

**Science and partnerships for adaptation and resilience
to climate change and climate variability**

Submitted by the University of Florida on behalf of the SECC-RISA

Scope of Work – 1 September 2010 through 31 August 2015

The mission of the Southeast Climate Consortium (SECC) is to use advances in climate sciences, including improved capabilities to forecast seasonal climate and long-term climate change, to provide scientifically sound information and decision support tools for agricultural ecosystems, forests and other terrestrial ecosystems, and coastal ecosystems of the SE USA. As a multidisciplinary, multi-institutional team, the SECC conducts research and outreach to a broad community of users and forms partnerships with extension and education organizations to ensure that SECC products are relevant, reliable, and delivered to the public by these organizations through their networks and mechanisms.

In order to meet the growing demands for climate information, including that for climate change and from new ecosystems, the SECC has established four scientific objectives:

1. Working with boundary organizations, planners, regional data clearinghouses, and other stakeholders, assess the needs of decision makers for climate information, their access to and applications of climate information, and time-scales for needed information.
2. Based on stakeholder assessments, develop partnerships with appropriate boundary organizations to meet the climate information needs of stakeholders, particularly in coastal and other terrestrial ecosystems.
3. Provide reliable, timely, probabilistic, and local climate information according to stakeholder needs for adaptation and resilience to climate change and climate variability. Providing this information will require production of downscaled forecasts at the local level and at 1- to 30-year time scales, as well as maintaining and providing historical data and analyses for the region.
4. Through integrated, multi-disciplinary activities, develop decision support tools and information delivery systems that give decision makers access to climate information that will help decision makers manage risks associated with climate change at various time scales.

This Scope of Work will cover the activities of the SECC-RISA for 2010-2011 in three categories: core, coping with drought, and climate change assessment services. In subsequent years, 2011-2015, all activities are considered to be core activities and will be the same as those presented in the original SECC-RISA proposal. Universities conducting research and extension as part of the SECC-RISA include the University of Florida, which is the lead institution, Florida State University, the University of Miami, University of Georgia, Auburn University, and University of Alabama-Huntsville, which are included as subcontracts.

University of Florida Plan of Work

1. Core Activities

Coordination

C.1. Communication and Liaison

The Coordinator organizes regular meetings of the SECC Executive Committee, generally through tele-video conference. In addition, the Coordinator organizes an annual meeting of SECC scientists and *ad hoc* meetings to address specific issues and opportunities. The Coordinator maintains the SECC web site and publishes brochures, fact sheets, and technical reports. The Coordinator serves as liaison to funding agencies, other RISAs, and related organizations to assure timely flow of information. Liaison also represents the SECC at workshops, conferences, and other meetings.

C.2. Partnerships

The Coordinator will assist SECC members in the establishment of new partnerships and maintenance of existing partnerships. Important partnerships include those with other RISAs, Universities, and institutes that conduct climate research and with appropriate extension and outreach organizations in the region.

C.3. Managing Complementary Activities with Different Funding Sources

With eight university members and multiple funding sources, it is important to manage these resources and projects to avoid redundancies and to monitor progress. The Coordinator maintains a database of SECC objectives and activities. The Coordinator will work with the SECC Executive Committee to assure that activities are integrated and efficient in their contributions toward the overall SECC mission, goal, and strategy. A major effort is required each year to manage reporting to funding agencies and submitting annual work plans and budgets. The coordinator ensures that these are done on schedule and also integrates components from different institutions in the SECC when needed.

Activity C.4. Coordination of Outreach and Assessment Activities.

An important role of the SECC is to work with boundary organizations, such as extension, both to assure that SECC research and products are relevant and to help disseminate SECC products through these boundary organizations. Coordinating extension and outreach activities in the region is led by Clyde Fraisse and Dr. Keith Ingram of UF, working with extension faculty at UGA and AU, as well as the state climatologists for all SECC states.

C.5. CIMR 2011

In 2008, the SECC co-hosted CIMR – Climate Information for Managing Risks. We are now organizing a follow up symposium, which will be held in May 2011. The Coordinator and Jim Jones will lead this effort.

Research and Extension

1.1. Quantifying the potential impact of climate change and seasonal climate variability on agricultural ecosystems

Using scenarios developed from other projects that are downscaling IPCC scenarios using statistical and dynamical methods, or developing climate change scenarios based on historical data analyses, we will conduct crop simulations using DSSAT models to quantify the potential impact of climate changes on agricultural ecosystems. Jim Jones will lead this activity with collaboration from Guillermo Baigorria and Fred Royce at UF, and with collaborators at FSU, UAH, GISS and Texas Tech.

1.2. Evaluating options for agricultural use of land to provide environmental services

Previous research has shown that agricultural lands are cooler than urban areas, by as much as 5°C. Using regional climate models (WRF and MM5) in combination with agricultural models, we will investigate the interactive effects of agricultural land use and regional climate, especially temperature and precipitation. We will also explore the implications of land use / land cover impacts on climate, for example, on the relationship between climate and energy demands. Guillermo Baigorria and Jose Hernandez will lead this activity with collaboration from FSU.

1.3. Developing tools and delivery systems for decision support that link climate forecasts and climate change information to agricultural stakeholders for use in decision making and planning.

We will continue efforts to establish an open-source version of AgroClimate and to assist other researchers who have an interest in either implementing AgroClimate in their region or to develop new tools and information for AgroClimate. In addition, we will continue to support the development of new tools and information products to be added to AgroClimate based on the results of other research activities. Clyde Fraisse will lead this activity in collaboration with Tracy Irani, Jim Jones, and Keith Ingram at UF, as well as the state climatologists, and extension faculty from our SECC partners.

