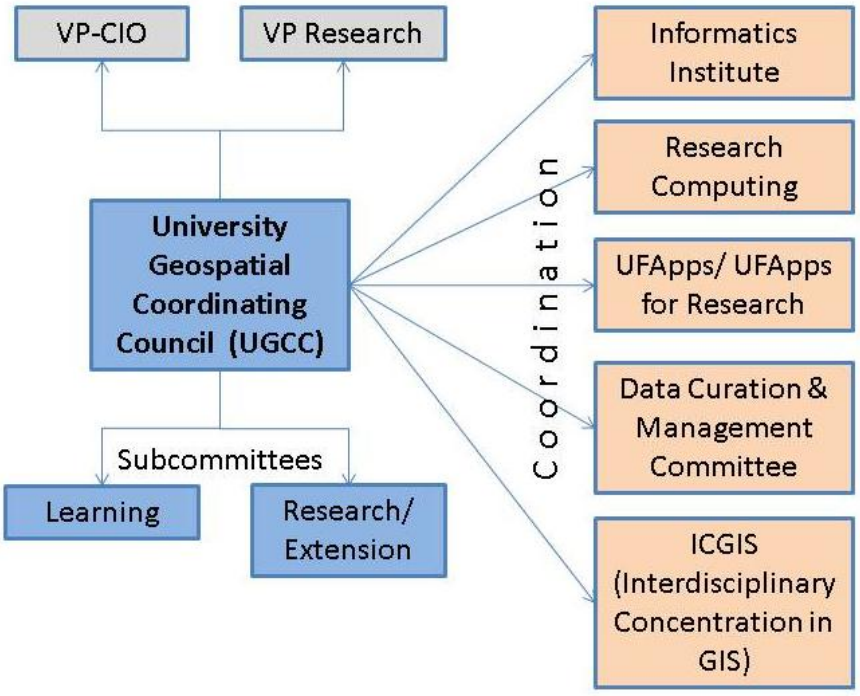
(ii) Investigate the need for increased hardware capacity to support increased demand for UFApps.

(b) Software
  (i) Investigate current use of ArcGIS software through UFApps and projected future needs.
  (ii) Research and develop business model to cover software costs.
  (iii) Conduct survey of relevant geospatial software for learning. Develop budget for priority geospatial software based on needs.

(c) Data
  (i) Research free and commercial data commonly used for learning. Develop budget for acquisition of commercial data based on needs.

(d) People
  (i) Assess training needs.
  (ii) Investigate staffing needs for identifying, acquiring and administering free and commercial software.
  (iii) Investigate the projected retirements of long-standing UF geospatial faculty to determine hiring needs and ensure continued expertise.
  (iv) Explore the feasibility and appropriateness of expanded geospatial offerings at the undergraduate level.

Figure 2. University Geospatial Coordinating Council and partners



(2) Addressing Research & Extension Needs. UGCC Research/ Extension Subcommittee to investigate the following hardware, software, and data needs for geospatial research and extension, include clinical investigation and discovery. The subcommittee will have six months to develop a report of their findings and brief the UGCC.

(a) Hardware
  (i) Investigate UF's Institutional Repository for research results.
  (ii) Investigate server stacks for visualization and interactive web services. Develop report of needs.
  (iii) Investigate temporary working storage to support research projects. Develop report of needs
  (iv) Investigate the need for increased hardware capacity to support increased demand for UFApps for Research.

(b) Software
  (i) Investigate current business model for Esri software costs.
  (ii) Develop alternate business model to fund share of Esri University Campus Site License, Estimated Cost: $10,000.
  (iii) Investigate current use of ArcGIS software through UFApps for Research and projected future needs.

(c) Data
  (i) Research commonly used and needed commercial datasets.
  (ii) Develop budget for annual data acquisition based on needs.
  (iii) Acquire a license for Esri Premium Streets Dataset, Annual Cost: $7,500. Use as a test case for shared licensing of commercial data.
  (iv) Identify data steward for physical storage and distribution to University data users.

(d) People
  (i) Develop a proposed preeminence cluster to enhance geospatial research.
  (ii) Investigate the projected retirements of long-standing UF geospatial faculty to determine hiring needs and ensure continued expertise.

(3) Develop Service Models and Pilots for Geospatial Support Services. The GeoPlan Center and the Library GIS Spatial Information Service Unit will develop service models for geospatial support services and identify pilots to test the service models. Service models will support internal UF geospatial activities. Service Models will identify roles and responsibilities for hosting, administration, and maintenance of software and hardware, included estimated cost of services.

(a) Work with Pilots to Develop Service Models. The GeoPlan Center and Library will work with pilots to develop service models and brief the

entire UCGG twice per year on their progress. Example service models include, but are not limited to:

(i) Geocoding services model: Working with Research Computing to develop a geocoding service on HPC hardware. Potential Pilot Partner: Center for Health Policy and Outcomes, which could utilize fast geocoding services to map address locations of various populations of research interest.

(ii) Working with Research Computing to develop a model to efficiently host, serve, and process geospatial data and maps utilizing Research Computing hardware. Potential Pilot Partner: IFAS Sea Grant that could benefit from web mapping and visualization services.

(b) Develop Menu of Services. The GeoPlan Center and Library will work to develop a "menu" of geospatial services, based on the work with the pilots (above).

(c) The subcommittee will have eight months to compile and present a report of their findings to the UGCC. This report and menu will form the foundation of University geospatial support services.

b) Projected Work Plan for University Geospatial Coordinating Committee

Within Year 1, the UGCC will have developed a detailed work plan based on their findings and subcommittee reports. Listed below are some tasks expected to be included in the work plan.

Addressing Learning Needs

1) Develop and Implement Software Program. Develop and implement a business model to cover software costs, dissemination, and licensing. Implement a regular review process to gather feedback on emerging technologies.
2) Develop and Implement Program for Data Acquisition & Distribution. Develop and implement a business model to cover data costs, dissemination, and licensing. Implement a regular review process to gather feedback on new data products.
3) Develop and Implement Communication Plan. Develop and implement a communications plan to promote the use of UFApps, geospatial data and software resources, and foster communication amongst the Geospatial learning community. If appropriate, this would include promoting the use of the IR to store finalized masters and doctoral research results.

Addressing Research & Extension Needs

1) Develop and Implement Hardware Solutions. Develop, implement, and disseminate information about hardware solutions.
2) Develop and Implement Software Program. Develop and implement a business model for funding share of Esri University Campus Site License.

3) Develop and Implement Program for Data Acquisition & Distribution. Develop and implement a business model to cover data costs, storage, distribution, and licensing for commonly used commercial datasets. Implement a regular review process to gather feedback on new data products.

4) Develop and Implement Communication Plan**.** Develop and implement a communications plan to promote available geospatial resources (hardware, software, and data) and foster communication amongst Geospatial research community.

5) Implement Service Models for Geospatial Support Services. The GeoPlan Center and Library will implement geospatial service models based on the pilot work and lessons learned in Year 1.
   a) Begin Round 2 of pilots based on the input from Year 1. Number of pilots will depend on the scope of the pilot work.
   b) Based on the input from academic units needing assistance, identify units needing liaisons or partial positions to support geospatial activities in their respective units.

c) Requested Funding

Year 1 Requested Funding: $20,000 to support the following:

- University of Florida membership the University Consortium for Geographic Information Science (UCGIS). Cost: $500 one-time initiation fee and $2,000 Annual Membership Cost
- Esri Campus Site License. Estimated Cost: $10,000.
- Data Acquisition: $7500.

Requested funding for subsequent years will be refined by the UGCC in Year 1. Based on initial research by the task force, the annual amount needed to support geospatial is estimated below.

Subsequent Years Estimated Annual Funding - $250,000

7. References

[1] "Examples of what Geospatial Science & Technology entail are from Dibase et al. (2006) and include the following knowledge areas: analytical methods, cartography and visualization, conceptual foundations, design aspects, data modeling, data manipulation, geocomputation, geospatial data, Geographic Information Science & Technology and society, and organizational and institutional aspects. (DiBiase, David, DeMers, M., Johnson, A., Kemp, K., Luck, A.T., Plewe, B., and Wentz, E.,2006, *Geographic Information Science & Technology Body of Knowledge*, Washington, D.C.: Association of American Geographers).

8. Appendices

Appendix A. List of UF Geospatial Courses

Key to Course Type

1: courses where geospatial techniques are taught
2: courses where digital geospatial data are applied
3: courses using maps but not doing spatial analysis
4: courses using digital spatial info, but without geo-reference

College/Unit/Course	Type
College of the Arts – School of Art & Art History	
Art and Art History	
ART5905C Sketchbook Development	3
DIG1000C Workshop in Fundamental Technologies	2
DIG4527 Advanced Experiments in Digital Media	2
College of Agriculture and Life Sciences	
Wildlife Ecology and Conservation	
WIS 4203C: Landscape Ecology and Conservation	2
WIS 6468C: Pattern and Process in Landscape Ecology	2
WIS 6934: Species Distribution and Resource Selection Modeling	2
WIS 6934 Salamander Biology (3 hrs).	3
WIS 6934/4934 Vertebrates in Lotic Habitats (2 hrs)	3
WIS 6934/4934 Biology of Snakes (2hrs)	3
WIS 3434/6934 Tropical Wildlife	3
Milton Campus	
ALS4932L Plant Communities of the Florida Panhandle Field Lab	3
ALS5932L Plant Communities of the Florida Panhandle Field Lab	3
FNR3410C Integrated Natural Resources Management	2
WIS4443C Wetland Wildlife Ecology	3
School of Forest Resources and Conservation	
FNR3410C Natural Resource Sampling	2
FNR4461 Spatial Models and Decision Analysis	1
FNR4623C Integrated Natural Resource Management	2
FOR3153C Forest Ecology	2
FOR3162C Silviculture	2
FOR3214/L Fire Ecology and Management	2

