

**Aim 6 – Extension**  
**PINEMAP Year 2 Final Progress Report**  
**March 2013**

This is the final Aim progress report for year 2 (March 2012-February 2013). Please update the outputs list and provide brief progress updates on milestones and work plan tasks as applicable. The information provided in these reports is used to track Aim-level outputs and outcomes over the course of the project and to fulfill NIFA reporting requirements via the annual continuation proposals and CRIS progress report.

Please return the updated report to Jessica Ireland no later than **March 22**.

**Outputs**

List **Products** developed/completed January 2012-current (including published, in press, or in review peer-reviewed publications; other written materials such as white papers, research summaries, fact sheets, or popular press articles; audio or video products; etc.).

*A list of currently documented Aim 6 year 2 publications is provided; please update as necessary and highlight in yellow any publications added to the list in the March 2013 Progress Report.*

**Peer-reviewed Publications**

Wojcik, D.J., M.C. Monroe, D.C. Adams, and R.R. Plate. Message in a bottleneck?: Attitudes and perceptions of climate change in the U.S. Cooperative Extension Service. *Climatic Change*, in review.

**Research Summaries**

Adams, D.C., M.C. Monroe, R. Plate, and D. Wojcik. *The Six Americas of Climate Change: Perceptions of Southeast Extension Professionals*. PINEMAP Research Summary.

**Internal Webinar Series**

Aim 6 organized and hosted internal webinars for integration of all PINEMAP members. Aim 6 members; other PINEMAP members and additional external lecturers gave Webinar presentations.

- July 13, 2012, Topic: *TerraC/PINEMAP Data Resources*, Speakers: Sabine Grunwald and Brandon Hoover (21 attendees)
- July 27, 2012, Topic: *Assessing Impact of Bioenergy Production on the Age Structure of Surrounding Forest Plantations*, Speaker: Puneet Dwivedi (20 attendees).
- August 17, 2012, Topic: *The Six Americas of Climate Change: Perceptions of Southeast Extension Professionals*, Speakers: Martha Monroe and Damian Adams (33 attendees).
- September 21, 2012, Topic: *Internship Successes and Education Research: PINEMAP's Integrating Education Projects*, Speakers: John Seiler, John Kidd, Martha Monroe and Stephanie Hall (19 attendees).
- October 19, 2012, Topic: *Does Wood-based Electricity Generation Reduce GHG emissions? An Exploration Considering Forestland Holdings, Harvest Age, and Power Plant Capacities*, Speaker: Puneet Dwivedi (24 attendees).
- November 16, 2012, Topic: *Genetic Approaches to Understanding and Increasing the Resilience of Pine Plantations to Climate Change*, Speaker: Ross Whetten (33 attendees).

- January 18, 2013, Topic: PINEMAP Project scaling loblolly pine productivity in the southeastern U.S., Speakers: Randy Wynne, Steve McNulty, and Bob Teskey (46 attendees).
- February 15, 2013, Topic: Aim 1 Overview, Speakers: Tom Fox, Rod Will, Eric Ward, Jason Vogel (31 attendees)

### **Fact Sheets**

#### A. Finalized

- *Southern Region Emerging Forest Threats: Management Options for Healthy Forests*, Lisa Jennings, Leslie Boby, Mark Megalos, William Hubbard and Emrys Treasure.
- *Invasive Plants and Your Forest*, Hilary Cole, Christina Temple and Mark Megalos
- *Forest Land: Health and Resiliency*, Hilary Cole, Christina Temple and Mark Megalos

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#### B. In Progress

- *What can TACCIMO / CACCIMO tell us?* Mark Megalos
- *Obstacles to Delivering Climate Variability Programming to Traditional Audiences*, Mark Megalos, Heather Dinon
- *Frequently Asked Questions about Climate Projections*, Heather Dinon and Ryan Boyles
- *Water Cycle in Forested Lands with Emphasis on Silvopasture Systems*, Shareika Williams and Gwendolyn Boyd
- *Glossary of Climate Terms*, Mark Megalos and Heather Dinon
- *Assessing Forest Vulnerability*, Mark Megalos and Heather Dinon
- *Climate Oscillations: Impacts to Forestry*, Heather Dinon and Ryan Boyles
- *Introduction to Weather and Climate*, Heather Dinon and Ryan Boyles
- *Misconceptions about Global Warming and Climate Change*, Heather Dinon and Ryan Boyles
- *Climate Change and Forestry*, Leslie Boby and Heather Dinon
- *Interpreting Uncertainty of Climate Model Projections*, Heather Dinon and Ryan Boyles
- *Herbicide Use Considerations*, Eric Taylor
- *Minimizing Forest Insect/ Disease Risk: A Practical Landowner Guide*, Mark Megalos
- *Fire Risk and a Changing Climate*, Rachel Burnett