1.4. Stakeholder engagement, needs assessment, and policy awareness for coastal communities

Coastal ecosystems face challenges of population growth, salt-water intrusion, sea level rise and storm surge. Sea level rise and storm surge are related, in that higher sea level increases risk of storm surge damage. In this activity, we will collaborate with Sea Grant Extension to design and execute survey of coastal property owners that have purchased their property on critically-eroding beaches subsequent to enactment of Florida Law 2006-273. Recruit and engage focus groups to assess stakeholder and policymakers' sea level rise and storm surge risk perception. We will also develop policy recommendations (including proposed regulatory and/or statutory changes in response to survey/focus group results. Tom Ankersen will lead this activity in collaboration with Wendy-Lin Bartels and Mike Spranger.

1.5. Region-specific implications of climate change on terrestrial ecosystems -- scoping

The SECC is just beginning to work in the area of terrestrial ecosystems. We will begin with the establishment of partnerships, such as with State Fish and Wildlife Conservation Commissions, State Departments of Environmental Protection, State Divisions of Recreation and Parks, county governments, water management agencies, US Forest Service, US Fish and Wildlife Service, US Geological Survey, The Nature Conservancy, and others. Using focus groups and interviews, we will work with these partners to identify the key resources are likely

to have the greatest influences on health and functioning of Florida's terrestrial ecosystems under a changing climate regime and to understand how public, land management agencies and organizations, and economic interests interface with these resources, and how are climate-induced changes likely to impact those relationships. John Hayes will lead this activity in collaboration with Susan Devitt

2. Coping with Drought

2.1. Understanding the interactions among climate, drought, and water supply on agricultural production systems

We will continue previous research that has shown the Agricultural Reference Index for Drought (ARID) to be a potentially valuable generic index for quantifying the impacts of drought on crops. In the next year we will develop databases and methods for calculating ARID on a daily basis and to present results at a 4 km x 4 km scale using Doppler radar estimates of precipitation, satellite estimates of solar radiation, and interpolation of weather station observations of temperature, relative humidity (or dew point) and wind speed using GiST. In addition, we will explore alternatives for forecasting ARID at 30- to 90-day timescales.

Keith Ingram and Clyde Fraisse will lead this activity with collaboration from Prem Woli, UAH, and NCSU.

2.2. Developing a municipal water availability index for managing drought by small water utilities

In 2009 we began a project to develop a drought index for use by municipal water managers. Through preliminary assessments, stakeholders have indicated that they need methods to estimate available water more than an index to quantify drought. Over the next year we will develop such an index for a small municipal water utility in eastern Alabama and then test the ability to extrapolate this index to other similar utilities in the region.

Keith Ingram will lead this activity at UF, in collaboration with Chris Martinez, Auburn, UGA, and NCSU.

2.3. Supporting NIDIS and the SE Pilot

The National Integrated Drought Information System is establishing a pilot project in the Apalachicola-Chattahoochee-Flint River basin of the southeast. We will support this effort through participation in workshops, development of databases, and providing new integrated data sources to the US drought portal.

Keith Ingram will lead this effort at UG, in collaboration with FSU, NCSU, UGA, Auburn, and UAH.

3. Climate Change Assessment Services

3.1. Assessment framework

Conduct literature and web searches for assessment frameworks that have been successfully implemented in other regions and nations. We will evaluate the different frameworks according to several criteria, including: i) how well they can support a national assessment; ii) their ability to balance breadth and depth, as is inherent in a nested matrix

approach; iii) their ability to identify gaps in information and analysis; and iv) compatibility and degree to which they are complementary with frameworks being used by other RISAs. This task will include be conducted in collaboration with the Carolinas RISA, SCIPP and other RISAs to ensure that our activities complement each other to the greatest extent possible.

Jim Jones and Keith Ingram will lead this activity with support from a postdoctoral scientist to be hired and in collaboration with UGA, UM, and UAH.

3.2. Social network analysis

Use results from literature and web searches to identify key institutions, individuals, and communities. Authors and citations will be analyzed to provide insight into levels of collaboration among researchers and the quality of their research. Analysis of information and products disseminated to various stakeholders will provide insight into the sources of information for boundary organizations as well as how and how well information from the scientific community reaches decision makers that are concerned with climate change and sea level rise.

Jim Jones and Keith Ingram will lead this activity with support from a postdoctoral scientist and in collaboration with UM, UGA, and UAH.

3.3. Decision maker surveys

In order to reach as broad a population as possible, we will conduct diverse surveys, most of which will be web-based. We will survey existing institutions and communities, largely building on results of key stakeholder interviews. Numerous workshops and conferences on climate change adaptation and mitigation already planned for the coming year in our region. Instead of conducting separate workshops, we will work with the organizers of those workshops to survey participants.

Jim Jones and Keith Ingram will lead this activity with support from a postdoctoral scientist and in collaboration with UM, UGA, and UAH.

3.4. Key stakeholder interviews

Based on network analysis, previous research, and other contacts, we will interview leaders and other key individuals in public and private institutions that develop, disseminate, or use climate information, as well as those that assess vulnerability or conduct programs aimed at adaptation to and mitigation of climate change and sea level rise. Because it is not possible to interview all leaders and key individuals, we will select interviewees so as to include as broad a spectrum as possible, geographically, sectorally, and socioeconomically. While we will strive to include representatives from groups and communities that have been identified as particularly vulnerable to climate change, we will also study groups and communities that have been as particularly resilient. Moreover, we will collaborate with neighboring RISAs in order to tap into each other's relative strengths so that the process can be most efficient.