College/Unit/Course - Continued	Type
School of Forest Resources and Conservation - Continued	
FOR 3430C Forest Mensuration	2
FOR 3434 Forest Resource Information Systems	2
FOR4090C Urban Forestry	2
FOR5157 Ecosystem Restoration Principles and Practices	2
FOR 5435 Forest Information Systems	2
FOR5626 Forest Resource Management	2
FOR6156 Simulation Analysis of Forest Ecosystems	2
FOR6164 Silviculture: Concepts and Application	2
FOR6215 Fire Paradigms	2
FOR6XXX Analysis of Forest Ecosystems	2

Geomatics	
GIS 4121: Geospatial Analysis	1
GIS 6103: GIS Programming and Customization	1
GIS 6116: Geographic Information Systems Analysis	1
SUR 3103C: Geomatics (intro)	1
SUR 3323: Visualization of Spatial Info.	1
SUR 3331/L: Photogrammetry	1
SUR 3393/L: Geographic Information Sys.	1
SUR 3501/L: Spatial Measurement Sys.	1
SUR 3520: Measurement Science	1
SUR 3641: Surveying Computations	1
SUR 4201: Route Geometrics and Design	1
SUR 4350: Advanced Photogrammetry	1
SUR 4380: Remote Sensing	1
SUR 4403: Cadastral Principles	1
SUR 4430: Surveying & Mapping Practice	1
SUR 4463: Subdivision Design	1
SUR 4530: Geodesy & Geod. Positioning	1
SUR 4912: Senior Project	1
SUR 4934: Special Topics	1
SUR 4949: Co-op	1
SUR 5365: Digital Mapping	1
SUR 5385: Remote Sensing Applications	1
SUR 5386: Image Processing for Remote Sensing	1
SUR 5391C: Geomatics: Spatial Foundations of GIS	1
SUR 5425: Cadastral Information Systems	1
SUR 5525: Least Squares Adjustment Computations	1

College/Unit/Course - Continued	Type
Geomatics - Continued	
SUR 6375: Terrain Analysis and Mapping	1
SUR 6395: Topics in Geographic Information Systems	1
SUR 6427: Land Tenure and Administration	1
SUR 6535: GPS-INS Integration	1
SUR 6905: Special Problems in Geomatics	1
SUR 6934: Topics in Geomatics	1

Fisheries and Aquatic Sciences	
FAS4202C Biology of Fishes	2
FAS4270 Marine Ecological Processes	2
FAS5203C Biology of Fishes	2
FAS6272 Marine Ecological Processes	2
FAS6339C Advanced Quantitative Fisheries Assessment	2
FAS6355C Fisheries Management	2
FAS6XXX Spatial Ecology and Modeling	1

Ornamental Horticulture	
ORH3222C Turfgrass Culture	2
ORH4223 Golf/sport Turf Management	2

College of Design, Construction and Planning

Architecture	
ARC 2180 Introduction to Digital Architecture	4
ARC 3181 Advanced Topics in Digital Architecture	4
ARC 4310C Building Information Modeling	4
ARC 6311C Building Information Modeling	4
ARC 6911 Introduction to Digital Architecture	4
ARC 6912 Advanced Topics in Digital Architecture	4

Construction Management	
BCN 4252 Introduction Building Information Model	1
BCN 6785 Construction Information Systems	1

Landscape Architecture	
LAA 4359 Environmental Planning and Design Studio	1
LAA 6656 Advanced Landscape Design	1

College/Unit/Course - Continued	Type
Urban and Regional Planning	
URP 4273 Survey of Planning Information Systems	1
URP 4905 Special Studies	1
URP 6270 Survey of Planning Information Systems	1
URP 6271 Customizing Planning Information Systems	1
URP 6272 Advanced Geospatial Information Systems	1
URP 6274 GPS for Planners: Introduction to Global Positioning System	1
URP 6275 Spatial Database Design and Development	1
URP 6276 Internet Geographic Information Systems	1
URP 6277 Land Use Visioning and Analysis	1
URP 6341 Urban Planning Project	1
URP 6821 Transportation and Land-Use Modeling	1
URP 6871 Planning and Design I	1
URP 6871 Planning and Design II	1
URP 6905 Geospatial Modeling	1
URP 6905 Visual Urban Simulation	1
URP 6933 Planning Information Seminar	1

College of Engineering

Civil and Coastal Engineering	
CEG 5205C Insitu Measurement of Soil	2

College of Journalism and Communications

Journalism	
JOU3220C Visual Journalism	3

College of Liberal Arts and Sciences

Center for African Studies	
AFS5061 Africana Bibliography	3

Anthropology	
ANT3141 – Development of World Civilization	3
ANT3930 - Florida Archaeology	3
ANT4930 Researching Anthropology	3
ANT 4930/6930 - Lithic Technology	3
ANT 4930/6930 African Archaeology and	3
ANT 4930/6930 The Archaeology of Human Origins	3
ANG6930 Applied Statistics in Bioanthropology	2

College/Unit/Course - Continued	Type
Anthropology - Continued	
ANT3930 - GIS in Anthropology (not taught regularly)	1
ANT6930 Biocultural Diversity	3
ANT6930 Regional Analysis	2
Biology	
ZOO/GLY 4926/6927 Island Biogeography and Paleontology	2
ZOO 4926 Herpetology - 4 CHs	3
ZOO 6927 Herpetology - 4 CHs	3
PCB 6675C Evolutionary Biogeography	2
ENY 6934 Insect Biogeography	2
ENY 6934 Lepidoptera Biology	3
Classics	
CLA2100 The Glory That Was Greece	3
CLA 2120 The Grandeur That Was Rome	3
CLA 3433 The Athenian Democracy	3
CLA 3434 Classical Greece	3
CLA 3500 Sport and Recreation in the Ancient World	3
History	
EUH-3182: Medieval Archaeology	2
EUH-3323: Medieval Eastern Europe	3
EUH-3300: Byzantine History	3
EUH-3473: Medieval Germany	3
EUH-3432: Medieval Italy	3
HIS3942 History Practicum (British Atlantic History)	3
EUH-4185: Viking Experience	3
EUH-4584: Medieval Russia	3
EUH-4123: Holy War in the Middle Ages	3
Geography	
GEA 1000 Geography for a Changing World	3
GEA 2210 Geography of the United States and Canada	3
GEA 2270 Geography of Florida	3
GEA 3405 Geography of Latin America	2
GEA 3500 Geography of Europe	3
GEA 3600 Geography of Africa	3

College/Unit/Course - Continued	Type
Geography - Continued	
GEA 4465 Amazonia	2
GEO 2200 Physical Geography	2
GEO 2200L Physical Geography Laboratory	2
GEO 2201 Physical Landscapes	2
GEO 2242 Extreme Weather	3
GEO 2410 Social Geography	3
GEO 2420 Introduction to Human Geography	2
GEO 2426 Pop Music and Culture: A Geographic Perspective	2
GEO 2474 The Geography of Now	2
GEO 2500 Global and Regional Economies	2
GEO 3162C Introduction to Quantitative Analysis for Geographers	1
GEO 3250 Climatology	2
GEO 3280 Principles of Geographic Hydrology	2
GEO 3315 Geography of Crop Plants	3
GEO 3341 Extreme Floods	2
GEO 3352 The Human Footprint on Landscape	2
GEO 3372 Conservation of Resources	2
GEO 3430 Population Geography	2
GEO 3452 Introduction to Medical Geography	1
GEO 3502 Economic Geography	2
GEO 3602 Urban and Business Geography	1
GEO 3803 Geography of Alcohol	3
GEO 4167C Intermediate Quantitative Analysis for Geographers	1
GEO 4281 Fluvial Morphology and Processes	1
GEO 4285 Models in Geographic Hydrology	1
GEO 4300 Environmental Biogeography	2
GEO 4554 Regional Development	2
GIS 3043 Foundations of Geographic Information Systems	1
GIS 3420C GIS Models for Public Health	1
GIS 4001C Maps and Graphs	1
GIS 4021C Air Photo Interpretation	1
GIS 4037 Digital Image Processing	1
GIS 4113 Introduction to Spatial Networks	1
GIS 4115 Applied Geostats	1
GLY 4734 Coastal Morphology and Processes	2
MET 3503 Weather and Forecasting	3
MET 4532 Hurricanes	3
MET 4560 Atmospheric Teleconnections	2

College/Unit/Course - Continued	Type
Geography - Continued	
MET 4750 Atmospheric Data Analysis	1
GEA 6419: Seminar: South America	3
GEA 6466: Seminar on Geography of Amazonia	3
GEA 6468: Resource Utilization and Conservation in Latin America	3
GEO 5305: Environmental Biogeography	2
GEO 5346: Natural Hazards	2
GEO 5556: Geography of Innovation and Technological Change	2
GEO 5605: Advanced Urban Geography	2
GEO 5809: Geography of World Agriculture	2
GEO 5945C: Field Course in Geography	2
GEO 6118: Contemporary Geographic Thought and Research	3
GEO 6160: Introduction to Quantitative Methods for Geographers	2
GEO 6161: Intermediate Quantitative Methods for Geographers	2
GEO 6166: Advanced Quantitative Methods for Spatial Analysis	2
GEO 6255: Climatology	2
GEO 6282: Fluvial Morphology	1
GEO 6375: Land Change Science Seminar	1
GEO 6429: Seminar: Cultural Geography	3
GEO 6435: Seminar in Population	2
GEO 6451: Medical Geography	1
GEO 6495: Environment and Behavior	3
GEO 6931: Seminar in Cultural and Political Ecology	2
GIS 5008C: Maps and Graphs	1
GIS 5009C: Advanced Cartography	1
GIS 5028C: Advanced Aerial Photo Interpretation	1
GIS 5038C: Remote Sensing	1
GIS 5107C: Geographic Information Systems in Research	1
GIS 5306: Geographic Information Systems Apps in Environmental Systems	1
GIS 5540: Business Geography and New Real Estate Market Analysis	1
GIS 6104: Spatial Networks	1
GIS 6425C: GIS Models for Public Health	1
MET 5504: Weather and Forecasting	2
MET 6530: Hurricanes	2
MET 6565: Seminar in Atmospheric Teleconnections	2
MET 6752: Atmospheric Data Analysis	1

