

PINEMAP Year 3 Progress Report 2

April 2014

Aim 6 (Extension)

OUTCOMES/IMPACTS

Aim 6 activities contribute to project-level outcomes and impacts through development and dissemination of informational products and tools which provide stakeholders with knowledge and skills needed to address planted pine mitigation and adaptation issues related to climate and climate change. We conducted a survey of climate change perceptions among Extension faculty and agents across the region. We are developing partnerships among state climatologists and Extension foresters and establishing a PINEMAP Extension network in the Southeast. These partnerships and networks will be critical to the efficient and effective dissemination of PINEMAP Extension programs and products. Programs and products being developed include a Decision Support System (DSS), a web-based, open-source set of current and future decision support tools directed at the innovative management of southern pine; eXtension modules for the Climate Science and Forests Interaction Community of Practice (CoP); and additional resources such as fact sheets and web-based education modules.

- To date, PINEMAP information has reached 72 Silviculturists through the Western Gulf Silvicultural and Technology Meeting representing 9 million acres- 5 of those million in pine. Based on what they learned from this effort, changes will be made to management plans covering at least 250,000 acres.
- Texas Forestry Agency Training- 16 foresters have participated in the initial run, representing around 200,000 northeast Texas landowners. They have incorporated PINEMAP strategies into their forest management plans and landowner outreach efforts. This group represents roughly 4 million acres across the Western Gulf region.

OUTPUTS

Products

Forest Ecosystem Values Tool

The Forest Ecosystem Values Tool, funded in part by PINEMAP and hosted at texasforestinfo.com, is an online application that provides estimated economic values for certain ecosystem services and benefits provided by forests for forest practitioners and landowners. To date, there have been 166 unique users to use the tool.

Peer-reviewed publications

Burnett, R.E., Megalos, M.A., Vuola, A.J., Adams, D.C., and M.C. Monroe. North Carolina Cooperative Extension professionals' climate change perceptions, willingness, and perceived barriers to programming: An educational needs assessment. *Journal of Extension* 52(1). Available at <http://www.joe.org/joe/2014february/rb1.php>.

Krantz, S., Monroe, M., & Bartels, W. (2014). Creating Extension Programs for Change: Forest Landowners and Climate Change Communication. *Journal of Applied Environmental Education and Communication* 12(4): 272-279.

Wojcik, D. J., M. C. Monroe, D. C. Adams, and R. R. Plate. 2014. Message in a Bottleneck? Attitudes and Perceptions of Climate Change in the Cooperative Extension Service in the Southeastern United States. *Journal of Human Sciences and Extension* 2(1): 51-70.

Monroe, M.C. and D.C. Adams. 2012. Increasing response rates to web-based surveys. *Journal of Extension* 50(6): Article 6TOT7. <http://www.joe.org/joe/2012december/tt7.php>

Morris, H.L.C. Megalos, M.A., Vuola, A.J., Adams, D.C., Monroe, M.C. (2014). Cooperative Extension and Climate change: Successful Program Delivery. *Journal of Extension* (in press).

Theses/Dissertations

Shelby Krantz, Shelby. Message Framing To Affect Forest Landowners' Intention To Adapt To Climate Change (Master's Thesis), January 2014. University of Florida, School of Forest Resources

Morris (Cole) H.L. 2013 Climate Change Attitudes of Southeast Forestry Professionals: Implications for Outreach. Jan ,2014. Master of Science Thesis, NC State University, <http://www.lib.ncsu.edu/resolver/1840.16/9225>

Other publications

Fact sheets: published

<i>Drought and Southern Forests: The Importance of Forest Health and Resiliency</i>	Heather Dinon, Rachel Burnett, Eric Taylor, Ryan Boyles, William Hubbard, Mark Megalos, Sean Burns, and Leslie Boby
<i>Healthy Forests: Managing for Resilience</i>	Hilary Cole, Heather Dinon, Mark Megalos, and Christina Temple
<i>Healthy Forests: Invasive Plants and Your Forests</i>	Hilary Cole, Mark Megalos, and Christina Temple
<i>Protecting Your Forest Asset: Managing Risks in Changing Times</i>	Lisa Jennings, Leslie Boby, Mark Megalos, William Hubbard, and Emrys Treasure
<i>To Plant or Not to Plant: New Timber Stand Drought Risk Assessment</i>	Eric Taylor and Sean Burns

Fact sheets: in development

<i>Assessing Forest Vulnerability</i>	Mark Megalos and Heather Dinon
<i>Climate Change and Forestry</i>	Leslie Boby and Heather Dinon
<i>Climate Change in the Southeastern United States: Opportunities for Adaptation and Mitigation</i>	Anslei Foster and Joshua Idassi
<i>Climate Oscillations: Impacts to Forestry</i>	Heather Dinon and Ryan Boyles
<i>Drought and Southern Forests: The Importance of Forest Health and Resilience</i>	Rachel Burnett, Heather Dinon, Ryan Boyles, Mark Megalos, Eric Taylor, and Sean Burns
<i>Fire Risk and a Changing Climate</i>	Rachel Burnett
<i>Frequently Asked Questions about Climate Projections</i>	Heather Dinon & Ryan Boyles
<i>Glossary of Climate Terms</i>	Mark Megalos and Heather Dinon
<i>Herbicide Use Considerations</i>	Eric Taylor and Sean Burns
<i>Interpreting Uncertainty of Climate Model Projections</i>	Heather Dinon and Ryan Boyles
<i>Introduction to Weather and Climate</i>	Heather Dinon and Ryan Boyles
<i>Minimizing Forest Insect / Disease Risk: A Practical Landowner Guide</i>	Mark Megalos
<i>Misconceptions about Global Warming and Climate Change</i>	Heather Dinon and Ryan Boyles
<i>Obstacles to Delivering Climate Variability Programming to Traditional Audiences</i>	Martha Monroe and Mark Megalos
<i>Drought and Southern Forests: Management Practices</i>	Eric Taylor and Mark Megalos
<i>To Plant or Not To Plant: New Timber Stand Drought Risk Assessment</i>	Eric Taylor & Matt Bonham
<i>Water Cycle in Forested Lands with Emphasis on Silvopasture Systems</i>	Shareika Williams and Gwendolyn Boyd
<i>What's Under the Umbrella that is Climate?</i>	Heather Dinon and Ryan Boyles
<i>Southern Pine Plantations and the Carbon they store: Important Information for the Forest Landowner</i>	Adam Maggard and Leslie Boby
<i>The Role of Central Texas Woodlands in Climate Regulation</i>	Eric Taylor and Sean Burns
<i>The Role of Central Texas Woodlands in the Bio-based Industry: Woody Biomass for Power and Products</i>	Eric Taylor and Sean Burns