The primary objectives of these interviews will be: i) to identify priority issues and information needs for current and potential future climate sensitive decisions; ii) to ascertain how decision makers value climate information and their sources of climate information; iii) to investigate stakeholder perceptions of their vulnerability to climate change at different time scales, e.g. 5, 10, 20, 50 years; iv) to assess stakeholders' perceptions of the relative importance of climate information compared with other information that they consider; v) to identify policy

issues of concern to stakeholders; and vi) to identify the best methods for engaging stakeholders in the research and assessment process.

Jim Jones and Keith Ingram will conduct this activity with support from a postdoctoral scientist.

Research and Outreach Activities – 2011 through 2015

SECC activities are designed to emphasize collaboration across disciplines and institutions. Toward this end, we have organized our efforts into: three ecosystem-based adaptation sectors: coastal, agriculture, and other terrestrial ecosystems; four natural resource sciences: climate, water, land, and energy; and three application sciences: human dimensions, outreach and extension, and integrated systems.

The four principal goals of the agricultural program in the SECC are: 1) to quantify the potential impact of climate change and seasonal climate variability on agriculture and to develop adaptation options; 2) to understand the interactions among climate, drought, and water supply on agricultural production systems; 3) to evaluate options for agricultural use of land to provide environmental services; and 4) to develop tools and delivery systems for decision support that link climate forecasts and climate change information to agricultural stakeholders for use in decision making and planning. We will conduct research aimed at producing information and tools that the stakeholders can use for seasonal to decadal adaptive management and for helping them to prepare for long-term changes in climate and climate variability.

Within the coastal ecosystem, the SECC will focus on four overall research questions in this new program area: 1) How are coastal county governments considering climate change and sea level rise in their policies, what information are they using, and what do they need for more effective policies? 2) To what extent are coastal property owners aware of potential threats of sea level rise, increased storm surge, and climate change issues, and how are they responding to this information? 3) To what extent does existing coastal erosion legislation address stakeholder needs regarding climate change and sea level rise, and are these policies being used by developers and other stakeholders? 4) What information do coastal stakeholders need for information on climate variability, climate forecasts, and climate change? Would they make use of an information and decision support system, and if so, what information and tools are needed?

SECC programs for terrestrial ecosystems will focus on four overall research questions: 1) What key resources are likely to have the greatest influences on health and functioning of Florida's terrestrial ecosystems under a changing climate regime? 2) How do the public, land management agencies and organizations, and economic interests interface with these resources, and how are climate-induced changes likely to impact those relationships? 3) What potential strategies can be adopted to mitigate negative consequences of climate-induced changes in terrestrial ecosystems on societal interests? 4) What are the predicted efficacy, costs, benefits, and environmental consequences of alternative adaptive strategies?

Climate research will include: historical data analysis and downscaling for understanding climate change; decadal climate predictability Impacts of changing land use and land cover on

climate; forecasting of extreme climate events, particularly tropical cyclones; and education and outreach.

Specific water resource research activities will address the following questions: 1) What is the value of using downscaled seasonal to decadal climate forecasts for managing ground and surface water resources at watershed and administrative scales? 2) How do climate variability and climate change affect quality of surface and ground water in relation to land and water management, and how can this information be used to improve management to reduce risks of water contamination? 3) What approaches can be used to integrate models of water resources, climate, land use, and societal water use to increase understanding of the complex inter-relationships among these components? 4) What are the risks of water shortages associated with climate change scenarios in selected case studies and what adaptation options should be considered for reducing those risks? 5) What climate data, information, and other decision support tools are needed by water resource manager partners to use in operational water management and policy making processes? Integral to the research will be social science and extension components to ensure that we understand stakeholder needs and uses of climate information and that we make sure that our information and tools are useful.

Land and energy are new areas of research for the SECC. Important issues of land resources include changes in land use and land cover, which in the SE USA are likely to have greater impact on local temperatures, rainfall, and other climate variables than are greenhouse gases, which the IPCC predicts to have little or no effect on temperatures and precipitation in the southeast. Our research on energy issues will be conducted in collaboration with other organizations that specialize in energy, for example the Florida Energy Sciences Consortium.

The overall goal of the SECC Extension program is to develop and provide information and tools to decision makers that will help them address climatic impacts in the SE USA due to climate variability and change by understanding, and perhaps reducing, the uncertainty that accompanies critical decisions. In particular, Extension seeks to: 1) provide information and tools that decision makers can use to make more informed, reliable, and defensible decisions and to improve protection of resources and efficiency of production systems; 2) develop mitigation and adaptation strategies in collaboration with stakeholders; and 3) produce outreach and education programs suitable for both professional and lay audiences.

An overarching theme of our Human Dimensions activities is that the fundamental structure of climate information use decisions cannot be divorced from their local content. In turn that implies that the estimated economic value of climate information loses meaning if separated from its context of use. Scientists need to know how the public is likely to respond to climate information because those responses alter the economic influence of climatic impacts. Policy makers should understand user needs, to realize the potential economic value from the emerging technology of climate prediction.. SECC RISA activities for human dimensions will have two parts: 1) economic and policy decision analysis; and 2) qualitative assessments and evaluation.