College/Unit/Course - Continued	Type
Geological Sciences	
GLY3200C Principles of Mineralogy	3
ESC 1000 : EXPLORING GEOLOGICAL SCIENCE	3
GLY 1000 : FLORIDA GEOLOGICAL SCIENCE	3
GLY 1150L: FLORIDA GEOLOGY LAB	3
GLY 1880: EARTHQUAKES, VOLCANOES, AND OTHER HAZARDS	3
GLY 2010C: PHYSICAL GEOLOGY	3
GLY 2030C: ENVIRONMENTAL AND ENGINEERING GEOLOGY	3
GLY 2038: SUSTAINABILITY AND THE CHANGING EARTH	3
GLY 2100C: HISTORICAL GEOLOGY	3
GLY 3074: OCEANS AND GLOBAL CLIMATE	3
GLY 3083C: INTRODUCTION TO MARINE SCIENCE	3
GLY 3105C: EVOLUTION OF EARTH AND LIFE IN NORTH AMERICA	3
GLY 3163: GEOLOGY OF AMERICAN NATIONAL PARKS	3
GLY 3202C: EARTH MATERIALS	3
GLY 3603C: PALEONTOLOGY	3
GLY 3882C HYDROLOGY AND HUMAN AFFAIRS	3
GLY 4155C: GEOLOGY OF FLORIDA	3
GLY 4310C: IGNEOUS AND METAMORPHIC PETROLOGY	3
GLY 4400C: STRUCTURAL GEOLOGY AND TECTONICS	3
GLY 4450: GEOPHYSICS	3
GLY 4552C: SEDIMENTARY GEOLOGY	3
GLY 4734: COASTAL MORPHOLOGY AND PROCESSES	1
GLY 4750L: GEOLOGICAL FIELD METHODS	3
GLY 4790: GEOLOGY SUMMER FIELD CAMP	3
GLY 5247: SURFACE AND GROUND WATER INTERACTION	3
GLY 5328: ADVANCED IGNEOUS PETROLOGY	3
GLY 5455: INTRODUCTION TO GEOPHYSICS	3
GLY 5468: TERRESTRIAL GRAVITY AND MAGNETISM	1
GLY 5705: GEOMORPHOLOGY	3
GLY 5736: MARINE GEOLOGY	3
GLY 5786L: TOPICS IN FIELD GEOLOGY	3
GLY 5827: GROUND WATER GEOLOGY	3
GLY 6075: GLOBAL CLIMATE CHANGE	3
GLY 6425: TECTONICS	3
GLY 6519: STRATIGRAPHY AND TIMESCALES	3
GLY 6826: HYDROGEOLOGIC MODELING	3
GLY 6862: NUMERICAL METHODS IN EARTH SCIENCES	2
GLY 6932: CHEMICAL BIOMARKERS IN AQUATIC ECOSYSTEMS	3
GLY 6932: CURRENT TOPICS IN EARTH SCIENCE FOR TEACHERS (UFUTuRES)	3
GLY 6932: DATA AND ANALYSIS IN NATURAL SCIENCES	2
GLY 6932: GEOPHYSICAL INVERSE METHODS	3

College/Unit/Course - Continued	Type
Geological Sciences - Continued	
GLY 6932: PALEOECOLOGY	3
GLY 6932: PALEOLIMNOLOGY	3
OCE 1001: INTRODUCTION TO OCEANOGRAPHY	3
PCB 5307C: LIMNOLOGY	
Languages, Literature, and Culture	
MEM3300 Castles and Cloisters	3
LIN 4784 Writing Systems	3
JPT 3500 Japanese Culture	3
JPN 3730 Language in Japanese Society	3
JPN 4850 Structure of Japanese	3
Political Science	
CPO6756 Comparative Elections and Party Systems	3
POS 2112 - American State and Local Government	3
POS 4275 - Modern Political Campaigns	3
POS 4194 - Beyond the Beltway: Politics in States, Counties, and Communities	3
CPO 3403 Politics of the Modern Middle East (space, urban geophy, class)	3
CPO 2001 Introduction to Comparative Politics	3
POS 6933 Modern Middle East Politics (space, urban geophy, class)	3
CPO 4401 Arab-Israeli Conflict (territorial wars, holy site control, prop. ownership)	3
INR 2001 Intro to International Relations	3
Religion	
REL 2071 Religion and Sustainability	3
REL 3018 Religion and Food	3
REL 2166 Religion and the Environmental Crisis	3
REL 3169 Religion and Environmental Movements of the Global South	3
REL 4936 Religion, Nature, and Society	3
REL 4936 Religion and Fieldwork	3
Spanish and Portuguese Studies	
SPN 4830 Spanish Dialectology	3
SPW 3101 Introduction to Spanish Literature	3
SPW 4532 Introduction to Spanish Romanticism	3
SPW 6902 Spanish Romanticism: Literature and National Identity	3
POR 3243 Portuguese Composition and Conversation	3

College/Unit/Course - Continued	Type
Spanish and Portuguese Studies - Continued	
POR 3500 Luso Brazilian Civilization	3

Biostatistics	
PHC 6xxx Biostatistical Computing	2

Florida Museum of Natural History
174,000 specimens of amphibians online including an Atlas of Amphibians and Reptiles of Florida georeferenced and thousands of others geo-referenced. 240,000 specimens being placed online and most will be geo-referenced.

Appendix B. List of UF Geospatial Projects

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Adams, Carrie R	Smith 2014-2015 FLEPPC	$2,000.00	5/12/2014	5/11/2015	FL EXOTIC PEST PLANT CNCL
Adams, Peter N	Collaborative Research: Coastal Geomorphic Consequences	$231,632.00	9/15/2011	8/31/2015	NATL SCIENCE FOU
Ahrens, Robert	Evaluating habitat restoration for juvenile tarpon	$108,780.00	8/16/2012	8/15/2015	BONEFISH & TARPON TRUST
Ahrens, Robert	Using SEDAR-Assessed Stocks to Validate the Accuracy of	$103,505.00	8/1/2013	8/31/2015	UNIV OF MIAMI
Andreu, Michael	Forest Stewardship Program X	$76,500.00	3/4/2014	12/31/2014	FL DEPT OF AG AND CON SER FORESTRY
Andreu, Michael	Secondary Wood Product Directory Project	$50,000.00	4/4/2013	12/31/2014	FL DEPT OF AG AND CON SER FORESTRY
Andreu, Michael	Denitrification Potential in the Tampa Bay Watershed	$35,700.00	7/21/2011	1/31/2015	US DEPT OF AG FOREST SERVICE
Andreu, Michael	Florida Invasive Species Partnership Outreach	$8,000.00	11/1/2014	6/30/2015	FL DEPT OF TRANSPORTATION
Andreu, Michael	Wildland Urban Interface Research and Technology Transfe	$86,000.00	8/10/2010	8/1/2015	US DEPT OF AG FOREST SERVICE
Andreu, Michael	Florida Invasive Species Partnerhship Outreach Program	$25,000.00	9/1/2010	9/1/2015	US DEPT OF INTERIOR FISH AND WILDLIFE SE
Andreu, Michael	Growth, Mortality, and in-growth in the Tampa Bay	$19,000.00	8/1/2013	12/31/2015	US DEPT OF AG FOREST SERVICE
Andreu, Michael	More Kids in the Woods	$12,000.00	8/6/2012	7/31/2017	US DEPT OF AG FOREST SERVICE
Andreu, Michael	More Kids in the Woods	$89,695.00	9/3/2013	8/1/2018	US DEPT OF AG FOREST SERVICE
Andreu, Michael	Wildland-Urban Interface Research and Science Delivery	$28,609.00	8/12/2013	8/1/2018	US DEPT OF AG FOREST SERVICE
Asseng, Senthold	Enhancing Crop Model Results for Global Futures	$371,538.00	8/1/2013	12/31/2014	INTL FOOD POLICY RES INST
Asseng, Senthold	Global Futures - Virtual potato crop modeling	$72,326.00	1/1/2013	12/31/2014	INTL POTATO CTR
Asseng, Senthold	Science and partnerships for adaption and resilience	$4,018,000.00	9/1/2010	8/31/2015	US DEPT OF COMMERCE
Asseng, Senthold	CRP 2 - Virtual maize crop modeling	$43,000.00	12/17/2013	9/12/2015	INTL MAIZE & WHEAT IMPROVEMENT CTR
Asseng, Senthold	Research Service Agreement with Wheat Initiative	$53,368.00	6/1/2014	12/31/2018	INSTITUT NATIONAL DE LA RECHERCHE AGRON