Audio/video products

- Forest Management in a Changing World, Leslie Bobby, Bill Hubbard and Shelby Krantz, a 6 minute video which includes an interview with 2009 tree farmers of the year Wanda and Earl Barrs as they talk about what they've experienced on their farm and the changes they have witnessed.
- Forest Management techniques from a Landowners' Perspective, Shelby Krantz and others. Shelby developed this video, in conjunction with the video listed below to test theories of information presentation and what landowners would be most receptive too.
- Pine Management in a changing world: PINEMAP. (See above).

Events/Activities

Presentations

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Adams, D.C. and M.C. Monroe	Climate Change Perceptions Among Southeast Extension Professionals	Presentation (Conference)	November 5, 2012	AgSystems Seminar, Department of Agriculture and Biological Engineering, University of Florida, Gainesville, FL	25
Boby, LA.	PINEMAP: Pine Integrated Network: Education, Mitigation, and Adaptation Project	Presentation (Meeting)	December 8, 2011	Forest Modeling Research Cooperative Annual Meeting, Amelia Island, FL	
Boby, L.A.	Presentation on PINEMAP	Presentation (Meeting)	October 4, 2012	Southern Group of State Foresters SUM Task Force Meeting, Williamsburg, VA	30
Boby, L.A.	PINEMAP: An Overview of PINEMAP Extension	Presentation (Meeting)	November 13, 2012	Southeast Climate Consortium Annual Meeting, Tifton, GA	75
Boby, L.A.	Update on PINEMAP	Presentation (Meeting)	February 20, 2013	Southern Regional Extension Forestry Unit Leaders Meeting	25
Boby, L.A. and D. Markewitz	PINEMAP: Pine Integrated Network: Education, Mitigation, and Adaptation Project	Presentation (Meeting)	August 23, 2012	Warnell School of Forestry, University of Georgia Forestry Seminar	40