Research questions that will guide our integrated systems analysis efforts will be based on needs from the ecosystems and water resources program sectors to make sure that our efforts are based on needs for information and tools that help stakeholders. For example, activities will be undertaken by: 1) climate and agricultural researchers to study implications of changes in land use on crop production and feedbacks on local to regional climate; 2) climate and hydrology

scientists to develop a Water Resource Prediction Platform needed by water managers to incorporate climate forecast and climate change information into their planning and operational processes; and 3) economic, agriculture, and climate scientists to evaluate adaptation options for managing agriculture under various climate change scenarios and policies. These are only a few examples. As research needs are identified in all sectors, we will design integrated systems analysis activities to address those needs. These methods are embraced as a core part of the SECC culture for integrating across physical, biological, hydrological, economic, and social science disciplines and stakeholders.

Additional detail on these research programs is given in the SECC RISA proposal at SEClimate.org.

Research and Outreach Activities at FSU, UGA, AU, UAH, and UM

Research to be conducted in sub-contracts to FSU, UGA, AU, UAH, and UM is detailed in the attachments, as are their budget details and budget justification.

Budget Justification

Budget Strategy. The UF budget was allocated to expand the emphasis of the SECC RISA to other sectors that are vulnerable to climate variability and change, building on our experience and approach in climate forecast and climate variability use in agriculture for managing climate-related risk. Although the SECC RISA also worked on water resources management, most of our resources at UF had gone into agriculture to conduct research and extension programs, including the development and transition of AgroClimate.org to the Extension service. Thus, budgets are allocated for social science assessment activities, for engaging legal scholars who assess and inform policy and new activities emphasizing coastal issues and terrestrial ecosystems in addition to agriculture and water. The budget was also allocated with a strategy of building leveraging funds from the different sectors, similar to what we successfully did in agriculture in the last 10 years. Thus, most personnel will be supported part time to initiate new research and extension activities, working with new SECC RISA investigators in these new sectors. This strategy also will bring new stakeholders into partnerships with the SECC RISA, including Sea Grant and several environmental NGOs as described in the body of the proposal.

Faculty and Scientific Personnel. University of Florida faculty salaries are mostly paid by the university, and the only salary payments listed below are for faculty who will receive part of their salaries from the project at some time during the 5-year duration.

- *Senior PI* (JW Jones) will be paid part time during years 1, 3-5 (1 month in year 1, 1/2 month in year 3 and 1.5 months in years 4-5). He will provide overall leadership for the SECC RISA. Fringe benefits are computed at 2.1% of the salary.
- *SECC RISA Coordinator* (KT Ingram) will be paid 0.50 FTE from these funds each of the 5 years. In addition to the annual salary, there is a cost of 27.8% of the salary for fringe benefits. Ingram is responsible for coordinating the research and extension program for all participating institutions.
- *UF Climate Extension Specialist* (CW Fraise) will be paid 10% from this project during the first 3 years of the project, then 12.5% during years 4 and 5. In addition to the annual salary,

there is a cost of 27.8% of the salary for fringe benefits. Fraisse will provide leadership for the Extension programs for the RISA, and he will conduct extension programs and develop outreach material and workshops in Florida, working with other investigators in agricultural, coastal, and water resources areas.

- *Assistant Scientist* (G. Baigorria) will be supported for 5% of his time on the project in the first 3 years and 10% during years 4-5. Baigorria is responsible for leading the activity for downscaling climate information for use in agricultural models. Benefits are computed at 27.8%.
- *Post doc assistant in Extension* will be funded at ¼ time in year 3 and ½ time in years 4-5 and will work under Fraisse.
- *Social Scientist Post Doc* (W. Bartels) will be responsible for conducting assessments of stakeholder perceptions of climate change, sea level rise, and storm surge in the coastal sector in the first 3 years, then for conducting similar assessments during years 3-5 in the terrestrial ecosystem sector. She will work with a new Social Scientist in the project (Irani) and with leaders of the coastal and terrestrial ecosystem sectors. She will receive half time support from the RISA for 3 years and one-fourth time support for years 4-5. Fringe benefits for post docs at UF is 18.3% of her salary.
- *Social Scientist Post Doc* will be hired in year 1 to support the Climate Change Assessment Services project.
- *Hydrology/Climate Modeler Post Doc* will be hired for years 1-3 to work with W. Graham to develop an integrated framework. Fringe benefits are computed using the 18.3% of salary figure. W. Graham is paid by the UF and will not be paid from the project.
- *Master of Law Assistant* will be hired for the first 3 years of the RISA to work with T. Ankersen in the coastal assessments and policy analysis activities. The fringe benefits for the assistant are 2.1%. In year 1 \$8,109 is budgeted as a partial tuition waivers is budget for the MS Law assistant, with funds for the remaining tuition to be provided from other sources.
- *Terrestrial Ecosystem Post Doc* will be hired at the ½ time level during the last two years of the project to work with J. Hayes on options for adaptive management of ecosystems. Fringe benefits are computed using the UF rate of 18.3% of salary.
- *Administrative support*. Three months of salary for administrative support is provided in year 1 within the Climate Change Assessment Services activity. Fringe benefits are computed at 18.3%.
- *Graduate student*. Under the guidance of G. Baigorria, a 1/3 time MS graduate student will evaluate different approaches for use in agricultural models during the first 3 years. Fringe benefits are computed using the UF-figure of 11.6% of salary. In addition, tuition waiver is charged at \$8,109, \$9,325, and \$10,724 per year for the duration of the MSc degree program of the student, the required UF rates.