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Behringer Jr., Donald Charles	Are Mooring Buoys Effective for Managing Vessel Anchorin	$94,944.00	7/1/2012	4/30/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Behringer Jr., Donald Charles	Tools for Sustainably Managing the Florida Lobster Fishe	$248,115.00	7/1/2014	6/30/2016	US DEPT OF COMM NATL OCEANIC & ATMOS ADM
Bejleri, Ilir	MAINTENANCE AGREEMENT FOR THE GEOSPATIAL CRASH DATABASE	$35,250.00	12/21/2012	12/31/2014	SPACE COAST TRANSPORTATION PLANNING ORG
Bejleri, Ilir	Update of the Metroplan Orlando Crash Geospatial Databas	$30,000.00	10/15/2014	6/30/2015	METROPLAN ORLANDO
Bejleri, Ilir	Expanding Accessibility, Utilization and Data Integratio	$156,354.00	10/1/2014	9/30/2015	FL DEPT OF TRANSPORTATION SAFETY OFFICE
Bejleri, Ilir	A Unified and Sustainable Solution to Improve Crash Geo-	$125,159.00	10/1/2014	9/30/2015	FL DEPT OF TRANSPORTATION SAFETY OFFICE
Binford, Michael William	Coll.Rsch:Building Management into Earth System Modeling	$274,523.00	4/1/2013	5/31/2015	NATL SCIENCE FOU
Bohlman, Stephanie Ann	Determination of tropical forest blowdown frequency is	$60,000.00	9/1/2013	8/31/2015	NASA GODDARD SPACE FLIGHT CTR
Boughton, Raoul	Feral Swine Contact	$112,994.00	9/4/2014	9/3/2015	US DEPT OF AG APHIS
Brown, Mark T	EMERGY RESEARCH SUPPORT FOR SUPPLY CHAINS	$149,859.00	9/15/2011	12/31/2014	US ENVIRONMENTAL PRO AGCY
Brown, Mark T	Monitoring Initiative Funds: Water Monitoring Program	$173,999.00	3/9/2011	12/31/2014	FL DEPT OF ENVIRONMENTAL PROTECT
Brown, Mark T	Florida's Participation in the National Wetland	$434,700.00	4/1/2011	12/31/2014	FL DEPT OF ENVIRONMENTAL PROTECT
Buss, Eileen	Mitigation of Southern Chinch Bug Insecticide Resistance	$44,114.00	7/1/2012	12/31/2014	INSECTICIDE RESISTANCE ACTION COMMITTEE
Buss, Eileen	Efficacy Trials for Turf and Ornamental Insect Pests	$53,900.00	9/26/2011	9/25/2016	MULTIPLE SPONSORS
Cohen, Matthew J	Mechanisms of Ridge-Slough Maintenance and Degradation a	$504,630.19	8/16/2010	3/31/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Cohen, Matthew J	The Florida Fertilization Project: Monitoring the	$50,000.00	5/1/2014	3/31/2015	NATL CNCL AIR AND STREAM IMPROVE
Cohen, Matthew J	Surface Water Project	$103,936.00	9/27/2013	7/30/2015	FL DEPT OF AG AND CON SER FORESTRY
Cohen, Matthew J	From nutrients to metabolism: Linking numeric nutrient	$51,000.00	8/22/2012	8/21/2015	US ENVIRONMENTAL PRO AGCY
Cohen, Matthew J	Mechanisms of Ridge-Slough Maintenance and Degradation	$256,467.00	9/7/2012	9/30/2015	US ARMY CORPS OF ENGINEERS
Cohen, Matthew J	Biotic Control on Carbonate Dissolution	$599,080.00	5/15/2014	4/30/2017	NATL SCIENCE FOU

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Cohen, Matthew J	Rainbow River Sediment and Algal Cover Study	$75,000.00	6/1/2014	2/1/2018	SW FL WATER MGMT DISTRICT
Cohen, Matthew J	Managing Forests for Increased Regional Water Availabili	$637,725.00	3/27/2014	3/1/2018	FL DEPT OF AG AND CONSUMER SER
Donohoe, Holly	Ticks, tick-borne diseases	$2,000.00	6/1/2014	5/31/2015	TRAVEL AND TOURISM RESEARCH ASSOCIATION
Duncan, Larry Wayne	Managing root health by exploiting knowledge of the serv	$117,445.00	3/1/2012	2/28/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Duncan, Larry Wayne	Beyond BioVector: Can cold-tolerant nematodes effectivel	$50,000.00	4/1/2013	3/31/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Ehsani, Reza John	Low-cost solar thermal treatment for in-grove reduction	$237,559.00	4/1/2012	3/31/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Ehsani, Reza John	Automated Stress and Disease Detection in Vegetable and	$448,120.00	8/15/2013	8/14/2018	UNIV OF CENTRAL FLORIDA
Fletcher, Robert	Demographic, Movement, and Habitat Studies of Snail Kite	$2,624,366.00	3/16/2010	4/30/2015	US ARMY CORPS OF ENGINEERS
Fletcher, Robert	Linking Snail Kite Foraging Activity	$449,625.00	6/8/2010	6/7/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Fletcher, Robert	EAGER: The causes and consequences of spatial modularity	$156,427.00	8/1/2013	7/31/2015	NATL SCIENCE FOU
Fletcher, Robert	A quantitative framework to evaluate vessel collision ri	$93,422.00	8/15/2014	7/15/2016	FL FISH & WILDLIFE CONSRV COMMISSION
Fletcher, Robert	Resource Use by Florida Manatees in the Northern GOM	$66,778.00	8/15/2011	8/14/2016	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Fletcher, Robert	Evaluating the sustainability of bioenergy production in	$496,996.00	9/1/2012	8/31/2016	US DEPT OF AG NATL INST OF FOOD & AG
Flory, Stephen	Pathogen accumulation and its consequences for invasive	$156,244.00	3/1/2013	2/28/2015	NATL SCIENCE FOU
Flory, Stephen	Economic Costs of Invasive Plant Managment	$36,159.00	7/29/2014	6/4/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Flory, Stephen	IFAS Assessment of Non-Native Plants in FL Natural Areas	$34,066.00	7/29/2014	6/4/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Flory, Stephen	Variation in competitive ability and response to managem	$2,000.00	5/1/2014	10/1/2015	FL EXOTIC PEST PLANT CNCL
Flory, Stephen	Testing a conceptually-driven framework to predict varia	$170,242.00	4/15/2014	3/31/2017	NATL SCIENCE FOU
Fortes, Jose	Collaborative Research: Center for Autonomic Computing	$683,029.00	1/15/2008	12/31/2014	NATL SCIENCE FOU

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Fortes, Jose	Industry Membership in CAC (Center for Autonomic Computi	$612,482.00	1/15/2008	12/31/2014	MISCELLANEOUS DONORS INDUSTRY FUNDS
Fortes, Jose	Second Workshop on Instrumentation Needs of Computer and	$45,000.00	3/1/2012	4/30/2015	NATL SCIENCE FOU
Fortes, Jose	EAGER: Collaborative Research: Model-based Autonomic Clo	$167,000.00	8/1/2013	7/31/2015	NATL SCIENCE FOU
Fortes, Jose	SAVI:PRAGMA: Enabling Scientific Expeditions and Infrast	$1,063,802.00	10/1/2012	9/30/2015	UNIV OF CALIFORNIA SAN DIEGO
Frank, Kathryn I	Planning for Sea Level Rise: A Pilot Study to Evaluate a	$618,377.00	11/15/2011	12/31/2014	UNIV OF NEW HAMPSHIRE
Frazer, Tom K	Assessment of Florida's Marine and Freshwater Hatchery P	$827,500.00	2/17/2010	6/1/2015	FL FISH AND WILDLIFE COM ENV EDU
Frazer, Tom K	Kings Bay algal grazer evaluation	$369,375.00	1/18/2012	6/30/2015	SW FL WATER MGMT DISTRICT
Frazer, Tom K	Kings Bay sediment feasibility study	$350,000.00	1/18/2012	6/30/2015	SW FL WATER MGMT DISTRICT
Frazer, Tom K	Project COAST North	$300,000.00	1/18/2012	9/30/2015	SW FL WATER MGMT DISTRICT
Frazer, Tom K	Marine and Coastal Sciences - Assistant Research Scienti	$125,000.00	7/17/2012	7/16/2017	FL FISH & WILDLIFE CONSRV COMMISSION
Frazer, Tom K	Marine and Coastal Sciences - Assistant Research Scienti	$250,000.00	7/20/2012	7/19/2017	THE FLORIDA AQUARIUM
Fujisaki, Ikuko	Florida Apple Snail Monitoring	$24,000.00	7/1/2012	1/15/2015	UNIVERSITY OF WEST FLORIDA
Fujisaki, Ikuko	Mapping and Spatial Data Analysis for Research on Indica	$338,002.00	9/15/2011	9/14/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Fujisaki, Ikuko	Removal of marine-debris	$105,000.00	11/1/2012	10/31/2015	US DEPT OF COMMERCE NATL MARINE FISH SER
Ghosh, Malay	Some Contributions to Sampling Theory with Applications	$160,185.00	10/1/2013	9/30/2016	NATL SCIENCE FOU
Giblin-Davis, Robin	Technical Assistance for Indicator Species Research	$45,850.00	9/1/2012	8/31/2017	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Goodison, Crystal	Testing and Enhancement of the Florida Sea Level Scenari	$120,000.00	12/17/2013	6/30/2015	FL DEPT OF TRANSPORTATION
Grunwald, Sabine	CGIAR Research Program: Water, Land and Ecosystems (CRP-	$114,000.00	8/1/2012	12/31/2014	INTL POTATO CTR
Grunwald, Sabine	Development of a Geospatial Soil-Crop Inference Engine	$292,033.00	1/1/2012	12/31/2014	NATL SCIENCE FOU
Harman, Jeffrey	Assoc of State Regs & APRNs Practice in Underserved Area	$249,735.00	9/1/2013	8/31/2015	JOHNSON, ROBERT WOOD FOU
Harman, Jeffrey	Assessing the Acceptability of a Technology Solution to	$4,533.00	10/1/2013	9/30/2015	UF COL OF PUB HLTH & HLTH PROF SEED PROG