#### C. In Review:

- *Climate change in the Southeastern United States: Opportunities for Adaptation and Mitigation*, Anslei foster and Joshua Idassi
- *Drought in the Southern U.S. and Forests- what you need to know!*, Rachel Burnett, Heather Dinon, Ryan Boyles, and Mark Megalos
- *What's Under the Umbrella that is Climate?*, Heather Dinon and Ryan Boyles
- *To Plant or Not To Plant: New Timber Stand Drought Risk Assessment*, Eric Taylor and Matthew Bonham and others

### **Events/Activities** (January 2012-current)

® Provide a bulleted list of presentations (oral and poster) given at meetings or conferences. The format for citing presentations is as follows:

Presenter(s)/Author(s). Date. Name/title of meeting/conference, location.

\*Indicate poster presentations by placing [poster] at end of citation.

*Highlight in yellow presentations added to the list in the March 2013 Progress Report.*

### **July**

- Dinon, H., L. Bobby, M. Bonham, G. Boyd, R. Boyles, B. Hubbard, J. Idassi, T. Martin, M. Megalos, M. Monroe, and E. Taylor. July 9-12, 2012. *PINEMAP: Progress and future plans*. 37th Annual Meeting of the American Association of State Climatologists, Destin, FL. (Poster)

### **August**

- Bobby, L.A. and Markewitz, D. Aug. 23, 2012. *PINEMAP: Pine Integrated Network: Education, Mitigation and Adaptation Project*. Warnell School of Forestry, University of Georgia, Athens, Ga. Forestry Seminar, (40 attendees)
- Burnett, R. and Megalos, M. *PINEMAP: Pine Integrated Network: Education, Mitigation and Adaptation Project*. Poster presentation at NC Prescribed Fire Council Annual Meeting (115 attendees)
- Monroe, M. and Plate, R. August 21, 2012. *Climate change perceptions among Southeast Extension professionals*. Southeast Extension Administrators Annual Meeting. Orlando, FL. (25 attendees).
- Monroe, M. and Plate, R. August 22, 2012. *Climate change perceptions among Southeast Extension professionals*. Southeast Extension Administrators Annual Meeting. Orlando, FL. (20 attendees).

### **September**

- Megalos, M.A, Vuola, A.J. Monroe, M. C., Wojcik, D., Plate, R., and Adams, D. C. *Bridging the climate communication divide between agents and small forest landowners in North Carolina* (Poster presentation) IUFRO 3.08, Amherst, MA (89 attendees)

### **October**

- Boyles, R. October 4, 2012. *Weather Hazards and Forests in NC*. NC Forestry Association Meeting, Asheville, NC. (500)
- Megalos, M. A. October 5, 2012. *Tree Solutions to Today Vexing Environmental Problems: Remediation, Sequestration and Ecosystem Services*. NC Urban Forestry Council, Greensboro. (23 Attendees)
- Boyles, R. and McKeand, S. October 10, 2012. *Climate Hazards and Forests in NC*. *Forestry Forum Teleconference*, Raleigh, NC [online webinar]. (15)
- Bobby, L.A. October 4, 2012. *Presentation on PINEMAP*. Southern Group of State Foresters SUM Task Force Meeting. Williamsburg, VA. (30 attendees)
- Monroe, M. C., Wojcik, D., Plate, R., and Adams, D. C. October 9, 2012. *Understanding educators' perceptions of climate change*, NAAEE Research Symposium formal presentation, Oakland CA. (30 attendees)
- McMillan, P. October 11, 2012. (Natural Resource Opportunities for Landowners Series). *Introduction to Natural Resource Conservation*. Webinar (75 attendees).
- Reed, D., Yarrow, G. October 18, 2012. (Natural Resource Opportunities for Landowners Series). *Wildlife Conservation on Your Land*. Webinar (75 attendees).

- Megalos, M. October 15, 2012. *Tree Solutions to Today Vexing Environmental Problems: Remediation, Sequestration and Ecosystem Services*. NC Urban Forestry Council, Greensboro. (23 Attendees)
- Boyd, G.D. October 17-20, 2012. *Climate Change and the Forest Environment*. Mississippi Forestry Association Annual Meeting. Tupelo, MS. (12 attendees)
- Cushing, T. and Stringer, J. October 25, 2012. (Natural Resource Opportunities for Landowners Series). *Forest Management on Your Land*. Webinar (75 attendees).