Travel. Total budget allocated for travel varies between \$18,000 and \$33,722 per year for the 5 years. The travel funds will be used to support in-state and SE Region travel for performing proposed research and extension programs and to attend two annual SECC RISA meetings: one for annual planning and the other for reviewing progress. In addition, some funds will be used to support investigators' travel to national meetings and, in the case of the PI and SECC Coordinator, to report activities to NOAA.

In-state/SE Region – RISA meetings. Each year, the SECC RISA will use \$7,500 to pay for 15 trips to SECC RISA planning and/or review meetings. These annual meetings will be held in Atlanta or Orlando, and costs per meeting are estimated to be the same for each attendee, \$500

per trip, which amounts to \$7,500 per year. This per trip estimate is based on automobile transportation (shared travel) of \$100 per trip per person, 2 days hotel cost of \$200, registration fee of \$70, per diem of \$80, and miscellaneous expenses of \$50.

In-state/SE Region – Assessments of coastal and terrestrial ecosystem sectors. Social science assessments will take place in all years. Costs for these assessments are based on spending a total of 25 days per year on trips to engage stakeholders via workshops and interviews. Costs for these trips are estimated to cost \$50 per day for car rental, \$70 per day for hotel, and \$40 per day for per diem, totaling \$160 per day. This amounts to \$4,000 per year for these surveys to be conducted by the social science team. An additional amount of \$12,000 is included in year 1 to support the Climate Change Assessment Services activities.

In-state/SE Region – Extension workshops (agriculture and coastal). Starting in year 3, funds will be allocated to extension workshops. Although we will attend and contribute to extension workshops during the first 2 years, funds for that participation are provided from other sources. In year 3, we will pay for one trip by an extension specialist to an annual extension meeting in Florida (\$400, based on \$100 car rental for 2 days, \$200 hotel cost for 2 nights, \$80 for per diem, and \$20 for miscellaneous expenses). In years 4 and 5, we will organize extension workshops and pay for 5 extension agents/specialists to attend, which will cost \$2,000 per year.

National meetings. A total of \$6,000 per year will be shared among PIs and other scientific personnel to attend professional meetings to present their work to peers and gain information to strengthen our program. We estimate that each trip will require \$1,500 so this will support 4 of these trips per year. This per meeting figure is estimated on an average basis assuming a meeting registration fee of \$500, airline ticket of \$530, hotel for 3 days of \$300, per diem of \$120, and miscellaneous expenses of \$50.

Cross-campus research visits. Investigators from UF will be working closely with other SECC RISA universities, particularly FSU and the University of Georgia. The number of these visits will vary during the project. We estimate that each trip will be for 4 working days and will cost \$140 for travel by rental car, \$250 for hotel, and \$160 for per diem, totaling \$550 per trip.

Year 1, 4 trips totaling \$2,200

Year 2, no trips

Year 3, 2 trips totaling \$1,100

Year 4, 5 trips totaling \$2,200

Year 5, 4 trips totaling \$2,200

Coordinator and PI travel. Each year, the UF PI and/or SECC Coordinator located at UF will travel to other universities in the RISA to ensure that activities are running smoothly. We estimate that each of these trips will cost \$500 for travel to universities outside Florida (\$100 for car rental, 3 days hotel cost of \$300, and per diem of \$100). For visits to FSU, we estimate the cost to be \$300 (\$100 for car rental, \$150 for hotel for 2 nights, and \$50 for per diem). Trips are scheduled as:

Year 1, Georgia, FSU, and Miami (\$1,300 total)

Year 2, Auburn (\$500 total)

Year 3, Huntsville and Georgia (\$1,000 total)

Year 4, FSU (\$300 total)

Year 5, FSU and Auburn (\$800 total).

In addition, a symposium will be held by the SECC RISA in Year 4, and \$3,000 will be used to support travel of the Coordinator and PI to this meeting (\$1,500 each, assuming the same costs as for the national meeting per person cost above). In year 5, an additional \$1,500 is allocated for

the Coordinator/Co-PI to attend a national scientific meeting, using the same cost basis as above for national meeting travel.

Equipment. Three computers will be purchased during the 5 years, one in year 1 for the social scientist post doc (\$2,000), one in year 3 for the Assistant Scientist (\$2,000), and one in year 4 for the Extension post doc (\$2,000). These costs are based on a Mac notebook for the social scientist and high-end desktops for the others.

Other Costs

SECC Research Reports. We estimate that we will publish 4 SECC research reports per year for the first 2 years, followed by 5 per year for the last 3 years of the project. The cost for printing each is estimated to be \$300, resulting in per year costs of \$2,000 for year 1, \$1,200 for year 2 and \$1,500 for years 3-5.

Publications. Grants must pay for page charges for refereed scientific publications that charge them. We estimate that the cost per paper for scientific journals is \$1,000. We have allocated \$2,000 for year 1, \$1,000 each for years 2-3, \$3,000 for year 4, and \$2,000 for year 5 to pay for publishing a total of 8 scientific papers.

Communications and Mailing Costs. Costs for mailing and other shipping (including express mail) will be \$2,175, \$290, \$479, \$180, and \$428 for years 1-5, respectively, for the RISA component of the SECC.

Software. Software licenses are estimated at \$800 per year for Linux licenses and \$2,000 for software to support the Climate Change Assessment Services activities in year 1.

Workshops and focus groups. Supplies for workshops and focus groups, including notebooks, tablets, and flip charts, is budgeted at \$2,000 for the Climate Change Assessment Services in year 1.

Subcontracts

Florida State University (FSU) will receive \$170,000 in year 1 and \$100,000 in each of years 2-5 as explained in the FSU attachment.