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Harman, Jeffrey	Comparative Effectiveness of Musculoskeletal Pain Treatm	$80,000.00	6/1/2014	5/31/2016	UF DIV OF SPONSORED RES OPPORTUNITY FUND
Heckenberger, Michael	Participatory Mapping and Landscape among an Indigenous	$94,576.00	9/15/2013	1/31/2015	NATL SCIENCE FOU
Heckenberger, Michael	Kuikuro Cultural Center	$35,100.00	7/1/2014	6/30/2015	HILLMAN FOU, WILLIAM TALBOTT
Hochmair, Hartwig H	Walk to School Route Planner ? Phase II	$35,000.00	6/2/2014	12/15/2014	FLORIDA INTERNATIONAL UNIV
Hoctor, Thomas Scott	Dynamic Reserve Design	$26,766.50	8/22/2013	8/21/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Hoctor, Thomas Scott	LCC Science Updates	$116,094.00	9/1/2014	8/30/2015	US DEPT OF INTERIOR FISH AND WILDLIFE SE
Hoctor, Thomas Scott	Updating the CLIP 3.0 Database	$85,000.00	9/20/2013	9/30/2015	US DEPT OF INTERIOR FISH AND WILDLIFE SE
Hoctor, Thomas Scott	Updates to the Cooperative Conservation Blueprint	$48,000.00	11/3/2014	11/2/2015	WILDLANDS CONSERVATION, INC
Hodges, Alan Wade	Economic Impacts of Agriculture, Natural Resources and F	$18,439.75	8/1/2014	4/14/2015	POLK CNTY FARM BUREAU
Hodges, Alan Wade	2012-13 Economic Contributions of the FL Citrus Industry	$28,600.00	6/1/2014	4/30/2015	FL DEPT OF CITRUS
Hodges, Alan Wade	Assessment of National and Regional Trends in Production	$34,500.00	7/1/2014	6/30/2015	HORTICULTURAL RES INST
Hodges, Alan Wade	ECONOMIC BENEFIT RESEARCH SERVICES	$27,500.00	7/24/2014	6/30/2015	FL HOUSING FINANCE CORP
Ifju, Peter	Unmanned Aircraft System Research	$20,000.00	3/6/2014	1/20/2015	ALTAVIAN
Jones, Douglas	DSR Match - PIRE: Ancient Biodiversity and global	$500,000.00	7/1/2010	8/1/2015	UF DIV OF SPONSORED RES MATCHING FUNDS
Jones, James	Joint CCAFS-AGMIP Activities	$25,054.00	4/1/2014	2/28/2015	INTL CTR FOR TROPICAL AGRICULTURE
Jones, James	AgMIP Advancing Pest and Disease Modeling Workshop-IFPRI	$50,000.00	7/31/2014	5/31/2015	INTL FOOD POLICY RES INST
Jones, James	FACE-IT	$302,710.00	10/1/2013	9/30/2016	NATL SCIENCE FOU
Jones, Pierce	Austin Data Analysis	$52,154.00	9/17/2014	1/29/2015	CITY OF AUSTIN
Jones, Pierce	Utility Energy Data Services for Multifamily Energy Retr	$60,000.00	1/22/2014	1/21/2017	FL HOUSING FINANCE CORP

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Judge, Jasmeet	Downscaling satellite-based passive microwave observatio	$314,468.00	12/7/2012	12/6/2015	NASA STENNIS SPACE FLIGHT CTR
Kern Jr., William H	IFAS Service Agreement	$3,300.00	5/9/2013	5/8/2018	MULTIPLE SPONSORS
Kobziar, Leda	Does High Severity Lead to Delayed Tree Mortality in Cyp	$216,905.00	7/1/2010	5/31/2015	US DEPT OF INTERIOR NATL PARK SERVICE
Kobziar, Leda	The Southern Fire Exchange	$211,900.00	7/1/2013	5/31/2015	US DEPT OF AG FOREST SERVICE
Kobziar, Leda	Fuel treatments and the longleaf pine-wiregrass understo	$24,922.00	7/28/2014	8/31/2016	US DEPT OF INTERIOR BUREAU OF LAND MGMT
Kruse, Jason Keith	IFAS Service Program	$48,400.00	7/1/2013	6/30/2018	MULTIPLE SOURCES
Kruse, Jason Keith	Zoysiagrass Evaluation	$7,500.00	4/1/2014	6/30/2018	NATL TURFGRASS EVALUATION PROGRAM
Larkin, Sherry L	Determine the status of precision farming technology	$41,000.00	1/1/2010	12/31/2014	COTTON INCORPORATED
Larkin, Sherry L	Economic Analysis Commercial Red Snapper Fishery	$174,991.00	9/1/2012	8/31/2015	US DEPT OF COMMERCE NATL MARINE FISH SER
Liburd, Oscar Emanuel	Monitoring and management of current, emerging, and inva	$34,326.00	8/1/2013	1/31/2015	FL STRAWBERRY RESEARCH & EDUCATION FOU
Liburd, Oscar Emanuel	Evaluation of in situ Detection Methods, of Twospotted S	$48,016.00	8/1/2014	7/31/2015	FL STRAWBERRY RESEARCH & EDUCATION FOU
Liburd, Oscar Emanuel	Improving integrated pest management of key pests to inc	$103,227.53	12/10/2012	7/31/2015	FL DEPT OF AG AND CONSUMER SER
Liburd, Oscar Emanuel	Monitoring and management of current, emerging, and inva	$37,275.00	8/1/2014	7/31/2015	FL STRAWBERRY RESEARCH & EDUCATION FOU
Liburd, Oscar Emanuel	Development and Participatory Implementation of Integrat	$204,033.00	10/1/2011	8/31/2015	AUBURN UNIV
Liburd, Oscar Emanuel	Comparison of Sampling Methods for Treatment Decisions I	$48,616.00	8/1/2013	10/31/2015	FL STRAWBERRY RESEARCH & EDUCATION FOU
Liburd, Oscar Emanuel	IPM Strategies to Combat the Invasive Spotted Wing Droso	$132,914.88	12/24/2013	12/31/2015	FL DEPT OF AG AND CONSUMER SER
Lillywhite, Harvey B	Seahorse Key Conservation	$6,223.29	3/15/2005	6/30/2015	UF FOU UNRESTRICTED DONATION
Lindberg, William	Efficient Mapping of Hard-Bottom Habitats at Reef Morpho	$189,117.00	9/1/2012	8/31/2015	US DEPT OF COMMERCE NATL MARINE FISH SER
Lindberg, William	Do juvenile gag have a habitat-mediated bottleneck in	$425,776.00	9/1/2013	8/31/2016	US DEPT OF COMMERCE NATL MARINE FISH SER
Longini, Ira M	Containing Bioterrorist and Emerging Infectious DIsease	$100,315.00	1/1/2014	12/31/2014	HUTCHINSON FRED CANCER RES CTR
Longini, Ira M	MIDAS: PANDEMIC INFLUENZA SUPPLEMENT	$34,140.00	7/1/2013	12/31/2014	HUTCHINSON FRED CANCER RES CTR

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Longini, Ira M	Quantifying the balance between vaccine-induced T cell p	$25,458.00	2/1/2014	1/31/2015	EMORY UNIV
Longini, Ira M	Dengue Vaccine Initiative	$184,668.00	4/1/2013	3/31/2015	INTERNATIONAL VACCINE INSTITUTE
Longini, Ira M	Dengue baseline studies and vaccine efficacy field trial	$175,618.89	5/1/2014	4/30/2015	Universidad Autonoma de Yucatan
Longini, Ira M	Methods for Evaluating Vaccine Efficacy	$146,664.00	6/1/2014	5/31/2015	HUTCHINSON FRED CANCER RES CTR
Longini, Ira M	Using TranStat for Emerging Infectious Disease Threats i	$94,962.00	5/1/2014	6/30/2015	CNTY OF LOS ANGELES DEPT OF PUBLIC HLTH
Longini, Ira M	Mathematical Models for the Optimal Control of Cholera w	$95,635.00	11/1/2012	11/1/2015	GATES FOU, BILL & MELINDA
Lorenzen, Kai	Tools to enhance sustainability Caribbean FAD fisheries	$50,000.00	2/1/2014	1/31/2015	ROYAL CARIBBEAN CRUISES
Macfadden, Bruce	PIRE-Ancient biodiversity & global change in the New Wor	$3,905,831.00	8/1/2010	7/31/2015	NATL SCIENCE FOU
Macfadden, Bruce	RET Site: GABI- Panama connection	$350,000.00	5/15/2014	4/30/2017	NATL SCIENCE FOU
Macfadden, Bruce	Fostering Opportunities for Synergistic STEM with	$1,440,431.00	10/1/2013	9/30/2017	NATL SCIENCE FOU
Maldonado Molina, Mildred Merisa	Florida Medicaid Maternal and Child Health Status Indica	$680,031.05	10/30/2012	6/30/2015	AGCY FOR HLTH CARE ADMN
Maldonado Molina, Mildred Merisa	OEL Web Portal	$135,000.00	6/30/2014	6/30/2015	FL DEPT OF EDUCATION
Maldonado Molina, Mildred Merisa	Florida Family Planning Waiver Evaluation	$430,450.00	7/1/2013	6/30/2016	AGCY FOR HLTH CARE ADMN
Mao, Liang	The Role of Air Travel in the Transmission and Spread of	$249,955.00	9/7/2010	6/30/2015	NATL RES CNCL TRANS RES BOARD
Martin, Timothy	Growth and Yield Model for Even-Aged Naturally Regenerat	$35,000.00	9/26/2011	12/31/2014	US DEPT OF AG FOREST SERVICE
Martin, Timothy	Integrating Research, Education and Extension for Enhanc	$16,000,000.00	3/1/2011	2/28/2015	US DEPT OF AG NATL INST OF FOOD & AG
Martin, Timothy	Developing Decision Support Tools for Ecological Forestr	$521,000.00	3/14/2011	3/13/2016	AUBURN UNIV
Matyas, Corene J	"CAREER: Geospatial Modeling Of Tropical Cyclones.	$470,000.00	8/15/2011	7/31/2016	NATL SCIENCE FOU
Mazzotti, Frank	Exotic animal risk assessments	$25,888.50	9/4/2014	12/31/2014	FL FISH & WILDLIFE CONSRV COMMISSION
Mazzotti, Frank	Alligator Dist., Size, & Occupancy & Croc Growth & Survi	$672,429.58	8/23/2010	3/31/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Mazzotti, Frank	Monitoring Program for the Turkey Point Uprate 2012	$302,559.02	1/23/2012	5/28/2015	FL POWER AND LIGHT CO
Mazzotti, Frank	Everglades Exotic Animal Monitoring	$192,611.82	9/11/2014	6/30/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Mazzotti, Frank	Everglades Invasive Animal Web and Mobile Reporting Syst	$4,994.00	1/1/2014	9/30/2015	UNIV OF GEORGIA
Mazzotti, Frank	FY2012: The American Crocodile in Northeastern FL Bay	$227,206.00	10/1/2011	9/30/2015	US DEPT OF INTERIOR NATL PARK SERVICE
Mazzotti, Frank	SFWMD Alligators	$35,000.00	10/1/2014	9/30/2015	SO FL WATER MGMT DISTRICT
Mazzotti, Frank	Technical Assistance for Indicator Species Research	$265,144.00	10/1/2011	9/30/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Mazzotti, Frank	LionFish Human Dimensions Survey	$39,352.00	10/27/2014	4/1/2016	FL FISH & WILDLIFE CONSRV COMMISSION
Mazzotti, Frank	IFAS Service Program	$50,970.00	7/1/2012	6/30/2018	MULTIPLE SPONSORS
McCarty, Christopher	DOT14	$120,960.00	7/15/2014	5/31/2015	FL DEPT OF TRANSPORTATION
McCleery, Robert	Monitoring and analysis of translocation of marsh rabbit	$102,200.00	7/23/2012	3/31/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
McCleery, Robert	Study of direct and indirect effects of imported Fire an	$62,648.00	8/16/2011	8/15/2015	JONES ECOLOGICAL RES CTR
McCleery, Robert	Bats in a Mosaic Landscape: The Effects of Land-Use on P	$4,000.00	8/25/2014	8/24/2015	BAT CONSERVATION INTERNATIONAL
McCleery, Robert	Monitoring protocols for Bats in Everglades National Par	$29,843.91	8/6/2014	10/31/2015	US DEPT OF INTERIOR NATL PARK SERVICE
McCleery, Robert	Assessing the impact of Burmese pythons on rabbits popul	$5,000.00	10/30/2014	12/31/2015	EVERGLADES FOUNDATION
McCleery, Robert	Conservation of Florida's Fox Squirrels	$132,889.00	4/30/2012	12/31/2015	FL FISH & WILDLIFE CONSRV COMMISSION
McCleery, Robert	Changes in Mammal Communities across the Greater Evergla	$44,929.00	6/1/2014	1/30/2016	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
McCleery, Robert	Co-Sponsorship of Graduate Student Support between Jones	$67,761.71	8/16/2014	8/15/2018	JONES ECOLOGICAL RES CTR
Mcvay, Michael	Drilled Shaft Resistance Based on Diameter, Torque and C	$144,755.00	3/25/2014	4/30/2015	FL DEPT OF TRANSPORTATION RESEARCH CTR
Mcvay, Michael	Evaluation of Static Resistance of Deep Foundation	$299,526.00	5/20/2013	6/30/2015	FL DEPT OF TRANSPORTATION RESEARCH CTR
Mcvay, Michael	LFRD Resistance Factors for Augercast in Place Piles	$111,994.00	2/7/2014	7/31/2015	FL DEPT OF TRANSPORTATION RESEARCH CTR