### **November**

- Monroe, M.C. November 1, 2012. *What will help us communicate complex, value-laden information?: Climate Change*. County Extension Director's Training, University of Florida, Gainesville FL. (45 county extension directors attended)
- Hall, K. and Haggerty, M. November 1, 2012. (Natural Resource Opportunities for Landowners Series) *Natural Resource Appreciative Values on Your Land*. Webinar (75 attendees).
- Adams, D.C. and Monroe, M. C. November 5, 2012. *Climate change perceptions among Southeast Extension professionals*. AgSystems Seminar. Department of Agriculture and Biological Engineering, University of Florida, Gainesville FL. (25 agriculture and biological engineering students attended).
- Jones, D. November 8, 2012. (Natural Resource Opportunities for Landowners Series) *Natural Resource Enterprise Considerations for Your Land*. Webinar (75 attendees).
- Megalos, M. November 9, 2012. *PINEMAP and your forest*. Duke Forestry Symposium. Durham, NC. (175 attendees)
- Dinon, H. November 15, 2012. *What is PINEMAP and how could it help you?* Webinar given to South Atlantic LCC Third Thursday Web Forum (20 attendees).
- Taylor, E.T. November 10, 2012. Forest Resiliency. Workshop provided to natural resource professionals - Central East Texas. (34 Participants)
- Taylor, E.T. November 13, 2012. Adaptive Forest Afforestation. Workshop provided to natural resource professionals - Northeast Texas. (26 Participants)
- Bobby, L.A. November 13, 2012. PINEMAP: An overview of PINEMAP Extension. Southeast Climate Consortium annual meeting. Tifton, GA. (75 participants)
- Taylor, E.T. November 16, 2012. Adaptive Forest Management Option. Day training for Brookhaven community leaders. (12 Participants)

### **December**

- Dinon Aldridge, H. December 7, 2012. *What is PINEMAP and how could it help you?* Webinar given as part of Forest Service First Friday All Climate Change Talks (27 attendees).

### **January**

- Taylor, E.T., January 8, 2013. Forest Decline and Environmental Pressures. Workshop for natural resource professionals - Northeast Texas. (43 participants)
- Bobby, L.A. and Markewitz, D. January 9, 2013. Southern Pines, Carbon and Climate Change. Presentation given through the Georgia Initiative for Climate and Society. Athens, Georgia. (50 attendees.)
- Taylor, E.T., January 12, 2013. Forest Health and Resiliency Management Options pt 2. Day training for Brookhaven Lake Community leaders of ( 23 participants)
- Dinon Aldridge, H. January 15, 2013. *Climate 101: Southeast US*. Webinar given as part of PINEMAP Distance Graduate Course (20 attendees).

Taylor, E.T., January 25, 2013. Forest Pest Agency Training. (5 participants)

Taylor, E.t., January 31, 2013. Adaptive Strategies for Regeneration Pests. Workshop for natural resource professionals - Northeast Texas. (87 participants)

## **February**

Taylor, E.T., February 1, 2013. Adaptive Strategies for Regeneration Pests. County meeting (21 participants)

Taylor, E.T. , February 8, 2013. Forest Pesticide Seminar - Adaptive Management. Workshop for natural resource professionals - central East Texas. (85 participants)

Boby, L.A., February 20, 2013. Update on PINEMAP. Southern Regional Extension Forestry Unit Leaders Meeting. Athens, GA. (25 participants)

## **March**

Taylor, E.T. , March 1, 2013. Forest Pesticide Seminar - Adaptive Management. Workshop for natural resource professionals - Southeast Texas. (73 participants)

® Provide a short narrative describing any workshops, courses, and/or trainings conducted.

*Highlight in yellow items added to the list in the March 2013 Progress Report.*

### **Forest Landowners Explore Climate Change**

The University of Florida Extension faculty organized an extension workshop in Leon County, Florida for forest landowners called, "Climate and Forests, What's Changing?" The goals included 1) answering questions about climate change, 2) enhancing the ability of the participants to adapt to changes in climate, and 3) providing tools and strategies for coping with these changes. The program was organized by Stan Rosenthal, Wendy-lin Bartels, Martha Monroe, and Shelby Krantz.

At the program, Florida state climatologist Dr. David Zierden presented El Niño and La Niña cycles and how they affect weather. After taking questions, a panel of three faculty (Drs. Tim Martin, Jason Smith, and Pat Minogue) gave short presentations on disturbance, pests, and pine management strategies and then fielded questions.

These topics were based on findings from focus groups with similar landowners in north Florida. The focus groups asked landowners what they were interested learning about climate and this program responded to their concerns. Workshop data collection took the form of a written survey before and after the program.

