



Air & Waste Management Association

News for People with Environmental Vision

New Forest Values: The Georgia Carbon Sequestration Registry

by Josh Love, Carbon Registry Manager—Georgia Forestry Commission

Carbon sequestration provides a low-cost, flexible way to mitigate greenhouse gas (GHG) emissions produced by the combustion of fossil fuels. As forests grow, trees absorb carbon dioxide from the atmosphere and trap (sequester) the carbon in the bole, roots, branches, and leaves. Globally, the amount of carbon dioxide in the atmosphere grows by 3.3 billion tons each year. An acre of managed southern pine forest can sequester between 1 and 4 tons of carbon per year, which is equivalent to 3.7-15.7 tons of carbon dioxide in the atmosphere. The 24.7 million acres of forestland in Georgia have enormous potential to reduce atmospheric carbon dioxide levels caused by fossil fuel emissions.

The state legislature recognized this important forest value in 2004 when it authorized the Georgia Forestry Commission to develop the **Georgia Carbon Sequestration Registry**.

This voluntary program has four primary goals:

1. To encourage voluntary reductions in GHG gas emissions.
2. To provide new economic opportunities to Georgians.

3. To provide a legitimate, legal record of carbon sequestration.
4. To recognize registry participants' commitment to environmental stewardship.

Carbon sequestration is but one of many ecosystem services that forests provide to us. Other examples include clean water, habitat for wildlife, and erosion control. Although all of these services hold incredible value, they are not bought or sold in traditional economic markets and forestland owners are typically not paid for these outputs. In recent years, however, market-based approaches for reducing carbon dioxide have garnered particular interest and landowners may soon be paid for the services their forests provide.

Many emission-dependent industries have made voluntary commitments to reduce their carbon dioxide emissions. Even in the absence of federal regulations that mandate GHG reductions, these entities are facing increasing pressure from shareholders and consumers to reduce their impact on the environment. For many carbon dioxide emitters, current capital investments inhibit sufficient reductions in emissions, so manufacturers and power plant purchase "carbon credits" from carbon sequestration projects to offset their fossil fuel emissions and reduce their environment impact. (Continued on page 4)

INSIDE THIS ISSUE:

<i>Recap of Fall 2006 Georgia Chapter Environmental Conference</i>	2
<i>Georgia A&WMA Chapter Annual Scholarship Winners</i>	3
<i>Notice of Intent Due for Industrial Storm Water Discharges</i>	4
<i>What is Pollution Prevention?</i>	4
<i>The Hardening of Georgia : Impervious Surface Analysis from 1991 to 2005</i>	5
<i>A Growth Management Plan for Georgia? Get a GRIP</i>	6
<i>U.S. EPA's WasteWise Program</i>	7
<i>Georgia Tech: Modeling Material Flows for Sustainable Industrial Systems for Urban Regions</i>	11
<i>What is CAFÉ?</i>	11



Mary Kay Lynch, US EPA Region 4

Recap of Fall 2006 Georgia Chapter Environmental Conference

Summary by Tommy Sweat—Chair, Georgia Chapter Environmental Planning Specialists, Inc.

On October 3, 2006, the Georgia Chapter of A&WMA held our Annual Environmental Conference at the Georgia Tech Global Learning & Conference Center in Atlanta. After

receiving a keynote address from Mary Kay Lynch, Regional Counsel—U.S. EPA Region 4, attendees were presented with a panel discussion titled, “Environmental Compliance: Agency Enforcement Priorities and How You Can Be Prepared”. Panel speakers included Georgia EPD enforcement personnel in the areas of air quality, hazardous waste, storm water, and risk management, as well as an attorney to discuss legal strategies.

After the panel discussion, attendees were treated to a luncheon address by Peter F. Hess, P.E., DEE, QEP, President of A&WMA, entitled “A&WMA-Stewards of the Environment”. Mr. Hess spoke of the many ways A&WMA members are going above and beyond what is required to protect the environment. As a sign of our appreciation, the Georgia Chapter presented Mr. Hess with a basket of Georgia souvenirs, including a book on Atlanta and a Georgia Tech hat.