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Mcvay, Michael	EDC Phase II ? LRFD Resistance Factors	$75,750.00	2/7/2014	9/30/2015	FL DEPT OF TRANSPORTATION RESEARCH CTR
Mcvay, Michael	Detection of Sinkhole Anomalies, Phase II	$150,500.00	10/2/2014	4/30/2016	FL DEPT OF TRANSPORTATION RESEARCH CTR
Mcvay, Michael	Bearing Resistance of Large Diameter Open-End Piles (LDO	$210,500.00	9/8/2014	9/7/2017	SHANNON & WILSON
Meert, Joseph	Ediacaran Paleomagnetism and Geochronology of Eastern	$301,950.00	7/1/2011	6/30/2015	NATL SCIENCE FOU
Meert, Joseph	Building India: Clues from the Singhbhum Craton & South	$230,007.00	8/15/2014	7/31/2016	NATL SCIENCE FOU
Migliaccio, Kati White	Smart Irrigation: Smartphone technology for managing urb	$398,800.00	9/1/2011	8/31/2015	US DEPT OF AG NATL INST OF FOOD & AG
Migliaccio, Kati White	Smart Apps for Smart Farmers	$188,427.75	12/16/2013	12/31/2015	FL DEPT OF AG AND CONSUMER SER
Migliaccio, Kati White	To develop agronomic and irrigation strategies to manage	$442,003.00	6/11/2013	9/30/2016	US DEPT OF AG NATURAL RESOURCES CONSERV
Mohseni, Ana	Field Testing and Calibration of the Vertical Insitu Per	$74,243.00	3/31/2014	4/30/2015	FL DEPT OF TRANSPORTATION RESEARCH CTR
Mohseni, Kamran	A Multi-Scale Investigation of Liquid-Sold-Gas Interacti	$490,421.00	2/1/2011	12/31/2014	US NAVY OFFICE OF NAVAL RES
Mohseni, Kamran	A Global Nonlinear Reduced Order Modeling Technique for	$316,737.00	6/15/2011	5/31/2015	US NAVY OFFICE OF NAVAL RES
Mohseni, Kamran	Observable Divergence Theorem: A new technique for deriv	$300,101.00	9/1/2011	8/31/2015	NATL SCIENCE FOU
Mohseni, Kamran	Biomechanics and Sensory Mechanisms of Cephalopods Propu	$608,770.00	10/1/2012	9/30/2015	US NAVY OFFICE OF NAVAL RES
Mohseni, Kamran	Dynamic Data-Driven UAV Network for Plume Characterizati	$740,483.23	2/15/2013	2/14/2016	US AIR FORCE AFOSR
Mohseni, Kamran	Microscale Heat Transfer in Digital Microfluidics	$300,000.00	7/1/2014	6/30/2017	NATL SCIENCE FOU
Mohseni, Kamran	Inviscid Regularization of Fluid-Fluid and Wall-Fluid In	$489,329.97	9/15/2014	2/14/2018	US AIR FORCE AFOSR
Monaghan, Paul F	A Community Based Stormwater Management Program for the	$50,000.00	7/1/2013	12/31/2014	NATL FISH AND WILDLIFE FOU
Monaghan, Paul F	A Community Based Stormwater Management Program for the	$25,000.00	7/1/2013	12/31/2014	TAMPA BAY ESTUARY PROGRAM
Monaghan, Paul F	Education Program to Reduce Propellor Scarring in Pine I	$60,000.00	8/31/2013	1/31/2015	LEE CNTY BOARD OF COMMISSIONERS

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Morgan, Kelly	Outreach and Education in Support of Agricultural BMP Im	$166,100.00	10/13/2014	6/30/2015	FL DEPT OF AG AND CONSUMER SER
Morgan, Kelly	UF - Assistance with implementation of FDACS BMP program	$71,500.00	7/1/2014	6/30/2015	FL DEPT OF AG AND CONSUMER SER
Morgan, Kelly	Irrigation Scheduling to Address Water Demand of Greenin	$96,000.00	10/1/2013	3/31/2016	SW FL WATER MGMT DISTRICT
Morgan, Kelly	Citrus Irrigation Management to Increase Young Tree Grow	$79,400.00	10/1/2008	6/30/2016	WATER MANAGEMENT DISTRICTS
Morgan, Kelly	Smart Phone Apps: Scientific Validation Quantification o	$412,000.00	9/1/2013	8/31/2016	US DEPT OF AG NATL INST OF FOOD & AG
Morgan, Kelly	Effect of selected concentrations of calcium bicarbonate	$349,491.00	5/1/2014	4/30/2017	CITRUS RESEARCH & DEVELOPMENT FOU
Mueller, Paul A	Integrating Optical Emission and Isotope Ratio	$85,066.00	5/1/2010	12/31/2014	UF DIV OF SPONSORED RES OPPORTUNITY FUND
Mueller, Paul A	Collaborative Research: Precambrian Crustal Evolution i	$270,182.00	5/1/2012	4/30/2015	NATL SCIENCE FOU
Mueller, Paul A	Collaborative Research: Geochemical Imaging of Post-Pang	$276,118.00	8/1/2011	7/31/2015	NATL SCIENCE FOU
Mueller, Paul A	RUI: COLLABORATIVE RESEARCH - Age, Petrology, and Tecton	$139,942.00	8/15/2012	7/31/2015	NATL SCIENCE FOU
Mueller, Paul A	MULTIPLE SPONSORS - NON FEDERAL	$50,275.00	11/4/1999	11/3/2016	MULTIPLE SPONSORS
Muller, Keith	Multilevel and Longitudinal Study Sample Size Tools	$2,304,632.00	12/9/2010	11/30/2015	NATL INST OF HLTH
Muller, Keith	Power and Sample Size for Multilevel and Longitudinal	$50,000.00	9/28/2014	9/27/2017	NATL INST OF HLTH NLM
Muller, Keith	A Master Course on Power for Multilevel and Longitudinal	$805,732.00	8/25/2014	6/30/2018	NATL INST OF HLTH NIGMS
Murie, Debra Jean	Regional Age Structure, Reproductive Biology and Trophic	$110,146.00	9/1/2011	8/31/2015	FL STATE UNIV
Murie, Debra Jean	To Vent of Descend? Evaluation Seasonal Release Mortalit	$343,412.00	9/1/2012	8/31/2015	US DEPT OF COMM NATL OCEANIC & ATMOS ADM
Murie, Debra Jean	Spatial and Temporal Effects of the Deep Water Horizon	$898,807.00	10/1/2012	12/31/2015	CONSORTIUM FOR OCEAN LEADERSHIP
Murie, Debra Jean	Ecological Function and Recovery of Biological	$2,509,531.00	9/4/2013	8/31/2016	US DEPT OF INT BUR OF OCEAN ENERGY MGMT
Murray, Gerald	DDR: The Tree Farmers of Haiti: Documenting the Domestic	$23,140.00	7/1/2013	12/31/2014	NATL SCIENCE FOU