Most of the 14 participants were large landowners, with more than 100 acres. While a few of the participants answered that they do not believe the climate is changing, the majority participants answered that, "I believe it is changing and I am very concerned." This is a good indication of the type of participants that this program attracted, those that are concerned and want to learn more about climate change. There was no correlation between the size of the landowner's parcel and their amount of concern, nor between concern and interest in further workshops. Although there was no significant difference between the pre and post questions, more

landowners desired more information to manage their forests in light of climate change *after* the program than before. This could be because the program presented new information and led them to realize how much more they could learn. Over half of the participants believe that the climate change is caused more or less equally by natural changes in the environment and human activities.

Evaluation feedback was generally positive. The participants found each part of the program to be fairly or very useful. By the end of the program, the participants still had many questions, which suggests the program established a comfortable atmosphere for considering the sometimes contentious issue of climate change and that there is a need for additional programming. There was a positive response on the survey to continuing climate-related workshops, with researchers providing information to landowners.

® Provide a short narrative describing experiments or surveys conducted and/or analyzed.

Bill Hubbard and Leslie Boby, from the Southern Regional Extension Forestry, along with Hilary Cole, Graduate student at North Carolina State University, conducted a comprehensive survey of foresters' perceptions of climate, climate change and forestry educational programs related to forestry and climate. More than 6,000 foresters from the entire southeastern region were contacted via SurveyMonkey, email Survey platform and more than 1700 responded, yielding a response rate of about 27%. SREF staff put together a comprehensive database of foresters from the southern region by gathering information from professional organizations (contacts were obtained from their publicly available websites), state lists of registered foresters, personal contacts and their lists as well as state agencies. This survey was launched in late January 2013, closed at the end of February 2013 and the data is currently being analyzed. The main purpose of this survey was to determine what foresters believe about climate change (from no change in climate, to natural cycles to human-induced climate change, etc.), what changes they may have actually observed in their lifetimes, as well as what their interest would be in forestry programs about forest resiliency and climate science. Results from this survey will assist our effort to design educational programs (workshops, webinars, factsheets, etc.), that will be of interest to foresters. Additionally, these results will also help us structure our approach carefully, as climate change is a politically charged issue and many foresters may not be concerned about nor believe in human-induced climate change. Therefore, we will create educational programs that will take into account climate change, but will focus on actions that people can take to mitigate climate change effects, as well as focus on forest health issues that are already of concern to all foresters.

### **Progress Updates: Milestones and Work Plan Tasks**

Provide a short narrative describing progress and accomplishments on the year 2 milestones and work plan tasks listed below.

*Progress updates are carried over from the November 2012 Interim Report. Please provide additional progress updates as applicable for each milestone and work plan task under the March 2013 Progress Report heading.*

### **Year 2 Milestones**

® Implement and strengthen forestry Extension/climatologist partnership (ONGOING).

November 2012 Interim Report:

Aim 6 has identified three strategies within this milestone and progress has occurred on many aspects.

1. Local training: State climatologists have been approached singly and as a group, to become members of the PINEMAP delivery teams to help plan and execute local workshops and distance education training programs. Additionally, Aim 6 members have established individual relationships with their respective state climatologists and engaged with them on workshops as well as to review materials.
2. Climate expertise to support research: Aim 6 members have surveyed many climatologists to learn more about their backgrounds and specialties and to use them as resources for PINEMAP research and products.
3. Integrating climate and forestry research with extension expertise: AIM 6 members (including climatologists) are developing the Decision Support System (DSS) to utilize climate and forestry data, including PINEMAP research for dissemination. This DSS will utilize climate and forestry research and use an extension approach to reach stakeholders and design a user-friendly interface. There has been active collaboration on several workshops, presentations, and/or webinars in Texas between John Nielsen-Gammon, Eric Taylor, and Matt Bonham as well as in North Carolina between Mark Megalos, Ryan Boyles, and Heather Dinon. In addition, Georgia partnerships have been initiated between Pam Knox, David Stooksbury, Mark Risse, Leslie Bobby, and Bill Hubbard as well as Florida partnerships between David Zierden, Melissa Griffin, and Martha Monroe. Heather Dinon and Adrienne Wootten from the State Climate Office of NC are partnering with the Association of Natural Resource Extension Professionals (ANREP) Climate Science Initiative (CSI) group. Bill Hubbard, Mark Megalos, Leslie Bobby and Eric Taylor are all members of CSI as well. We are hoping to connect CSI, a national effort, with state climatologists in the Southeast US.