After Mr. Hess’s address, Rochelle Routman, Education Chair, presented three scholarships, each valued at \$1,500 to John Kominoski, Kuo-Jen Liao, and Rama Mohana R Turaga. All three scholarship winners attended the conference to accept their scholarships, and made a presentation about their research during the luncheon.

Tommy Sweat, Chapter Chair, presented three environmental awards to the following recipients:

- **Air (Minor Source): First American Resources Company** is a coil coating facility located in Mableton, Georgia. The subject of this award is the facility’s efforts to reduce emissions and energy consumption through the replacement of the regenerative thermal oxidizer used to control emissions from its coil coating lines. Receiving the award was Mr. Rick Blackmer of First American Resources Company.
- **Air (Major Source): Lockheed Martin Aeronautics Com-**

pany operates Air Force Plant 6 in Marietta, Georgia. The subject of this award is the facility’s efforts to reduce emissions through the installation of an ultra-low NOx boiler, utilizing alternative coating application equipment, and other activities. Receiving the award was Mr. Carl Jacobsen of Lockheed Martin Aeronautics Company.

- **Waste Management: InterfaceFLOR Commercial** operates a modular carpet manufacturing facility in LaGrange, Georgia. The subject of this award is the facility’s efforts to reduce waste through reclaiming carpet material, using oil-free backing technology, utilizing landfill gas for energy, and other activities. Receiving the award was Mr. Stuart Jones of InterfaceFLOR Commercial.



Peter Hess, A&WMA President

After the scholarships and awards presentations, two concurrent technical sessions were held. Attendees in the air session received updates on NSR rule revisions, air toxics, stack testing, the Boiler MACT, and MACT standard compliance. Attendees in the waste/water session received updates on Lockheed Martin’s recycling programs, SPCC requirements, TSCA inventory update rule amendments, the Southeast Diesel Collaborative, and AGL Resources brown-

fields redevelopment.

We would like to thank our sponsors for the event:

- Presenting Sponsor: Brown and Caldwell
- Supporting Sponsors: Analytical Services, Inc. (ASI), Environmental Planning Specialists, Inc. (EPS), ENVIRON, SPL Laboratories, Inc., and TechLaw, Inc.

We would like to thank all of the speakers for their time and efforts. The presentations from the conference are available online at www.gaawma.org. Click on the “Conference Presentations” link for a list of presentations available for download (Adobe pdf format).

Georgia A&WMA Chapter Annual Scholarship Winners

by Rochelle Routman, Education Chair, Georgia Power

Due to the generosity of our sponsors and the success of our Georgia A&WMA Chapter Programs, three scholarships, each valued at \$1,500.00, were awarded this year. A panel of judges rated each applicant's research on three factors:

1. Contribution to improving environmental knowledge.
2. Contribution to critical decision-making for the benefit of society; and
3. Originality of the research concept.

The 2006 scholarship winners are 1) John Kominoski; 2) Kuo-Jen Liao; and 3) Rama Mohana R Turaga. All three scholarship winners attended the Fall 2006 Chapter Environmental Conference to accept their scholarships, and made a presentation about their research during the luncheon.

John Kominoski is a graduate student at the Institute of Ecology at the University of Georgia. The title of John's research is *Effects of changes in riparian tree species dominance on microbial colonization of leaf litter in a southern Appalachian stream*. John will be graduating in May 2008, with a Ph.D in Ecology. He plans to continue researching the effects of biodiversity changes on the structure and function of ecosystems, with an emphasis on terrestrial-aquatic linkages. He would like to collaborate with other scientists and non-scientists to address concerns related to alteration of ecosystems and subsequent long-term ecological responses or adaptations. His career goal is to obtain a tenured position at a mid-sized university that emphasizes research and teaching excellence as well as high school science education and research outreach programs.