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Oakley, Mary Constance Lucier	Evaluation of Water Farming as a Means of Providing Wate	$156,400.00	7/14/2014	7/13/2017	SO FL WATER MGMT DISTRICT
O'dell, William	East Central Florida RPC	$168,995.00	2/1/2012	1/31/2015	EAST CENTRAL FL REG PLANNING CNCL
O'dell, William	City of Boca Raton Community Redevelopment Agency	$72,300.00	9/9/2013	3/8/2015	CITY OF BOCA RATON
O'dell, William	Analysis of Impediments ConPlan	$87,500.00	5/5/2010	12/31/2015	CITY OF JACKSONVILLE
Overholt, William	Acquisition of Goods and Services	$16,500.00	9/1/2014	4/8/2015	US DEPT OF AG AG RES SVC
Overholt, William	Acquisition of Goods and Services	$30,000.00	5/1/2014	4/30/2015	US DEPT OF AG AG RES SVC
Overholt, William	Exploration and testing of natural enemies of cogongrass	$34,265.00	8/18/2014	6/4/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Overholt, William	Improving rearing and establishment success of the air p	$39,600.00	7/30/2014	6/4/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Overholt, William	Understanding abiotic and biotic interactions that may a	$35,046.00	8/18/2014	6/4/2015	FL FISH & WILDLIFE CONSRV COMMISSION
Overholt, William	Biological control of Invasive Exotic Plants	$720,000.00	7/1/2014	6/30/2015	FL DEPT OF AG AND CONSUMER SER
Paulay, Gustav	Curation & Digitization of Invertebrate collections	$339,303.00	6/1/2012	5/31/2015	NATL SCIENCE FOU
Paulay, Gustav	DIGG: Loss of swimming in "Swimming Crabs"	$19,487.00	3/1/2014	5/31/2015	NATL SCIENCE FOU
Peng, Zhong-Ren	Development of Seal Level Rise Adaptation Planning	$180,000.00	2/1/2012	1/31/2015	UNIV OF SOUTHERN MISSISSIPPI
Peng, Zhong-Ren	UF Research Agreement for Grad Intern	$154,700.00	7/1/2010	6/30/2015	REG PLANNING CNCL NORTH CENTRAL FL
Perz, Stephen	DSR matching support	$37,500.00	9/1/2012	6/30/2015	UF DIV OF SPONSORED RES MATCHING FUNDS
Perz, Stephen	Higher ED for Monitoring and Biodiversity in the Amazon	$749,880.00	9/1/2012	6/30/2015	AM COUNCIL ON EDUCATION
Perz, Stephen	CNH-Global Sensitivity & Uncertainty	$1,435,000.00	9/1/2011	8/31/2015	NATL SCIENCE FOU
Perz, Stephen	Matching Funds for Conservation of the Andes-Amazon	$10,000.00	7/3/2012	9/29/2016	UF DIV OF SPONSORED RES MATCHING FUNDS
Perz, Stephen	Consolidating Regional Environmental Management Capacity	$4,602,033.00	9/30/2011	9/29/2016	US AGCY INTL DEV, INTL DEV
Pine III, William E	Assessing juvenile fish responses to water release	$47,654.21	7/23/2012	9/30/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Pine III, William E	Assessment of South Atlantic Landscape Conservation Coop	$119,973.00	8/30/2013	12/31/2015	US DEPT OF INTERIOR FISH AND WILDLIFE SE
Pine III, William E	Resolving uncertainty in natural mortality and movement	$33,018.87	8/15/2014	7/31/2016	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Prevatt, David	Impact of Spray Foam Insulation on Durability of Plywood	$90,102.00	10/10/2014	6/30/2015	FL DEPT OF BUS AND PROF REGULATION
Prevatt, David	CAREER: Tornado-Resilient Structural Retrofits for Susta	$400,000.00	3/1/2012	2/28/2017	NATL SCIENCE FOU
Prevatt, David	Evaluation of Wind Uplift Pressures on Air Permeable Dis	$293,000.00	8/15/2014	8/14/2017	METAL CONSTRUCTION ASSO
Qiu, Peihua	IPA for Baiming Zou	$25,560.00	6/1/2014	5/31/2015	US DEPT OF VETERANS AFFAIRS
Qiu, Peihua	IPA for Samuel Wu (07/01/2014 - 06/30/2015)	$11,287.62	7/1/2014	6/30/2015	US DEPT OF VETERANS AFFAIRS
Qiu, Peihua	New Methods for Sequential Monitoring of Longitudinal Pa	$39,617.00	8/15/2014	7/31/2015	NATL SCIENCE FOU
Qiu, Peihua	IPA for Samuel Wu	$150,077.27	10/23/2013	9/30/2015	US DEPT OF VETERANS AFFAIRS
Ray, Anne	Florida Housing Data Clearinghouse 2014/2015	$195,000.00	7/1/2014	6/30/2015	FL HOUSING FINANCE CORP
Ray, Anne	HUD PD&R Research Partnership Initiative	$170,000.00	9/27/2013	1/27/2016	US DEPT HOUSING AND URBAN DEV
Ray, Anne	Multifamily Energy Efficient Consumption, Tenant Stabili	$370,000.00	1/1/2014	12/31/2016	MACARTHUR FOU, JOHN D & CATH
Ribeiro Do Valle, Denis	Quantifying the Public Health Impacts of DAMS in the Bra	$84,000.00	8/1/2014	7/31/2016	UF DIV OF SPONSORED RES OPPORTUNITY FUND
Scheffrahn, Rudolf H	Mimimum Lethal Accumulated Dosage of Zythor? (Sulfuryl F	$18,750.00	4/1/2014	4/1/2015	ENSYSTEX INC
Scheffrahn, Rudolf H	Fumigant efficacy of BASF compound	$31,500.00	8/1/2014	8/31/2015	BASF CORP
Schumann, Arnold	Improving the uptake efficiency of nutrients applied to	$47,500.00	7/1/2012	12/31/2014	CITRUS RESEARCH & DEVELOPMENT FOU
Schumann, Arnold	Are there declines in hydraulic conductivity and drought	$181,130.00	4/1/2013	3/31/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Schumann, Arnold	Advanced Production Systems (ACPS) for efficient, sustai	$414,039.00	7/1/2012	6/30/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Schumann, Arnold	Bringing young citrus trees infected with Candidatus Lib	$152,952.00	7/1/2012	6/30/2015	CITRUS RESEARCH & DEVELOPMENT FOU

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Schwartz, Eric M	Machine Intelligence Lab White Papers	$9,799.00	6/30/2014	6/29/2015	HARRIS CORP
Shelnutt, Karla Pagan	Family Nutrition Program	$21,861,015.10	10/1/2010	9/30/2016	FL DEPT OF CHILDREN AND FAMILIES
Shenkman, Elizabeth	Texas EQRO	$20,427,136.15	9/1/2013	2/28/2015	STATE OF TEXAS HLTH HUMAN SERV COM
Shenkman, Elizabeth	VA IPA - Jonathan Shuster	$27,751.26	6/1/2014	5/31/2015	US DEPT OF VETERANS AFFAIRS
Shenkman, Elizabeth	Treo/3M Data Project	$186,556.87	6/26/2014	6/25/2015	3M COMPANY
Shenkman, Elizabeth	Bladder Cancer Outcomes and Impact Study (BCOIS)	$34,967.00	4/1/2014	6/30/2015	MOFFITT CANCER CTR, H LEE
Shenkman, Elizabeth	Evaluation of Quality of Care in CMS Network	$1,732,346.00	1/1/2013	6/30/2015	FL DEPT OF HLTH CHILDRENS MED SERVS
Shenkman, Elizabeth	Florida KidCare Evaluation 2012-2015	$1,591,950.00	11/5/2012	6/30/2015	AGCY FOR HLTH CARE ADMN
Shenkman, Elizabeth	External Quality Review-Medical Quality Auditing Service	$1,579,794.00	1/1/2014	12/31/2015	FL HEALTHY KIDS CORP
Shenkman, Elizabeth	Comparative effect of managed care on quality and costs	$40,034.00	2/1/2015	1/31/2016	NATL INST OF HLTH NIMH
Shenkman, Elizabeth	VA IPA - Bruce Vogel	$93,107.66	8/1/2014	6/30/2016	US DEPT OF VETERANS AFFAIRS
Shenkman, Elizabeth	OneFlorida Cancer Control Network	$533,333.33	6/30/2014	6/30/2017	FL DEPT OF HLTH
Shenkman, Elizabeth	Texas Quality of Care Assessment	$999,994.00	5/30/2014	8/31/2017	STATE OF TEXAS DEPT AGING & DISABLED SER
Shukla, Sanjay	Evaluation of Bed Geometry for Water Conservation on Dri	$200,000.00	4/30/2012	6/30/2016	SW FL WATER MGMT DISTRICT
Shukla, Sanjay	Enhancing Nutrient Removal of Agricultural Stormwater De	$371,081.93	10/14/2013	10/13/2017	FL DEPT OF ENVIRONMENTAL PROTECT
Shuster, Jonathan J	Statistical Services for Testostarone Study	$2,500.00	8/12/2014	8/11/2015	US DEPT OF VETERANS AFFAIRS
Soltis, Douglas	DISSERTATION RESEARCH: Tracking Timing of Migration and	$13,109.00	5/1/2013	4/30/2015	NATL SCIENCE FOU
Soltis, Douglas	Collaborative Research: Genomic consequences of recent	$361,890.00	4/1/2012	5/31/2015	NATL SCIENCE FOU
Soltis, Douglas	Plant exploration to collect wild cucurbita Germplasm	$5,907.00	8/15/2014	9/30/2015	US DEPT OF AG AG RES SVC
Soltis, Douglas	Dissertation Research;Genomic study squash and pumpkin	$19,461.00	6/1/2014	5/31/2016	NATL SCIENCE FOU