March 2012 Progress Report:

Heather Dinon, Ryan Boyles and Leslie Bobby attended the annual meeting of the Southeast Climate Consortium (SECC). At the meeting Leslie presented an overview of PINEMAP extension. Heather and Ryan are members of the SECC as well. The SECC meeting provided an opportunity to network with and engage more climatologists and other researchers and extension personnel in PINEMAP work.

Aim 6 is partnering with Melissa Griffin and Pam Knox to develop climate-related information for fact sheets on climate and forestry interactions, including topics of: 1) climate oscillations, 2) weather and climate, 3) climate change, 4) drought, 5) climate overview, and 6) extreme events.

Pam Knox and Ryan Boyles served as reviewers of the climate components of the Project Learning Tree modules during February/March 2013.

Melissa Griffin, Heather Dinon Aldridge, and Pam Knox are also planning to present at the PINEMAP 1890s workshop in Huntsville during May 2013. Barry Keim and John Nielsen-Gammon have been confirmed as speakers at the Western Gulf Workshop during May 2013.

® Audience/Needs Assessments for Extension programs (September 2012).  
November 2012 Interim Report:

These are critical for better understanding stakeholders themselves as well as determining their needs and thus, the direction of PINEMAP extension programs and products.

- Extension staff: During year 1, Aim 6 staff conducted an audience assessment survey of all extension staff throughout 8 states in the southeastern U.S. This survey was designed to assess attitudes, beliefs, practices and interest in global warming and climate change programs and programming. Results of that survey, as well as summaries were written up in 2011's annual report. Results have been presented at more than five conferences, meetings and webinars.
- The AIM 6 team has also completed and deployed the Texas FRESH (Forest Resources, Ecosystem Services and Health) Survey, both in hard copy and web versions. The intent of the survey is to get a better feel for the benefits that Texans associate with forests, and eventually use this data to support incentive programs to improve the management of Texas forests and woodlands. Data will be collected and analyzed in the second half of 2012. Analyzed data from this survey will also be used to direct and support PINEMAP education programs.

March 2013 Progress Report:

For the Texas FRESH (Forest Resources, Ecosystem Services and Health) Survey: it has been completed, the data has been analyzed and the draft report has been sent out for review.

- Forestry Professional: Aim 6 members have conducted a survey for professional foresters (includes consulting foresters, extension foresters and others). This survey utilizes a large database of forester contacts (5,000+) to reach as many people as possible. This needs assessment will examine forester and natural resource professionals needs for continuing education programs on increasing forest productivity (particularly pine plantation productivity) and resilience to extreme weather, climate variability and climate change. Specifically, participants will be questioned on their personal experiences and understanding of current and future effects of climate change on forestry management. We will also question attitudes and knowledge about climate change, climate variability, etc., with a focus towards developing the best approach for meeting perceived and actual needs. We will also query professionals on climate resiliency and forest "weather-proofing" areas they are interested in learning more about. Hilary Cole is conducting research on the survey data to identify which demographic variables influence climate change attitudes, and whether climate change attitudes influence management actions.

February 2013:

Joshua Idassi conducted a telephone inquiry on the 1890 Agroforestry consortium leadership about planning a joint PINEMAP training of their specialists and associates on the Climate Change basics. A planning conference call with PINEMAP AIMS 6 team was held to set a tentative agenda for the workshop to be held on May 15-17 in Huntsville, Alabama. A team of speakers from AIM 6 together with a panel of climatologists from three states will provide educational materials through presentations, discussions and hands-on activities.

® Extension programs evaluated (ONGOING).

November 2012 Interim Report:

It is important to develop evaluation instruments that will be used across the region to provide consistency with questions asked, etc.

- Retrospective Post – Family Forest Landowners: This retrospective-post evaluation allows the host to select/modify the types of question asked depending upon the topics of the training event. However, still maintain rigidity and consistency across the region. The form is scan tron to ease analyses.
- Retrospective Post – Natural Resource Manager: currently under development but will be retrospective-post, scan tron form with the ability to select questions from a pool of allowable questions designed to measure the impact of PINEMAP outreach programs.
- Follow-Up Surveys – Family Forest Landowners: under development.
- Follow-Up Surveys – Natural Resource Manager: under development

March 2013 Progress Report:

® Extension programs delivered (ONGOING)

November 2012 Interim Report:

We have ongoing extension programs as listed in the events/activities section. We are also planning four regional workshops on forest resiliency, which will incorporate PINEMAP information and will be supportive of PINEMAP goals. We will include feedback from completed audience assessments and evaluations as we continue to develop these workshops and more extension programs.