University of Georgia (UGA) will receive \$145,000 in year 1 and \$75,000 in each of years 2-5 as explained in the UGA attachment.

University of Alabama at Huntsville (UAH) will receive \$110,000 in year 1 and \$50,000 in each of years 2-5 as explained in the UAH attachment.

Auburn University (AU) will receive \$70,000 in year 1 and \$50,00 in each of years 2-5 as explained in the AU attachment.

The University of Miami (UM) will receive \$200,000 in year 1 and \$175,000 per year for years 2-5 as described in the UM attachment.

Indirect Costs. The standard indirect rate for the University of Florida, IFAS research is 46.5% of the modified total direct costs, which exclude graduate student tuition and equipment (computer) costs for items exceeding \$1000, and SECC subcontracts.

SECC Budget, Year 1

	Core	CWD	CCAS	Total
Salaries				
PI: JW Jones	4,000	0	12,000	16,000
Coordinator: KT Ingram	22,000	14,000	5,000	41,000
Climate Extension : CW Fraiss	7,700	0	0	7,700
Assistant In: G. Baigorria	3,100	0	0	3,100
Post doc, anthropology, Bart	25,000	0	0	25,000
Post doc, hydrology	15,000	7,000	0	22,000
Post doc, CCAS	0	0	45,000	45,000
Post doc, terrestrial ecosyste	0	0	0	0
Post doc, extension commur	0	0	0	0
Master of Law Asst.	18,000	0	0	18,000
MSc grad student	15,000	0	0	15,000
Admin support	0	0	5,000	5,000
Subtotal	109,800	21,000	67,000	197,800
Fringe benefits				
Jones, 2.1%	84	0	252	336
Ingram, 27.8%	6,116	3,892	1,390	11,398
Fraisse, 27.8%	2,141	0	0	2,141
Baigorria, 27.8%	862	0	0	862
Bartels, 18.3%	4,575	0	0	4,575
Post doc, 18.3%	2,745	1,281	0	4,026
Post doc, 18.3%	0	0	8,235	8,235
Post doc, 18.3%	0	0	0	0
Post doc, 18.3%	0	0	0	0
M Law, 2.1%	378	0	0	378
MSc grad student, 11.6%	1,740	0	0	1,740
Admin support, 18.3%	0	0	915	915
Tuition waiver	16,218	0	0	16,218
Subtotal	34,858	5,173	10,792	50,823
Travel	15,000	6,722	12,000	33,722
Equipment	2,000	0	0	2,000
Supplies	4,534	1,235	4,406	10,175
Subcontracts				
FSU	55,000	55,000	60,000	170,000
UGA	55,000	30,000	60,000	145,000
AU	35,000	35,000	0	70,000
UAH	25,000	25,000	60,000	110,000
UM	170,000	5,000	25,000	200,000
Subtotal	340,000	150,000	205,000	695,000
Total direct	506,192	184,130	299,198	989,520
Indirect	68,808	15,870	43,802	128,480
Total SECC budget	575,000	200,000	343,000	1,118,000

SECC Budget 2010 – 2015

	Year					Total
	1	2	3	4	5	
Salaries						
PI: JW Jones	16,000	0	5,000	15,000	15,300	51,300
Coordinator: KT Ingram	41,000	41,820	42,656	43,510	44,380	213,366
Climate Extension : CW Frais	7,700	7,854	8,011	10,214	10,418	44,197
Assistant In: G. Baigorria	3,100	3,162	3,225	6,579	6,711	22,777
Post doc, anthropology, Bart	25,000	25,500	13,005	13,265	13,530	90,300
Post doc, hydrology	22,000	22,440	22,889	0	0	67,329
Post doc, CCAS	45,000	0	0	0	0	45,000
Post doc, terrestrial ecosyste	0	0	0	20,000	20,400	40,400
Post doc, extension commur	0	0	10,000	20,400	20,808	51,208
Master of Law Asst.	18,000	18,360	9,364	0	0	45,724
MSc grad student	15,000	15,300	15,606	0	0	45,906
Admin support	5,000	0	0	0	0	5,000
Subtotal	197,800	134,436	129,756	128,968	131,547	722,507
Fringe benefits						
Jones, 2.1%	336	0	105	315	321	1,077
Ingram, 27.8%	11,398	11,626	11,858	12,096	12,338	59,316
Fraisse, 27.8%	2,140	2,183	2,227	2,840	2,896	12,286
Baigorria, 27.8%	862	879	897	1,829	1,866	6,333
Bartels, 18.3%	4,575	4,666	2,380	2,427	2,476	16,524
Post doc, 18.3%	4,026	4,106	4,189	0	0	12,321
Post doc, 18.3%	8,235	0	0	0	0	8,235
Post doc, 18.3%	0	0	0	3,660	3,733	7,393
Post doc, 18.3%	0	0	1,830	3,733	3,808	9,371
M Law, 2.1%	378	387	197	0	0	962
MSc grad student, 11.6%	1,740	1,775	1,810	0	0	5,325
Admin support, 18.3%	915	0	0	0	0	915
Tuition waiver	16,218	9,325	10,724	0	0	36,267
Subtotal	50,823	34,947	36,217	26,900	27,438	176,325
Travel	33,722	18,000	20,000	25,000	24,000	120,722
Equipment	2,000	0	2,000	2,000	0	6,000
Supplies	10,175	3,290	3,779	5,480	4,728	27,452
Subcontracts						
FSU	170,000	100,000	100,000	100,000	100,000	570,000
UGA	145,000	75,000	75,000	75,000	75,000	445,000
AU	70,000	50,000	50,000	50,000	50,000	270,000
UAH	110,000	50,000	50,000	50,000	50,000	310,000
UM	200,000	175,000	175,000	175,000	175,000	900,000
Subtotal	695,000	450,000	450,000	450,000	450,000	2,495,000
						0
Total direct	989,520	640,673	641,752	638,348	637,713	3,548,006
Indirect	128,480	84,327	83,248	86,652	87,287	469,994
Total SECC Budget	1,118,000	725,000	725,000	725,000	725,000	4,018,000