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Boby, L.A. and D. Markewitz	Southern Pines, Carbon and Climate Change	Presentation (Meeting)	January 9, 2013	Presentation given through the Georgia Initiative for Climate and Society, Athens, GA	50
Boby, L.A., W.G. Hubbard, and H. Cole	Climate change perceptions of southern foresters: Preliminary survey results, William Hubbard	Presentation (Meeting)	April 24, 2013	PINEMAP 2013 Annual Meeting, Athens, GA	
Boby, L.A. and Monroe, M.C.	PINEMAP PLT Activity	Workshop Activity	May 15, 2013	Huntsville, AL	26
Boby, L.A.	PINEMAP Extension Program	Informal Presentation to Industry foresters	July 17, 2013	Plantation Management Resource Cooperative Annual Meeting, Athens, GA	
Boby, L.A.	PINEMAP Information	Informal discussions to Meeting members	June 4, 2013	Southern Group of State Foresters Annual Meeting Savannah, GA	
Boby, L.A., Hubbard, W.G. and Idassi, J.O.	PINEMAP and Foresters Survey Summary Information	Informal presentation during meeting	August 26, 2013	Climate Change Education Roundtable/Washington , D.C.	
Boby, L.A., Dinon Aldridge, H. and Knox. P.	Climate Science and PINEMAP information	Informal presentation	September 18, 2013	Birmingham, AL Society of American Foresters Chapter Meeting	22
Boby, L. A.	Southern Regional Extension Forestry and PINEMAP Update	Presentation	October 16, 2013	Southern Group of State Foresters Services, Utilization and Marketing Committee Meeting Lexington, KY	35
Boby, L.A., Rashash, D. and Megalos, M.	Perceptions of Climate Change: Six Americas in the general Public and Extension Agents	Presentation	January 21, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27
Boby, L.A.	PINEMAP/ Project Learning Tree Activity	Presentation	January 23, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Boby, L.A. and Risse, M.		Presentation	February 18, 2014	American Meteorological Society Meeting Atlanta, GA	100
Boby, L.A. and Monroe, M.	Climate Change And Biomass Outreach- What's new- What's Needed	Presentation	February 27, 2014	Southern Regional Extension Forestry Unit Leaders Meeting Athens, GA	20
Boby, L.A., Dwivedi, P., Teskey, R., Markewitz, D., McGuire, M., Kane, M. and Akers, M.	Pine Integrated Network: Education, Mitigation and Adaptation Project	Poster	February 28, 2014	University of Georgia Sustainability Forum Athens, GA	115
Boyd, G.D.	Climate Change and the Forest Environment	Presentation (Meeting)	October 17-20, 2012	Mississippi Forestry Association Annual Meeting, Tupelo, MS	12
Boyles, R.	Weather hazards and forests in NC	Presentation (Meeting)	October 4, 2012	NC Forestry Association Meeting, Asheville, NC	500
Boyles, R. and H.A. Dinon	PINEMAP Decision Support System (DSS)	Webinar	April 17, 2012	Webinar given for Spring 2012 PINEMAP Distance Graduate Course	
Boyles, R. and E. Taylor	Understanding the causal factors of drought, expected patterns and impact on forested landscapes	Webinar	October 21, 2011	PINEMAP Internal Webinar Series	23
Boyles, R. and S. McKeand	Climate hazards and forests in NC [webinar]	Webinar	October 10, 2012	Forestry Forum Teleconference, Raleigh, NC	15
Boyles, R.	Climate Change and Coastal NC	Presentation	Sept. 17, 2013	New River, NC Roundtable	25
Boyles, R.	Climate change in NC	Presentation	November 8, 2013	NCCU Climate Change Symposium	25
Boyles, R.	Climate change and agriculture	Presentation	November 16, 2013	CFA Sustainable Agriculture Conference	250
Boyles, R. and Dinon-Aldridge, H.	Climate Change Basics: Climate 101	Presentation	January 21, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Boyles, R.	How Climate Forecasts are Made	Presentation	February 7, 2014	Farming Adaptation Conference	25
Boyd, G.	Integrating Climate Change into your Extension Programming	Presentation	January 23, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27
Burnett, R. and M. Megalos	PINEMAP: Pine Integrated Network: Education, Mitigation, and Adaptation Project [poster]	Poster Presentation	August 21-22, 2012	NC Prescribed Fire Council Annual Meeting, Chapel Hill, NC	115
Burnett, R. and M. Megalos	Climate drivers of wildfire size in North Carolina: scale thresholds and cross-scale interactions for 1970-2012	Poster Presentation	April 24-26, 2013	PINEMAP Annual Meeting, Athens, GA	
Burnett, R.E.	Prescribed Fire and Climate Change: Keeping Pace with a Changing Climate	Poster	August 27, 2013	NC Prescribed Fire Council and NC Longleaf Coalition Joint Meeting, Wilmington, NC	120
Cole (Morris), H., M. Megalos, W. Hubbard, and L. Boby	2013 Climate Change Attitudes of Southeast Forestry Professionals	Poster Presentation	April 24-26, 2013	PINEMAP Annual Meeting, Athens, GA	
Cushing, T. and J. Stringer	Forest Management on Your Land	Webinar	October 25, 2012	Natural Resource Opportunities for Landowners webinar series	75
Davis, C.	Teaching the Basic Weather Processes unit of the S-290 (Intermediate Wildland Fire Behavior) training course	Presentation	September 16, 2013	S-290 Training for NC Forest Service	35
Dinon, H.A.	Introduction to climate, climate variability, and climate change in the Southern U.S.	Presentation (Meeting)	September 30, 2011	Forest Biology Research Cooperative Annual Advisory Council Meeting, Gainesville, FL	
Dinon, H.A.	An overview of the Pine Integrated Network: Education, Mitigation, and Adaptation Project (PINEMAP) [poster]	Poster Presentation	November 3, 2011	Southeast Climate Consortium 2011 fall planning meeting, Tallahassee, FL	

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Dinon, H.A.	What is PINEMAP and how could it help you?	Webinar	November 15, 2012	Webinar given to South Atlantic LCC Third Thursday Web Forum	20
Dinon, H.A.	Understanding the link between weather and climate	Webinar	October 7, 2011	PINEMAP Internal Webinar Series	32
Dinon Aldridge, H.	What is PINEMAP and how could it help you?	Webinar	December 7, 2012	Webinar given as part of the Forest Service First Friday All Climate Change Talks	27
Dinon Aldridge, H.	Climate 101: Southeast U.S.	Webinar	January 15, 2013	Webinar given as part of the PINEMAP Distance Graduate Course	21
Dinon Aldridge, H.	What are PINEMAP and the DSS?	Presentation (Meeting)	February 12, 2013	State Climate Office of NC Lab Meeting	10
Dinon Aldridge, H.	PINEMAP you can use: Development of a decision support system for forestry applications	Webinar	April 4, 2013	Webinar given on the ANREP CSI conference call	20
Dinon Aldridge, H., Boyles, R.	Decision Support System: Connecting your research to decisions	Presentation (Meeting)	April 24-26, 2013	PINEMAP Annual Meeting, Athens, GA	
Dinon Aldridge, H.	What are people saying about global warming and climate change?	Presentation (Meeting)	May 16-17, 2013	PINEMAP 1890 Land Grant Climate Change Workshop	25
Dinon Aldridge, H.	PINEMAP's Decision Support System! What is it, what can it do for you?	Presentation (Meeting)	May 16-17, 2013	PINEMAP 1890 Land Grant Climate Change Workshop	25
Dinon Aldridge, H.	PINEMAP's Decision Support System: The Good, The Bad, & The Ugly	Presentation (Meeting)	June 13, 2013	Presentation explaining challenges and opportunities of the PINEMAP DSS given as part of State Climate Office of NC Summer Seminar Series	25
Dinon Aldridge, H.	PINEMAP's Decision Support System: An Integration Vehicle	Webinar	September 6, 2013	PINEMAP ATP meeting	50