PINEMAP AIM 6 members collaborated with Clemson University and University of Georgia's Forestry Extension Faculty to deliver a webinar based program for forest landowners this fall, titled, "Natural Resource Opportunities for Landowners." This five series course was conducted Thursday evenings from 7-8:30pm via Adobe Connect Software and ran from mid-October to early November. Topics included: 1. Introduction to Natural Resource Conservation, 2. Natural Resource Enterprise Considerations, 3. Wildlife Conservation (Introduction to Master Wildlifer), 4. Forest Management on Your Land (Introduction to Master Tree Farmer), and 5. Natural Resources Appreciative Values and Uses. Within the general course content, instructors also discussed impacts to natural resources from a changing and variable climate. Approximately 75 people attended each session, for a total count of 375 people reached, however, there were also 'viewing sites', where multiple attendees watched the webinars and we do not have final numbers from them yet.

March 2013 Progress Report:

- A workshop is planned for May 15-17, 2013, in Huntsville, Alabama and will include extension specialists from 1890's Universities in the Southeast. The focus of the workshop will be climate science, climate change, forestry and climate tools and PINEMAP developments. 25-30 people are expected to attend.
- A cyberworkshop is planned for summer 2013, planning is ongoing.

® State extension & climatologist teams organized (December 2011).

#### November 2012 Interim Report:

A conference call with the state extension team was held in February 2012. Initial conference calls with climatologists across the region were held in December 2011.

#### March 2013 Progress Report:

AIM 6 members continue to work with other state climatologists and to engage them for workshops, consultation and webinars.

#### ® Extension Program Evaluation (ONGOING).

#### November 2012 Interim Report:

It is important to develop evaluation instruments that will be use across the region to provide consistency with questions asked, etc.

- Retrospective Post – Family Forest Landowners: This retrospective-post evaluation allows the host to select/modify the types of question asked depending upon the topics of the training event. However, still maintain rigidity and consistency across the region. The form is scantron to ease analyses.
- Retrospective Post – Natural Resource Manager: currently under development but will be retrospective-post, scantron form with the ability to select questions from a pool of allowable questions designed to measure the impact of PINEMAP outreach programs.
- Follow-Up Surveys – Family Forest Landowners: under development.
- Follow-Up Surveys – Natural Resource Manager: under development.

#### March 2013 Progress Report:

#### ® Decision Support System Development (ONGOING).

#### November 2012 Interim Report:

Ryan Boyles and Heather Dinon have developed a subcommittee composed of at least one PINEMAP member from each Aim to provide guidance for the Decision Support System (DSS). This subcommittee has provided a list of existing tools and inputs/outputs from each aim for the DSS. A presentation and group activity at the annual meeting identified different ideas for the design of the DSS. Some of these ideas are shown in the figures below. Meetings with the DSS subcommittee will continue on a bi-monthly basis.

A layout and design of the PINEMAP DSS is being developed and reviewed by Aim 6 members. Also, conference calls are also being scheduled with the following goals:

- 1) To determine a theme for the PINEMAP DSS webpages (e.g. one similar to that of the [www.pinemap.org](http://www.pinemap.org) website) and details of where it will be hosted, etc. To accomplish this task, Aim 6 is partnering with Darryl Outlaw, the PINEMAP website administrator.
- 2) To help build the back-end structure of the PINEMAP DSS. The data from Terra-C is very important to consider as part of this discussion so we are working with Sabine Grunwald and Brandon Hoover to accomplish this aspect of the DSS. Aim 6 is also brainstorming ideas for determining a creative name for the PINEMAP DSS. One idea is to solicit ideas for a name from extension agents via the PINEMAP extension newsletter.

#### March 2013 Progress Report:

A prototype DSS website is available

at: [http://hatteras.meas.ncsu.edu/pinemap/pinemap\\_intro.php](http://hatteras.meas.ncsu.edu/pinemap/pinemap_intro.php)

During Jan/Feb 2013, DSS developers gathered potential research results from aim teams that could be used within the DSS.

Aim 6 is also working diligently to provide a layout and design which is useful for our DSS audience which includes professional foresters, specialized practitioners, and landowners. In particular, the group is developing a list of decisions that these stakeholders are trying to make by using results from the survey of professional foresters and by using internal knowledge of Aim 6. Eric Taylor has also been getting feedback on the DSS layout and design from a pilot group of about 12 professional foresters in the western Gulf region. This group plans to pilot test the DSS this summer.

DSS developers are working with the DSS subcommittee to determine how aim team research results can fit into the stakeholder decisions. We will prioritize 3-4 items that can be developed comprehensively by the end of the project.