2010 RISA Proposal – FSU Scope of Work

Core

1. Use of historical climate data to characterize interannual and multidecadal variability in the Southeast, create scenarios based on past variations, historical data for vulnerability assessments for different stakeholders (O'Brien, State Climatologist at FL, GA, AL)
2. Explore decadal variations and 5-30 year predictions from CMIP5 results (V. Misra, O'Brien)
3. Take advantage of regional dynamic downscaling experiments over the Southeast US to understand the impact of land-use land cover change on climate variations from SI to decadal time scales. (Misra, Y. -K. Lim)
4. Continue crop-climate modeling interaction using DSSAT for SI and decadal variations to improve growing season (summer) predictability (D. -W. Shin, UF)

Coping with Drought

1. Enhance wildfire threat historical assessment, monitoring, and prediction in the Southeast using standard and non-standard data sources (Coop and ASOS, CoCoRaHS, state mesonets, etc), extend predictions to multidecadal and climate change time scales (Zierden, Griffin)
2. Enhancement of *Coastalclimate.org* based on results of UF and UM assessments, include climate change and sea level rise assessment information (O'Brien, Griffin with UGA, UF)

Climate change assessment

1. Continue to education and outreach on climate literacy, climate variability, climate change in partnership with Extension. Provide routine summaries and outlooks through *AgroClimate.org*, participate in *AgroClimate* and other training workshops, adjunct member of UF Extension climate variability and change focus group, provide in-service training (State Climatologists at FSU, UGA, UAH, Extension Climatologists at Auburn, UF)

FBUDGET DISCUSSION

*Department of Meteorology and the
Center for Ocean-Atmospheric Prediction Studies at
THE FLORIDA STATE UNIVERSITY*

This proposal, entitled “*Regional Integrated Sciences and Assessments (RISA)*” is being submitted to the University of Florida as a request for a subcontract and will cover a five year period from September 1, 2010 to August 31, 2015. The funds are federal flow through from NOAA.

Faculty and Scientific Personnel: Dr. James O'Brien, PI, is a Professor Emeritus of Meteorology and Oceanography at the Florida State University. Dr. O'Brien will oversee the management of this project and work closely with the Co-PI to ensure that the projected research goals are met. We are requesting 2 months of salary for Dr. O'Brien in year one of this proposal and for each subsequent year one month of salary support. Dr. Vasubandhu Misra, Co-PI, is an Assistant Professor at the Department of Meteorology at the Florida State University. Dr. Misra will direct the day to day work of the climate scientists in COAPS and direct the graduate students. We are requesting one month of summer salary for Dr. Misra for each year of this project. Mr. David Zierden, the State Climatologist will manage the Florida Climate Center and provide insight to the activities outlined in this proposal. His participation is vital to SECC activities. We are requesting two months of salary in the first year. Ms. Melissa Griffin, Climate Services Assistant at the Center for Ocean-Atmospheric Prediction Studies will provide climate data and data analysis for this project. To support her efforts, we are requesting four months of salary for year one and 2 months of support for years two through five. Mr. Preston Leftwich, a research assistant at the Center for Ocean-Atmospheric Prediction Studies will assist with data analysis as well as journal publications. We are requesting two months of salary in year one for his efforts. Ms. Meredith Field, a research assistant will assist with outreach activities to promote the work of the SECC. We anticipate supporting her for 5 months in year one. We anticipate needing the services of an OPS undergraduate programmer. The undergraduate programmer will write FORTRAN CODE for the Beta products. We anticipate supporting the programmer for a total of 23.5 months of the 60 month project. Finally, we anticipate supporting one graduate research assistant for the duration of the project (60 months). The graduate research assistant will perform research on climate change aspects of the SE USA. For all associated personnel, we anticipate an average 3% salary increase beginning in year 2 and continuing for each of the subsequent years.

Fringe Benefits: Retirement benefits for the Co-PI, the State Climatologist and the Climate Services Assistant are charged at 10.43%. In addition, Social Security (6.20%), Medicare (1.45%), Terminal Leave Pool (1.3%) and Worker's Compensation (0.7%) costs total 9.65%. The PI, Mr. Leftwich and Ms. Field's fringe benefits are charged at 2.15% (1.45% Medicare and 0.7% Worker's Compensation). The OPS undergraduate programmer and the graduate research assistant's fringe benefit rate is charged at 0.7% for Workers Compensation. Along with the retirement and fringe benefit rate for the State Climatologist and the Climate Services Assistant, this project will support the cost of health insurance. The current rate for Mr. Zierden and Ms. Griffin is calculated at the family rate of \$1004.14 per month. Florida State University requires that all project that support graduate research assistants support the health insurance subsidy. The health insurance subsidy is \$575 per student per year.