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Dinon Aldridge, H., Adams, D., Boyles, R., Gan, J., Grebner, D., Ireland, J., Martin, T., Susaeta, A., Taylor, E., Teskey, B.	PINEMAP's Risk Assessment Tool	Webinar	October 4, 2013	PINEMAP ATP meeting	
Dinon Aldridge, H.	PINEMAP DSS development process	Webinar	October 18, 2013	Aim 4 in-person meeting	
Dinon Aldridge, H., Crimmins, M.	Climate Science Resources and Partnerships	Presentation (Meeting)	October 29, 2013	ANREP National Extension Climate Science Initiative Conference	
Dinon Aldridge, H., Knox, P.	Part I: Trends in the Southeast and Their Impacts on Trees and Foresters and Part II: What People are Saying About Global Warming and Climate Change?	Webinar	November 21, 2013	PINEMAP Professional Development Webinar Series: Climate Science and the South: An Overview	
Dinon Aldridge, H.	Frequently Asked Questions about Climate Change	Presentation	January 21, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27
Dinon Aldridge, H., Boyles, R.	PINEMAP Gridded Data: THREDDS Data Server & Climate Model Data	Webinar	February 7, 2014	PINEMAP ATP Meeting	
Dinon Aldridge, H.	Weather and Climate in NC	Webinar	February 21, 2014	NIDIS/CoCoRaHS webinar	
Dinon, H., Boyles, R.	PINEMAP Decision Support System (DSS)	Presentation (Meeting)	May 15-16, 2012	PINEMAP Annual Meeting, Atlanta, GA	
Dinon Aldridge, H., Taylor, E., L.A. Bobby, M. Bonham, V. Simon-Brown, Lisa Jennings and others	Its Getting Hot Out Here: an interactive workshop focused on communicating climate change for natural resource professionals	Training/Workshop/Course	May 20-23, 2012	ANREP Biannual Conference, Hendersonville, NC	
Dinon Aldridge, H., L. Bobby, M. Bonham, G. Boyd, R. Boyles, B. Hubbard, J. Idassi, T. Martin, M. Megalos, M. Monroe, and E. Taylor	PINEMAP: Progress and future plans [poster]	Poster Presentation	July 9-12, 2012	37th Annual Meeting of the American Association of State Climatologists, Destin, FL	

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Dwivedi, P. and Boby, L.A.	Pine Integrated Network: Education, Mitigation and Adaptation Project	Presentation	February 28, 2014	University of Georgia Sustainability Forum Athens, GA	115
Hall, K. and M. Haggerty	Natural Resource Appreciative Values on Your Land	Webinar	November 1, 2012	Natural Resource Opportunities for Landowners webinar series	75
Hubbard, W.G.	Effective climate change Extension programming	Webinar	April 3, 2012	Webinar given for Spring 2012 PINEMAP Distance Graduate Course	15
Hubbard, W.G.	An integrated approach to climate variability Extension delivery	Presentation (Conference)	November 1, 2011	Society of American Foresters National Convention, Honolulu, HI	75
Hubbard, W.G.	PINEMAP Extension goals and objectives	Presentation (Conference)	May 18, 2011	National Workshop on Climate and Forests, Flagstaff, AZ	50
Hubbard, W.G. and Megalos, M.A.	Forestry under a variable climate: tools and resources	Presentation	May 18, 2013	PINEMAP 1890 Land Grant Climate Change Workshop	25
Hubbard, W.G.	Updates on the PINEMAP project	Presentation	October 2, 2013	Arkansas Forestry Association Meeting Little Rock AR	85
Hubbard, W.G.	Southern Regional Extension Forestry Updates	Presentation	March 25, 2014	Clemson Society of American Foresters Meeting, Clemson SC	35
Jones, D.	Natural Resource Enterprise Considerations for Your Land	Webinar	November 8, 2012	Natural Resource Opportunities for Landowners webinar series	75
Keim, B.	Extreme Events in Changing Climate	Presentation (Meeting)	December 12, 2013	Western Gulf Silvicultural Technology Exchange	
Knox, P.	Climate Change -- Weather Patterns and Effects on Trees	Presentation (Meeting)	August 22, 2013	GA Arborist Association Summer Conference	
Knox, P.	Impacts of a changing climate on forestry	Presentation (Meeting)	May 16-17, 2013	PINEMAP 1890 Land Grant Climate Change Workshop	25

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Knox, P.	Our Changing Weather and Its Impacts on Horticultural and Arboricultural Operations	Presentation (Meeting)	January 23, 2014	Georgia Green Industry Association Wintergreen Meeting	
Knox, P., Bobby, L., and Risse, M.	From Drought to Floods (2012 to 2013): Agriculture, Livestock and Forestry Tools and Resources for a Variable Climate	Presentation (Meeting)	January 24, 2014	Georgia Winter School for Extension Agents at Rock Eagle Conference Center	
Knox, P.	Weather 101: Understanding and Responding to Severe Weather	Presentation (Meeting)	February 17, 2014	Southern Chapter of the International Society of Arboriculture's 72nd Annual Conference and Trade Show	
Krantz, S. and M.C. Monroe	Video as a communication tool: Forest landowners and climate change	Poster Presentation	April 24-26, 2013	PINEMAP Annual Meeting, Athens, GA	80
Krantz, S.	Video as a Communication Tool: Forest Landowners and Climate Change	Roundtable Presentation	October 9, 2013	National Association for Environmental Educators Baltimore, MD	
Krantz, S.	Engaging Audiences Through Video: Communicating Science Effectively and Interestingly	Roundtable Presentation	October 11, 2013	National Association for Environmental Educators Baltimore, MD	
Krantz, S.	Engaging audiences through Video: Communicating science effectively	Workshop	March 22, 2014	League of Environmental Educators in Florida 2014 Conference Ocala, FL	
Krantz, S.	Engaging audiences through Video: Communicating with forest Landowners Effectively	Presentation	May, 2014	Association of Natural Resource Extension Professionals 2014 Conference	
McMillan, P.	Introduction to Natural Resource Conservation	Webinar	October 11, 2012	Natural Resource Opportunities for Landowners webinar series	75