Data from TerraC will be feed into the DSS using an interface that Brandon Hoover developed. Careful consideration of the data use agreement is being performed during this process. Also, example code has been developed to display TerraC datasets on maps and time series graphs.

### **Year 2 Work Plan Tasks**

® Audience assessment—develop several “baseline” survey instruments that establish the existing knowledge levels, needs, beliefs, interests, attitudes, learning preferences, etc. regarding climate variability and forest interactions for various groups.

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#### November 2012 Interim Report:

The audience assessment has been developed and will be implemented at the end of November 2012. Additionally, we have assembled a large database of forestry professionals across the southeastern United States for distributing the survey.

#### March 2013 Progress Report:

The audience assessment survey- “Professional Foresters survey for continuing education needs,” was launched at the end of January 2013, closed March 1, 2013 and is currently being analyzed.

APRIL 2013

Poster and abstract on “Climate Change Attitudes of Southeastern Forestry Professionals” TB presented at Annual Pinemap Meeting Authors: H.L. Cole, M.A. Megalos, W. Hubbard, L. Boby

Abstract on “Climate Change Attitudes of Southeastern Forestry Professionals” TB presented at SAF National Meeting, October, 2013 Authors: H.L. Cole, M.A. Megalos, W. Hubbard, L. Boby

Poster and abstract on “Climate drivers of wildfire size in North Carolina: Establishment and quantification of Scale-threshold and cross-scale interaction 1907-2012” TB presented at Annual Pinemap Meeting Authors: R.E. Burnett and M.A. Megalos

® Strengthen relationships with education, research, and stakeholders:  
State/regional advisory planning meetings.

November 2012 Interim Report:

Aim 6 members will continue outreach activities including attending Forestry Cooperative Meetings, and other forestry related workshops and conferences. We will continue to coordinate the PINEMAP internal webinar series and will have each Aim group take turns presenting monthly, as well as including presentations on new developments and other research topics. Aim 6 members have joined other Aim’s listservs and will attend their in-person and virtual meetings as much as possible. Leslie Boby has been working with Jessica Ireland to develop the PINEMAP Press and the PINEMAP Gazette. These two newsletters summarize the latest developments from PINEMAP aim groups. One newsletter is a more technical version, while the second newsletter adapts the first newsletter’s articles for less of a research focus and more of a focus on knowledge application. Both newsletters will be widely distributed. PINEMAP Press has been emailed to all of PINEMAP, to faculty and Deans at participating universities, NIFA and others. The PINEMAP Gazette will be distributed through the website (there is a button for viewers to sign up for updates), through extension forester lists and to the forester database list. This newsletter will also be printed for giving out at workshops and/or training sessions. For this newsletter, each AIM group was required to submit one article, therefore, it is inclusive of the latest developments from each group.

Bill Hubbard, Eric Taylor and Leslie Boby are developing regional workshops for the late spring 2013 and into 2014. The workshop agenda and delivery of the content will be built collaboratively with PINEMAP researchers. AIM 1, 2, 3 and 4 members will be consulted for ideas for the newest developments in PINEMAP research and will also be asked to deliver presentations at these workshops.

Bill Hubbard and Leslie Boby met with Earl and Wanda Barrs (Tree Farmers of the year 2009) to film at their 1500 acre tree farm. The Barrs were recognized for their implementation of desirable forest management techniques. At this visit, the Barrs were interviewed about changes that they have witnessed on their land within the past 30 years, as well as the management techniques that they have tried to increase their forest resiliency. Footage from this visit will be turned into a PINEMAP video that can be used to advertise the PINEMAP project, as well as introduce PINEMAP concepts for foresters, landowners and extension staff.

March 2013 Progress Report:

Martha Monroe, Leslie Boby, Bill Hubbard and Wendylin Bartels are working with two other AFRI funded CAP grant projects to develop a leadership academy for extension agents on climate science, climate change and their respective resource (forestry, livestock and vegetable production). This program was first initiated through Bill Hubbard’s presentation on PINEMAP to Dr. Joan Dusky (Associate Dean for Extension, Agricultural programs, University of Florida). Dr. Dusky

requested ours (and others) help to develop training for extension agents on these areas. Many of us met in late January in Tifton, Georgia to define objectives, goals and general training guidelines for the “academy.” The ideas were put together and sent to Dr. Dusky- who will contact other state extension Deans to generate interest. The project would include training agents from at least three southeastern states (Georgia, Florida and Alabama), and eventually all of the states. Shelby Krantz, a graduate student of Marth Monroe is filming, editing and developing a short film about Southern Forest Landowners’ management attitudes and strategies. This video will be used in extension work- at workshops, panels, over webinars and in focus groups. Since the video will feature a diverse mixture of landowners, this video will be used to help generate peer-to-peer comparisons for extension work (as in, most landowners should see an approximate peer).