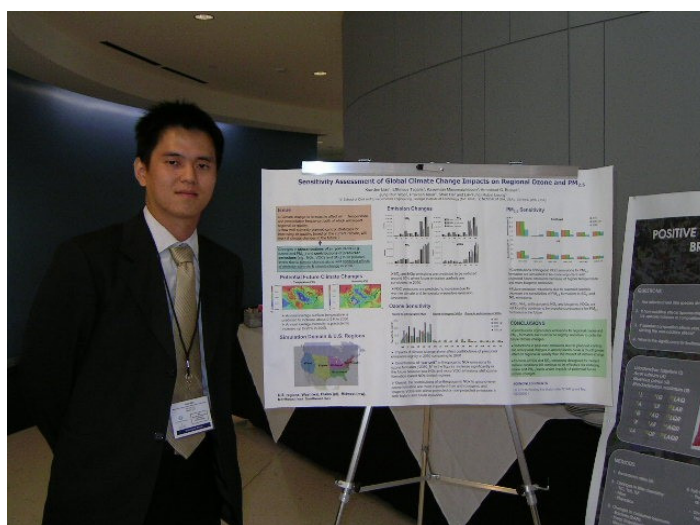
Kuo-Jen "K-J" Liao is a graduate student at the School of Civil and Environmental Engineering at the Georgia Institute of Technology. The title of K.J.'s research is *Sensitivity and Uncertainty Assessment of Global Climate Change Impacts on Regional Ozone and PM_{2.5}*. K.J. hopes to graduate in 2008 with a Ph.D. in Environmental Engineering. His plans for the future include continuing air quality and climate related research in either academic or government research institutes.

Rama Mohana R Turaga (picture not available) is a graduate student at the School of Public Policy at Georgia Tech. The title of Mohana's research is: *Spatial Resolution, Efficiency, and Equity in Air Toxics Regulation*. Rama expects to graduate in May 2007 with a Ph.D. in Public Policy. His plans for the future include a faculty position at a research-based university where he can continue his research. His research interests include environmental risk assessment and policy, spatial issues in environmental policy, political economy, and environmental policy in developing countries.

The AWMA-Ga Chapter congratulates all three scholarship winners and wishes them the best of luck in their future endeavors!



John Kominoski, UGA



K.J. Liao, GA Tech

Have You Submitted Your Notice of Intent for Industrial Storm Water Discharges?

By Woody Barnes, Georgia EPD, Small Business Environmental Assistance Program

The National Pollutant Discharge Elimination System (NPDES) new general permit for industrial storm water discharges in Georgia became effective August 1, 2006. If your business is subject to the requirements, then your Notice of Intent (NOI) should have been filed by August 31, 2006. The general permit specifies which SIC (Standardized Industrial Classification) codes are subject to the requirements.

Obtain the NOI and the general permit from the Georgia Environmental Protection Division's (EPD) website at www.gaepd.org. Click on *Technical Guidance* and look for *Storm Water under Watershed Protection Branch programs*. Then scroll down to *Industrial Storm Water* to find the NOI and a copy of the permit with SIC code applicability. You will also find monitoring requirements, and other guidance to assist you.

The NOI is fairly simple to complete. Along with your business and contact information, you'll need to know the GPS latitude/longitude coordinates for your site, the river basin where your storm water drains, and if your site is within a mile of a stream/river listed on the state's 303(d) list of impaired streams. For a list of the impaired streams, go to where you

found the NOI and click on Georgia 2004 303(d) list for Storm Water Permits (Revised 2006). The streams are listed by county name.

To comply with requirements of the permit, you must have an up-to-date storm water pollution prevent plan (SWPPP). Your plan must be developed and implemented within 60 days of the effective date of the permit. Check with professional trade associations for your industry for plan templates used by others in your industry. Georgia Tech has developed an internet website for building a SWPPP, www.gatechstormwater.com. You can save your plan on their website and update your plan as necessary to remain in compliance.

If you are a small business, contact the Georgia EPD Small Business Environmental Assistance Program TODAY at 1-877-427-6255 if you missed these deadlines and need assistance. Permit violations that impact state waters can be very expensive!



nvttech.com

What is Pollution Prevention?

Georgia DNR—Pollution Prevention Assistance Division

Simply stated, pollution prevention (also called P2) is elimination of waste at the source where it is first produced. EPA defines "pollution prevention" to mean source reduction as defined in the 1990 Pollution Prevention Act, including any practice which:

- A Reduces the amount of any hazardous substance, pollutant or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and
- B Reduces the hazards to public health and the environment associated with the release of such substances, pollutants or contaminants. . . .

P2 includes practices that reduce the use of raw materials, water, and energy through conservation and reuse (from EPA Facility P2 Guide).