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Megalos, M.A.	AFRI PINEMAP climate change grant: College of Natural Resources' role in advancing pine plantation management for a changing future	Presentation (Meeting)	October 24, 2011	North Carolina State University	
Megalos, M.A.	PINEMAP and Your Forest	Presentation (Meeting)	November 9, 2012	Duke Forestry Symposium, Durham, NC	175
Megalos, M.A.	Weather and climate variability: What should foresters do?	Presentation (Meeting)	April 10, 2012	Southern Pines, NC Sandhills Society of American Foresters and Forestry Club	36
Megalos, M.A.	Tree solutions to today's vexing environmental problems: Remediation, sequestration, and ecosystem services	Presentation (Meeting)	October 5, 2012	NC Urban Forestry Council, Greensboro, NC	23
Megalos, M.A., A.J. Vuola, M.C. Monroe, D. Wojcik, R. Plate, and D.C. Adams	Bridging the climate communication divide between agents and small forest landowners in North Carolina [poster]	Poster Presentation	September 24-27, 2012	IUFRO 3.08, Amherst, MA	89
Megalos, M.	Forestry Impacts from Climate Change and PINEMAP Information	Presentation	January 22, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27
Megalos, M.	Forestry and Climate Science/Change Resources for Extension Agents and Educators	Presentation	January 23, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27
Megalos, M., Bobby, L., Idassi, J., Boyd, G. and Rashash, D.	Outcomes, Expectations and Next Steps for utilizing Climate science information	Presentation	January 23, 2014	1890 Land Grant and PINEMAP Climate Change Workshop Wilmington, NC	27
Monroe, M.C.	What will help us communicate complex, value-laden information?: Climate Change	Presentation (Meeting)	November 1, 2012	County Extension Director's Training, University of Florida, Gainesville, FL	45
Monroe, M. C., D. C. Adams, R. Plate, and D. Wojcik	The Six Americas of Climate Change: Perceptions of Southeast Extension Professionals [poster]	Poster Presentation	August 6-9, 2012	CSCAP 2012 Annual Meeting, Wooster, OH	

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Monroe, M. C., D. C. Adams, R. Plate, and D. Wojcik	The Six Americas of Climate Change: Perceptions of Southeast Extension Professionals	Poster Presentation	February 13, 2013	REACCH Second Annual Meeting, Portland, OR	
Monroe, M.C., D. Wojcik, R. Plate, and D.C. Adams	Understanding educators' perceptions on climate change	Presentation (Conference)	October 9, 2012	NAAEE Research Symposium formal presentation, Oakland, CA	30
Monroe, M. and R. Plate	Climate Change Perceptions Among Southeast Extension Professionals	Presentation (Meeting)	August 21, 2012	Southeast Extension Administrators Annual Meeting, Orlando, FL	25
Monroe, M. and R. Plate	Climate Change Perceptions Among Southeast Extension Professionals	Presentation (Meeting)	August 22, 2013	Southeast Extension Administrators Annual Meeting, Orlando, FL	20
Monroe, M.C., A.W. Bowers, D.C. Adams, and R.R. Plate	Listening to Climate Perceptions: What the Comment Box Can Tell Us	Poster Presentation	April 24-26, 2013	PINEMAP Annual Meeting, Athens, GA	
Monroe, M, C. Powers and C. Layman	Climate Communication	Presentation	October 29, 2013	National Agent In-service Training on Climate Science, Sponsored by the Association of Natural Resource Professionals Cloquet, MN	55
Monroe, and C. Layman	Audience Analysis	Presentation	October 29, 2013	National Agent In-service Training on Climate Science, Sponsored by the Association of Natural Resource Professionals Cloquet, MN	55
Morris (Cole), H.L., M. Megalos, W. Hubbard, L.Boby	2013 Climate Change Attitudes of Southeast Forestry Professionals: Implications for Outreach	Presentation	October 10, 2013	Society of American Foresters Annual Meeting Charleston, SC	70

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Morris (Cole), H.L.	2013 Climate Change Attitudes of Southeast Forestry Professionals: Implications for Outreach	Presentation	January 2014	NC state University Marine Earth and Atmospheric Sciences- Forestry and Environmental Resources Joint Graduate Symposium Raleigh, NC	100
Nielsen-Gammon, J.	Climate Prediction Made Difficult	Presentation (Meeting)	December 12, 2013	Western Gulf Silvicultural Technology Exchange	
Reed, D. and G. Yarrow	Wildlife Conservation on Your Land	Webinar	October 18, 2012	Natural Resource Opportunities for Landowners webinar series	75
Taylor, E.L.	Adaptive Forest Management Option	Training/Workshop/Course	November 16, 2012	Day training for Brookhaven community leaders	12
Taylor, E.L.	Forest Decline and Environmental Pressures	Training/Workshop/Course	January 8, 2013	Workshop for natural resource professionals-- Northeast Texas	43
Taylor, E.L.	Forest Health and Resiliency Management Options, Part 2	Training/Workshop/Course	January 12, 2013	Day training for Brookhaven community leaders	23
Taylor, E.L.	Forest Pest Agency Training	Training/Workshop/Course	January 25, 2013		5
Taylor, E.L.	Adaptive Strategies for Regeneration Pests	Training/Workshop/Course	January 31, 2013	Workshop for natural resource professionals-- Northeast Texas	87
Taylor, E.L.	Adaptive Strategies for Regeneration Pests	Training/Workshop/Course	February 1, 2013	Workshop for natural resource professionals-- County meeting	21
Taylor, E.L.	Forest Pesticide Seminar-- Adaptive Management	Training/Workshop/Course	February 8, 2013	Workshop for natural resource professionals-- Central East Texas	85
Taylor, E.L.	Forest Pesticide Seminar-- Adaptive Management	Training/Workshop/Course	March 1, 2013	Workshop for natural resource professionals-- Southeast Texas	73
Taylor, E., W.G. Hubbard, M. Megalos, H.A. Dinon, L.A. Boby, and others	CSI: Climate Science Initiative	Training/Workshop/Course	May 20-23, 2012	ANREP Biannual Conference, Hendersonville, NC	24