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Soltis, Pamela S	Evolution of Flower color in Polemoniaceae	$1,000.00	4/17/2014	4/16/2015	INT'L ASSO FOR PLANT TAXONOMY (USA)
Soltis, Pamela S	Further study of the Evolution of Flower Color.	$1,000.00	5/19/2014	5/18/2015	AMER SOC OF PLANT TAXONOMISTS
Soltis, Pamela S	Reticulation and chromosomal evolution in Amaryllidaceae	$18,979.00	6/1/2013	7/31/2015	NATL SCIENCE FOU
Soltis, Pamela S	Dissertation:development genetics Sattugilia	$19,291.00	6/1/2014	5/31/2016	NATL SCIENCE FOU
Soltis, Pamela S	TRPGR:An Evolutionary Reference for Plant Biology	$1,309,925.00	5/3/2010	6/30/2016	PENNSYLVANIA STATE UNIV
Southworth, Jane	Death, disease and distribution	$36,000.00	8/1/2014	7/31/2015	UF INFORMATICS INSTITUTE SEED FUND
Srinivasan, Sivaramakrishnan	Crash Prediction Method for Freeway Facilities with High	$217,593.00	5/21/2013	12/31/2014	FL DEPT OF TRANSPORTATION
Srinivasan, Sivaramakrishnan	Policy Implications of Automated Vehicle Technology	$234,976.00	6/2/2014	11/30/2015	FL DEPT OF TRANSPORTATION RESEARCH CTR
Stansly, Philip Anzolut	Role of Nutritional and Insecticidal Treatments in Mitig	$199,960.00	2/15/2012	2/14/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Stansly, Philip Anzolut	Optimizing Spatial Distribution of Pheromone Traps for M	$211,680.00	4/1/2013	3/31/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Stansly, Philip Anzolut	Effective and Sustainable Insecticidal Control of Citrus	$205,539.72	6/1/2012	5/31/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Stansly, Philip Anzolut	Management Tactics Based on Psyllid	$296,000.00	6/1/2012	5/31/2015	CITRUS RESEARCH & DEVELOPMENT FOU
Stansly, Philip Anzolut	Mitigating Strategies to Slow the Spread of Tuta absolut	$24,994.00	8/1/2014	7/31/2015	US DEPT OF AG APHIS
Stansly, Philip Anzolut	Extension Model to Improve ACP Control in Citrus Health	$74,074.40	12/9/2013	12/31/2015	FL SPECIALTY CROP FOU
Stansly, Philip Anzolut	Management of Insecticide Resistance in Asian Citrus Psy	$86,342.97	7/1/2012	12/31/2015	INSECTICIDE RESISTANCE ACTION COMMITTEE
Steadman, David W	Collaborative: Long-termDynamics animal&plant in Bahamas	$164,573.00	9/1/2011	2/28/2015	NATL SCIENCE FOU
Stepp, John	Subcontract from Tufts University on NSF Award	$161,311.00	9/1/2013	8/31/2015	TUFTS UNIVERSITY
Su, Nan-Yao	IFAS Service Program	$6,667.00	4/22/2014	4/21/2019	MULTIPLE SPONSORS
Thomas, Alexis G	Environmental Database Project	$1,600,000.00	7/3/2013	6/30/2018	FL DEPT OF TRANSPORTATION
Vallad, Gary Edward	Protocol No. 2014-01-53-11	$7,500.00	3/1/2014	12/31/2014	MONSANTO COMPANY
Vallad, Gary Edward	Improving the efficacy of Methyl Bromide alternatives fo	$360,185.00	9/1/2012	8/31/2015	US DEPT OF AG NATL INST OF FOOD & AG

Award PI Name	Award Title	Award Amount	Award Begin	Award End	Sponsor Name
Vallad, Gary Edward	Emerging Specialty Crops: Development of Pomegranate and	$173,705.45	1/20/2014	12/31/2015	FL SPECIALTY CROP FOU
VanBruggen, Ariena	Field Trial to Evaluate HLB Control via Passive Trunk In	$89,999.03	11/7/2014	9/11/2015	FL DEPT OF AG AND CONSUMER SER
Watling, James I	Improving models of climate change	$166,992.50	7/1/2012	6/30/2015	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Watling, James I	Comparability of landscape connectivity products	$167,328.00	10/1/2012	9/30/2015	US DEPT OF INTERIOR FISH AND WILDLIFE SE
Watling, James I	Setting conservation targets for the Peninsular Florida	$91,367.00	9/1/2013	8/31/2016	US DEPT OF INTERIOR US GEOLOGICAL SURVEY
Williams, Norris	Digitizing Latin American & other type specimens LAPI	$32,386.72	12/16/2010	12/31/2014	MELLON FOU, ANDREW W
Williams, Norris	"Digitization PEN: Digitization of Florida Hebaria	$92,757.00	7/1/2012	6/30/2015	NATL SCIENCE FOU
Williams, Norris	Digitization TCN:Collaborative Research: The key to the	$65,198.00	8/15/2014	8/14/2015	FL STATE UNIV
Willmott, Keith	Molecular phylogeny & Biogeography of a highly diverse	$19,154.00	6/1/2013	5/31/2015	NATL SCIENCE FOU
Willmott, Keith	Arts Phyogeny & systematic revision Cryptic Euptychiian	$346,500.00	4/1/2013	3/31/2017	NATL SCIENCE FOU
Willmott, Keith	Collaborative:Connecting diversity to causes in species	$425,528.00	1/1/2014	12/31/2018	NATL SCIENCE FOU
		$136,951,386.63			

Appendix C. Geospatial Needs Matrix

	INFRASTRUCTURE				
MISSION	**HARDWARE**	**SOFTWARE**	**DATA**	**PEOPLE**	**INSTITUTIONAL/ ORG**
LEARNING	Shared, centralized storage (for project data and/or shared data sets) for class duration + buffer period for data download. This need is already accounted for through existing UF IT infrastructure.	Increased capacity for Esri ArcGIS geospatial software access via UFApps. Need to develop a business model for software costs.	Easy to use centralized data portals, access to web and feature map services.	Develop and regularly offer short-training opportunities regarding software, data, and hardware for faculty, staff, and students. Make courses through Esri site licenses available. Explore service model for training instructors.	Governance structure to represent and coordinate University geospatial interests. Need administrative support and continuity to manage.
	Workspaces for temporary storage of masters and doctoral research.	GUI for interfacing courses w/ HiPerGator.	Need budget for acquisition & maintenance of commercial data sets for shared use.	Staff to help identify, acquire and administer free and commerical software. Possibly ICGIS committee and Map Library?	Participate in national/ international GIS activities (example: UF join UCGIS - University Consortium for Geographic Information Science).
	Shared, centralized storage for master and doctoral research results supported by metadata (Institutional Repository). Possible division of results into readily accessible results and archived results.	Explore other relevant geospatial software	Include training on proper data management procedures for all courses involving geospatial data (policies from Data Management & Curation Task Force)		

	INFRASTRUCTURE				
MISSION	**HARDWARE**	**SOFTWARE**	**DATA**	**PEOPLE**	**INSTITUTIONAL/ ORG**
SPONSORED RESEARCH *	Centralized repository to store source data which can be accessed by research and learning projects.	Access to geospatial software through UFApps/ ResearchApps. Investigate current business model for software costs (keep costs low).	Easy to use centralized data portals, access to web and feature map services.	Geospatial support services to assist projects and best practices. FTEs distributed among colleges and libraries. Investigate service model and fee schedule for staffing.	Coordinate with other UF entities engaged in geospatial activities (in particular: Research Computing, UFApps, Informatics Institute, Data Management & Curation Comm, ICGIS).
	Shared, centralized storage for archived and/or published research results (Institutional Repository).	User friendly interface for accessing software and workflow management on UFApps for Research (can Galaxy be used?)	Acquisition & maintenance of commercial data sets.	Develop and offer short-training opportunities for software, data & hardware for faculty, staff & students. Make courses through Esri site licenses available.	Governance structure to represent and coordinate University geospatial interests. Need administrative support and continuity to manage.
	Working storage to support research projects. This need is already accounted for.		Support for PHI and other restricted data via Gator Vault.	Geospatial information science faculty - tenure track distributed amongst geospatial clusters, potentially aligned with Informatics Institute.	Participate in national/ international GIS activities (ex: join UCGIS - University Consortium for Geographic Information Science).
	Server stacks for visualization and interactive web services.			Staff to help identify, acquire and administer free and commercial software. Possibly ICGIS committee and Map Library?	
	Faster network speed - target 1 gigabit for all campus. (Already funded, approx 50% complete)				

	INFRASTRUCTURE				
MISSION	**HARDWARE**	**SOFTWARE**	**DATA**	**PEOPLE**	**INSTITUTIONAL/ ORG**
EXTENSION/ OUTREACH **	Server stacks for visualization and interactive web services (Piggyback on research capacity).	Access to geospatial software through UFApps/ ResearchApps.	Easy to use centralized data portals, access to web and feature map services.	Geospatial support services to assist projects and best practices. FTEs distributed among colleges and libraries. Investigate service model and fee schedule for staffing. (Piggyback on research personnel).	Governance structure to represent and coordinate University geospatial interests. Need administrative support and continuity to manage.
	Explore cloud-based high speed visualization technologies.	User friendly interface for accessing software and workflow management on UFApps for Research (can Galaxy be used?).	Explore cloud-based high speed visualization, data processing, and analytics.	Develop and offer short-training opportunities for software, data, and hardware for faculty, staff, and students. Make courses through Esri site licenses available.	

*research also includes clinical investigation and discovery, as defined by the College of Medicine.

**extension/outreach also includes service learning as undertaken by various units on campus