® Creation of regional advisory panels.

November 2012 Interim Report:

Invitations to a webinar based meeting about PINEMAP’s regional advisory panel were sent to more than 20 state level extension foresters and 1890’s University’s extension foresters in the early part of this year. About 10 foresters attended this initial meeting and expressed interest in evaluating PINEMAP extension products and plans.

March 2013 Progress Report:

® External outputs (fact sheets, web-based climate education modules, complete analysis and submit articles on SE Extension perceptions of climate change, eXtension, etc.).

November 2012 Interim Report:

Numerous factsheets are currently in draft form or in review with expected publication at the end of 2012 or the beginning of 2013. Factsheet review guidelines have been established and will be used to vet all PINEMAP publications. Additionally, official formats and templates for PINEMAP factsheets have been selected. All publications will be submitted to the Climate, Forest and Woodlands Community of Practice on eXtension. Web-based climate education materials are being adapted for forestry, with a goal of creating a ‘certificate’ program through another agency (such as Society of American Foresters) in Climate Smart Forest Management. The theme has been built and topics are being reviewed for relevance to our stakeholders. Contextual examples are being developed for the topics that are most important to our target audience(s). Some of these materials will be implemented into eXtension.

March 2013 Progress Report:

Three factsheets have been through the peer-reviewed process and are ready for production. Factsheets will be printed for distribution and added to the eXtension website.

Two training workshops are currently in planning stages: the first is a ‘cyber-workshop,’ planned for summer 2013 and the other one is Huntsville, AL in mid-May.

A workshop is planned for May 15-17, 2013, in Huntsville, Alabama and will include extension specialists from 1890’s Universities in the Southeast. The focus of the

workshop will be climate science, climate change, forestry and climate tools and PINEMAP developments. 25-30 people are expected to attend.

An academy on climate science, climate change, and resource management and impacts from climate change is being organized for fall 2013 and will include extension agents from at least three southeastern states.

#### ® Administrative activities

##### November 2012 Interim Report:

We will continue with PINEMAP reports, monthly web conferencing meetings and biannual in-person meetings. We will assist in the maintenance of the project website, provide content for PINEMAP Facebook page and attend monthly executive committee meetings. We are also assisting in development and writing of two different versions of a PINEMAP newsletter. Our continuing goal is to strengthen relationships with other Aim groups.

##### March 2013 Progress Report:

Aim 6 continues to have regular monthly web conferencing meetings, as well as additional meetings with different members of the Aim, dependent on project. In general, AIM 6 members consult each other almost daily and at least weekly, to work on joint projects.

#### **Aim 6 Article for *PINEMAP Press***

The purpose of PINEMAP's quarterly newsletter, the *PINEMAP Press* is to inform and educate on research results, programs, and outcomes of the PINEMAP project. The newsletter is distributed to internal project collaborators as well as stakeholders, NIFA, and university administrators.

Issue #3 will be published in May/June 2013. Please identify a topic for a brief (600 words or less) article for the May 2013 issue. Provide a preliminary title, list of authors, and a 3-5 sentence summary.

**Title:** Climate Change Attitudes of Southeast Forestry Professionals: Origins and influence

**Author(s):** Hilary Cole, Mark Megalos, William Hubbard, Leslie Boby

**Summary:** In early 2013, a web survey was distributed to 6,500 Southeast forestry professionals to determine their attitudes toward climate change and gauge interest in continuing education programs on forest resilience to provide an audience assessment for the extension community. The study also proposed two research objectives: examining which demographic characteristics significantly affect acceptance or doubt of anthropogenic climate change evidence (ACCE), and examining whether attitude toward climate change influences management actions. One-way ANOVA found political ideology, education level, gender, employer, and state of work highly significant at  $p < .0001$ , and years of forestry experience was also significant at  $p = .038$ . The second research objective examined the influence of climate change attitude on foresters' personal observations of climate change, concern about the forestry impacts of climate change, and belief that climate change will require different management practices. Simple linear regression found climate change attitude a highly significant predictor of all three

effects at  $p < .0001$ . Observations of climate change, concern about climate change impacts, and belief that management changes will be necessary increase directly as acceptance of ACCE increases.

\*if this is better suited to be a research summary factsheet rather than a PINEMAP press article (or both), I'm happy to do whatever is most helpful. Just wanted to put on Aim 6's radar that the data is analyzed and ready to write up---I'll be presenting a poster on our findings at the PINEMAP annual meeting. Please don't hesitate to get in touch if you have questions or suggestions.