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Zierden, D.	The Drivers of Climate and Climate Variability	Webinar	February 17, 2012	PINEMAP Internal Webinar Series	21
Taylor, E.T.	Forest Resiliency	Training/Workshop/Course	November 10, 2012	Workshop provided to natural resource professionals - Central East Texas	34
Taylor, E.T.	Adaptive Forest Afforestation	Training/Workshop/Course	November 13, 2012	Workshop provided to natural resource professionals - Northeast Texas	26
Taylor, E.T., Burns, S., Bobby L.A., Markewitz, D.	PINEMAP Professional Development Series: And Introduction to Soils – Getting Grounded	Webinar	October 16, 2013	PINEMAP sponsored webinar aimed at professional foresters & resource managers	135
Taylor, E.T., Burns, S., Bobby L.A.	PINEMAP Professional Development Series: Soil Mapping – An Overview	Webinar	October 17, 2013	PINEMAP sponsored webinar aimed at professional foresters & resource managers	93
Taylor, E.T., Burns, S., Bobby L.A., Jokela, E.	PINEMAP Professional Development Series: Expected Responses – Management Implications	Webinar	October 18, 2013	PINEMAP sponsored webinar aimed at professional foresters & resource managers	60
Dinon Aldridge, H., Taylor, E.T., Burns, S., Bobby, L.A	PINEMAP Professional Development Series: Climate Science and the South – An Overview	Webinar	November 21, 2013	PINEMAP sponsored webinar aimed at professional foresters & resource managers	36
Taylor, E.T., Burns, S., Bobby, L.A.,	PINEMAP Professional Development Series: The Connection Between Water Stress and Plant Productivity	Webinar	February 19, 2014	PINEMAP sponsored webinar aimed at professional foresters & resource managers	93
Taylor, E.T., Burns, S., Bobby, L.A., Martin, T.	PINEMAP Professional Development Series: Biology and Ecology of Temperature – Managing for Temperature and Water	Webinar	February 20, 2014	PINEMAP sponsored webinar aimed at professional foresters & resource managers	68

Author(s)/Presenter(s)	Title	Type	Date	Venue/Location	# of attendees
Taylor, E.T.	Climate Change Made Difficult	Prerecorded lecture	March 31, 2014	Recorded at Western Gulf Silvicultural Technology Exchange and hosted at forestrywebinars/.net	72
Taylor, E.T.	Hurricanes in a Changing Climate	Prerecorded lecture	March 31, 2014	Recorded at Western Gulf Silvicultural Technology Exchange and hosted at forestrywebinars/.net	72
Taylor, E.T.	Climate Resources	Prerecorded lecture	March 31, 2014	Recorded at Western Gulf Silvicultural Technology Exchange and hosted at forestrywebinars/.net	72
Taylor, E.T.	Nutrient Cycling and Nutrient Deficiencies in Production Forests	Prerecorded lecture	March 31, 2014	Recorded at Western Gulf Silvicultural Technology Exchange and hosted at forestrywebinars/.net	72
Taylor, E.T.	Tree Physiological Responses to Extreme Stress	Prerecorded lecture	March 31, 2014	Recorded at Western Gulf Silvicultural Technology Exchange and hosted at forestrywebinars/.net	72
Taylor, E.T.	Stand Establishment	Prerecorded lecture	March 31, 2014	Recorded at Western Gulf Silvicultural Technology Exchange and hosted at forestrywebinars/.net	72

Trainings, workshops, and courses

Climate and Forests, What's Changing

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.

The Western Gulf Silvicultural Technology Exchange

The Western Gulf Silvicultural Technology Exchange (WGSTE) is a biennial workshop focused on disseminating new knowledge, tools, and strategies about pine-based silviculture to industrial and large-scale silviculturists working primarily in the Western Gulf region of the U.S. This event is crucial due to the unique climate conditions of the region and the concomitant impact to forest health and resilience. In other words, the effects of climate and climate variability on southern forests are particularly hard-hitting here. PINEMAP is sensitive to the greater urgency of adaptive silvicultural strategies in the Western Gulf region. PINEMAP has established a permanent committee to guide this effort consisting of not only PINEMAP members, but also, non-PINEMAP funded universities and agencies in the Western Gulf including the Louisiana State University AgCenter, Stephen F. Austin College of Forestry, and Louisiana Tech School of Forestry. To date, PINEMAP information has reached 72 silviculturists through the WGSTE representing 9 million acres – 5 of those million in pine.