Travel: We are requesting a total amount of \$19,503 for the duration of this project. We anticipate in years 1-3 that the travel funds will support travel for the PI and/or Co-PI to travel to two meetings (Washington DC and Phoenix AZ) to collaborate with others involved in this research. In years 4-5, we anticipate the travel funds will support travel for the PI or Co-PI to travel to Phoenix, AZ to present research results and collaborate with colleagues. Typically, the travel costs for researchers working on the project will be at the state-contracted airfares which range from \$400 - \$800 for domestic travel. Hotel rates average \$145 - \$175/day. State of Florida meal allowance and per diem rates as of July 1, 2006 are \$36/day and \$80/day

respectively. For international travel, the meal rates and per diem are based on the State of Florida foreign meal allowance and per diem rates. Registration fees are included in the cost of the meetings and are typically \$300 - \$450 excluding honorary dinners and luncheons. Additional costs will be taxis, shuttles and parking as necessary. Generally, the transportation costs will average \$25 to \$40 depending on the distance and parking ranges from \$12 to \$20 per day depending on the venue.

In-State Tuition of Graduate Research Assistant: We are requesting a total of \$48,110 to support the in-state tuition cost for 1 student at 27 credit hours per year for five years. The first year's tuition cost will be \$291.86/hour and will increase by 10% for each subsequent year.

Indirect Cost Rates: The indirect cost rate for The Florida State University is 47% as of July 1, 2006. The Inspection Agency for all State Agencies and the State University System is the State Auditor General's Office. The cognizant Government Audit Agency is the Director of Cost Allocation, Department of Health and Human Services (DHHS) in Washington, DC.

Revised Budget for RISA
 FSU Subcontract
 September 1, 2010 - August 31, 2015

	2010-11		2011-12		2012-13		2013-14		2014-15	
	Mo	Amt	Mo	Amt	Mo	Amt	Mo	Amt	Mo	Amt
1) Salaries & OPS										
PI, J. J. O'Brien (OPS, 60% FTE)	2	20,050	1	10,325	1	10,635	1	10,954	1	11,283
Co-PI, V. Misra	1	8,026	1	8,267	1	8,515	1	8,771	1	9,034
Climatologist, D. Zierden	2	8,342	0	0	0	0	0	0	0	0
Climate Services Asst, M. Griffin	4	10,324	2	5,316	2	5,476	2	5,640	2	5,810
OPS Rsch Asst, P. Leftwich	2	4,000	0	0	0	0	0	0	0	0
OPS Rsch Asst, M. Field	5	6,000	0	0	0	0	0	0	0	0
OPS Undergraduate Programmer	8	9,458	6	7,510	5	5,465	3	3,900	1.5	2,000
Graduate Rsch Assistant	12	21,500	12	22,145	12	22,809	12	23,494	12	24,198
2) Benefits**										
ORP @ 20.08% (Misra, Griffin, Zierden)		5,360		2,727		2,809		2,894		2,981
OPS @ 2.15% + Students @ .7%		863		430		427		427		426
Health Insurance		6,025		2,008		2,008		2,008		2,008
Health insurance subsidy for Grad		575		575		575		575		575
TOTAL SALARIES & BENEFITS:		<u>100,523</u>		<u>59,303</u>		<u>58,719</u>		<u>58,663</u>		<u>58,315</u>
3) Domestic Travel		9,763		2,827		2,822		2,228		1,863
4) In-State Tuition* (27 cr hr/yr)		<u>7,880</u>		<u>8,668</u>		<u>9,535</u>		<u>10,489</u>		<u>11,538</u>
TOTAL DIRECT:		<u>118,166</u>		<u>70,798</u>		<u>71,076</u>		<u>71,380</u>		<u>71,716</u>
INDIRECT COSTS @ 47%:		<u>51,834</u>		<u>29,202</u>		<u>28,924</u>		<u>28,619</u>		<u>28,284</u>
TOTAL PROJECT COST:		<u>170,000</u>		<u>100,000</u>		<u>100,000</u>		<u>100,000</u>		<u>100,000</u>

* Excluded from indirect costs

** 20.08% = 6.2% SS + 1.45% Med + 10.43% Ret + .7% WC + 1.3% Leave Pool (Misra, Griffin, Zierden)

OPS 2.15% = 1.45% Medicare + .7% WC (O'Brien, Leftwich, Field)

Health Insurance = \$1004.14/mo family (Griffin, Zierden)



Division of Sponsored Research
Sponsored Research Services
874 Traditions Way
Tallahassee, Florida 32306-4166
(850) 644-5260 • FAX (850) 644-1464

June 3, 2010

Winifred Phillips
Vice President for Research
Division of Sponsored Research
University of Florida
219 Grinter Hall
PO Box 115500
Gainesville, Florida 32611-5500

RE: Prime Agency: National Oceanic And Atmospheric Administration
Project Title: Regional Integrated Sciences and Assessments (RISA)
Consortium Institution: Florida State University
Duns: 79-087-7419
Principal Investigator: Dr. James O'Brien
FSU Budget: \$570,000.00

Dear Dr. Phillips:

Please consider this to be an official letter of commitment for the above referenced project, and if awarded, Florida State University agrees to negotiate an agreement.

As a consortium partner, Florida State University agrees to provide the services defined in the scope of work on a reasonable best effort basis.

Agreements required in conjunction with this project should reflect **The Florida State University, for and on behalf of its Board of Trustees and their successors and assigns**, as the contracting party. The award and any administrative correspondence should be sent to the address above.

If you need additional information, please contact Julie Wammack at 850-644-8945, fax 850-644-1464 or by email at jwammack@admin.fsu.edu.

Sincerely,


Kirby W. Kemper
Vice President for Research