Professional Development Webinar Series

The Professional Development Webinar Series is an ongoing, monthly series of webinars that debuted in November 2012 using the Forestry Webinars portal (www.forestrywebinars.net). This effort primarily targets large-scale forest managers and natural resource professionals such as forestry consultants and state forestry agency personnel. The series packages and delivers new knowledge and tools developed by PINEMAP in such a way that the audience can confidently incorporate these into their daily business and, as a result, improve the resilience, productivity, carbon sequestration, and nutrient management of their forest lands. Combined survey results show that participants feel satisfied with the amount of information covered in the webinars (Figure 18.1). To date, there have been two parts in the series: the first session of three webinars focused on soils and soil management and the second part was a single session focused on climate change in the Southeast that also covered myths and misconceptions surrounding the topic. So far, there have been a total of 315 viewers.

Adaptive Silvicultural Training: State Forestry Agency Training

PINEMAP is driving efforts in adaptive silvicultural training for state agency foresters. The key goal is to inform foresters of the latest research and tools so they can transfer information to their clients (primarily small-scale family forest landowners) and positively impact forest health, resilience, and productivity. To date, the program has been tested with the Texas A&M Forest Service. Sixteen foresters participated in the initial training program and have already incorporated the new strategies into their forest management plans and used new decision-support tools to guide landowners. Plans are in place to conduct four trainings of this type across the region in 2014.

1890's Extension Agents and Specialists PINEMAP Training Workshop

Huntsville, AL, May 17-19, 2013

This workshop was organized by PINEMAP's Aim 6 extension team and was designed to train and inform extension specialists and agents from 1890's Universities on climate science as well as PINEMAP information and resources. The training included about 30 people as well as Aim 6's Martha Monroe, Bill Hubbard, Mark Megalos, Heather Dinon Aldridge, Leslie Boby and Joshua Idassi. Presentations included basic climate science, resources for learning and teaching about climate science, PINEMAP resources and tools available to utilize.

2014 Land Grant and PINEMAP Climate Change Workshop, Wilmington, NC, January 21-23, 2014

Members of PINEMAP's Aim 6 extension team organized a workshop on climate science, forestry, agriculture and coastal resources for a group consisting of North Carolina Cooperative Extension Service agents and then other extension agents from 1890's Universities, as well as a few agents from the non-profit forestry extension organization- Federation of Southern Cooperatives. 25 people attended to listen to talks on audience analysis, climate science and then forestry specific resources. Aim 6 members that were present included Ryan Boyles, Heather Dinon Aldridge, Leslie Boby, Mark Megalos, Gwen Boyd and Joshua Idassi.

Experiments, surveys, and data collection

Climate Change Perceptions of Southeastern Foresters Survey

Survey of forest professionals' perceptions of climate, climate change, and forestry education 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.

MILESTONES

Implement and strengthen forestry Extension/climatologist partnership

Heather Dinon, Ryan Boyles and Leslie Boby attended the annual meeting of the Southeast Climate Consortium (SECC) during November 2012. 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.

Heather Dinon Aldridge, and Pam Knox presented at the PINEMAP 1890s workshop in Huntsville during May 2013.

Barry Keim and John Nielsen-Gammon attended and presented on climate-related topics during the Western Gulf Silvicultural Technological Enterprise Workshop in December 2013.

Over the past year, Pam Knox has given seven climate-related presentations to various forestry audiences, including a webinar presentation on the basics of climate change at the SAF east central AL local chapter meeting in September 2013 and a webinar presentation on trends in the Southeast US and their impacts on trees as part of the PINEMAP Professional Development webinar series. Pam's other presentations are listed in the section above.

Leslie Boby attended the American Meteorological Society Meeting in Atlanta, GA in January 2013 and co-presented information on PINEMAP, with Mark Risse, who presented information about another climate science/livestock project. The AMS meeting is typically meteorologists and climatologists and the purpose of this talk was to create awareness about projects that work heavily with climatologists.

Audience/needs assessment for Extension programs

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

Joshua Idassi conducted a telephone inquiry to 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 delivered

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.

A workshop was implemented in Huntsville, Alabama in May 2013. Attendees included Extension specialists from 1890’s Universities in the Southeast. The focus of the workshop was climate science, climate change, forestry and climate tools, and PINEMAP developments.

The workshop for 1890’s extension faculty that was held in Huntsville in May 2013 delivered information about climate science and variability as well as forestry to 25 extension

professionals. A subsequent workshop was hosted in Wilmington, NC on similar topics for additional 1890's extension professionals, as well as North Carolina Cooperative Extension personnel and some forestry extension specialists from non-profit organizations.

Extension program evaluation

Decision Support System development

Over the past year, the DSS has taken a new direction in terms of the design and layout. While most forestry decision support systems are focused on decisions at the stand scale, the PINEMAP DSS will primarily focus on larger, regional scales. The rationale for this large-scale emphasis is that most of the PINEMAP research questions have a regional focus, e.g., "How will the climate of the Southeast United States change in the future, and how will these changes affect pine productivity?"; "Where will risks associated with changing temperature be most pronounced?"; and so on. There are many other decision support systems that focus on stand-scale problems, such as fertilization and growth and yield modeling; some of them are provided by the regional forestry research cooperatives associated with PINEMAP. Rather than replicate these efforts, the PINEMAP DSS will deliver information in areas where PINEMAP can provide a unique perspective, including climate, management, and soils impacts on forest management risks and opportunities across the entire range of loblolly pine.

A mock-up website has been created to highlight this new regional approach for the DSS. DSS developers will present these mock-ups to the DSS subcommittee in April 2014 to obtain their feedback on the new design.

Significant progress has also been made toward the development of a web-based framework to host the DSS on the PINEMAP website. Through collaborations with the PINEMAP website administrator and PINEMAP data managers, the back-end framework has been built and is being populated with new and existing decision support tools.

Data from TerraC is being fed into the DSS using an interface that Brandon Hoover developed. Careful consideration of the data use agreement is being performed during this process. The DSS will query and display data for gridded datasets using the THREDDS Data Server at the NC State Climate Office.

Collaborations with other PINEMAP colleagues have been developed for the DSS, including the following:

- Francisco Escobedo, Nilesh Timilsina: carbon hotspot dataset, species richness data
- Steve McNulty, Ge Sun and other USFS colleagues: incorporating WaSSI carbon sequestration projections and TACCIMO GIS viewer into DSS
- Damian Adams, Hyunjin An, Jim Gan, Don Grebner, Carlos Gonzalez, Tim Martin, Andres Susaeta Larrain, Eric Taylor, Bob Teskey, Ying Wang: risk assessment tool, which will provide guidance on how future changes in productivity due to climate factors will influence risk of southern pine beetle (SPB) outbreaks and hurricanes

- Tom Byram, Ross Whetten, Gary Peter: seed deployment tool
- Tom Fox, Forest Productivity Coop: DSS developers attended their meeting on 6/2/13 to learn more about their Lob DSS
- Eric Taylor: thinning decision key tool

Overall, DSS developers are prioritizing 3-5 tools that can be developed by the 2014 annual meeting. These include the seed deployment tool, a map displaying WaSSI output (water balance, water supply and demand, carbon storage projections), the risk assessment tool, a thinning decision key tool, and a map displaying climate projections across the PINEMAP region.

During the next two years of the PINEMAP project, the DSS will continue to be developed and improved using an iterative process of interaction between stakeholders and scientists. New tools will continue to be identified and implemented over the next year. The DSS will also undergo evaluation by key user groups in the PINEMAP region. Feedback from this evaluation will inform future direction of the PINEMAP DSS.

BROAD IMPACTS

The Extension team has organized an “Extension Climate Leadership Academy” training program with members of two other NIFA sponsored projects (one on Crops and the other one focused on animal agriculture). Collectively, we will develop a training event which includes training on climate science and how to understand/interpret it, as well as specific topic-based information on mitigating effects from climate change in three topic areas: crop production, animal production and forestry. Part of the design of the training is to create a ‘cohort’ group of extension agents who are trained and feel knowledgeable in understanding climate change and its effects on the resources that they manage.

Aim 6 members partnered with the ANREP CSI team to organize the National Extension Climate Science Initiative Conference during October 2013 in Minnesota and presented at least four times.

TRAINING

Last name	First name	Position	University	Role
Boby	Leslie	Extension Staff	UGA/SREF	Assisting with formation of regional Extension teams, and a PINEMAP Extension Advisory Board; participating in and presenting at research cooperative meetings; and facilitating internal and external PINEMAP research dissemination. Planned work includes developing and evaluating written and web-based (i.e., eXtension, webinars, etc.) educational materials and disseminating resources and materials to forestry stakeholders.
Burnett	Rachel	M.S. Student	NCSU	Assisting with reviewing factsheets and other PINEMAP-related publications; research focus: annual and decadal climate forcing of historical and current trends in fire regime in Southeast forests. Graduation 5/14
Cole	Hilary	M.S. Student	NCSU	Serving as a copy editor for factsheets and other PINEMAP-related publications. She is also providing guidance with contextual examples for the climate education materials in collaboration with the State Climate Office of NC. Hilary is assisting the SREF office with a region-wide Forest managers survey on Climate education needs that she will analyze as part of her Master's thesis. Graduation 5/14
Dinon Aldridge	Heather	Research Staff	NCSU	Applied Climatologist. Facilitating interaction between PINEMAP team members and state climatologists across the region through activities such as presentations in the internal webinar series and research cooperative meetings and weather/climate conferences. Other involvement includes development of the DSS, creation of fact sheets, and guidance on the best climate datasets for PINEMAP.
Foster	Anslai	M.S. Student	NCAT	Working on fact sheets and publications for PINEMAP.
Hall	Megan	Research Assistant	NCSU	She is implementing contextual examples into the climate education materials for forestry in collaboration with PINEMAP colleagues.
Holmes	Tiara	Undergraduate Intern	VSU	2013 Undergraduate Fellow; working with Shelby Krantz at UF
Krantz	Shelby	M.S. Student	UF	Conducted focus groups, helped design the forest landowner Extension workshop, developed a pre/post survey and analyzed data to better understand perceptions on climate, willingness to change management strategies, and opportunities to make a meaningful difference.
Martin	Andrew	Undergraduate Research Assistant	NCSU	Developing a tool for forestry professionals across the southern US, which displays historical temperature, precipitation, and drought indices.
O'Connell	Charlie	Undergraduate Research Assistant	NCSU	Reviewing the climate education materials for forestry as well as developing a tool for forestry professionals across the southern US which displays historical temperature, precipitation, and drought indices.
Temple	Christina	M.S. Student	NCSU	Drafted two fact sheets on adaptation related to forest pests and invasive species. Drafts were finalized by Hilary Cole and are undergoing developing a comprehensive list of climate education materials across the southern US.
Vuola	Aaron	M.S. candidate	NCSU	successfully defended his thesis on 3/30, graduated in May 2012. . Aaron has coauthored a peer reviewed paper and commentary from his theses with current graduates Hilary Cole and Rachel Burnett as research notes and ultimately as refereed publications. Aaron's thesis research was featured in poster during an IUFRO Small-Scale Forestry Conference in Amherst, MA fall, 2012.
Wojcik	Deborah	Postdoc	UF	Assisting with survey development and data analysis for the Extension climate perceptions survey. Dr. Wojcik helped develop the Six Americas survey for SE Extension Professionals and is writing one article.