P2 methods can include such actions as equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.



New Forest Values: The Georgia Carbon Sequestration Registry—Continued

by Josh Love, Carbon Registry Manager—Georgia Forestry Commission

Continued from Page 1

In light of these current developments, Georgia's carbon registry will serve as a system for bringing carbon dioxide emissions-dependent companies together with certified carbon sequestration projects. An online database will track and record carbon sequestration achieved from a variety of qualified forest practices. A few examples of qualified practices include tree planting, fertilization, and forest restoration. Companies interested in purchasing carbon credits will use the Registry's database to find available projects. The Georgia Forestry Commission will be responsible for development and oversight of the program, training third-party project certifiers, and monitoring projects for compliance with developed registry protocols.

As of September 2006, the registry remains in the final stages of development. Later this year, a final version of



nvttech.com

the protocols governing the registry will be made available for public review and comment. After receiving the feedback and input of all interested parties, the registry will be implemented in early 2007.

As local, state, and national concern over carbon dioxide emissions increases, the value of carbon sequestration will also rise. The Georgia Carbon Sequestration Registry will provide a system for capturing this growing value. Through this process, participating forest landowners will realize additional economic value from their forests while industries achieve legitimate and quantifiable reductions in greenhouse gas emissions.

The Georgia Forestry Commission welcomes all comments and questions. For additional information about the Georgia Carbon Registry, please contact:

Joshua Love, Carbon Registry Manager—Georgia Forestry Commission: (478) 751-3482

The Hardening of Georgia: Impervious Surface Analysis from 1991 to 2005

By Dr. Liz Kramer, Director, National Resources Spatial Analysis Laboratory, Institute of Ecology, University of Georgia, Athens, GA

The State of Georgia added 108 acres of impervious surface per day during the period of 2001 to 2005. That is less than an acre per county if spread evenly over the entire state; however, that is not the case. Almost half of the daily increase is happening in the 16 counties that make up the Metropolitan Water Planning District. These counties are experiencing an increase of 55 acres per day, up from 28 acres per day over the ten year period of 1991 to 2001. However, these increases aren't just limited to the metropolitan Atlanta area. Chatham and Muscogee counties are in the top 10 counties for daily impervious surface increases. These increases have huge potentials for impacting air quality, water quality and quantity, as well as loss of habitat for plants and animals.

There are natural impervious surfaces such as exposed granite outcrops, but the vast majority of materials that create impervious surfaces are man-made such as buildings, driveways, roads, and sidewalks. Mapping these surfaces is a challenge because it is difficult to develop an automated protocol. Much of the mapping for local government applications involves hand digitizing from high resolution photographs which limits the amount of area that can be mapped because it is expensive and time consuming. Recent techniques have been developed to detect and map impervious surface density from readily available Landsat TM satellite imagery. Although the method is not as

accurate as photo interpretation it does provide a data set that can be used for large areas and is comparable from county to county, city to city or region to region.

In an effort to improve assessment of landcover change, the United States Geological Survey (USGS) incorporated two new data products to their National Land Cover Database (NLCD 2000). Along with the standard land cover map product, the addition of impervious surface density maps and tree canopy density maps provide information on land cover class, percentage of impervious surface, and percentage of tree canopy. This information is a useful snapshot in time, but does not reflect the latest changes occurring around the state.

Two years ago, with funding from the Georgia Forestry Commission and in partnership with the Upper Chattahoochee Riverkeeper, the National Resources Spatial Analysis Laboratory at the University of Georgia's Institute of Ecology designed a pilot project for the Metropolitan Atlanta Region to determine the ability to map change in impervious surface and tree canopy for multiple dates. In addition, the Georgia Forestry Commission's Community and Urban Forestry Grant program and matching support from Georgia Environmental Protection Division has provided funding for the creation of statewide maps for 1991 and 2005, in addition to the initial 2001 maps.

(Continued on page 8)



nvttech.com



nvtech.com

Why doesn't Georgia have a comprehensive growth management plan? While the

Georgia Planning Act outlines growth management in our state, certain touchy aspects remained unimplemented.

According to OCGA 50-8-7.1 "(1) The department (Georgia DCA), utilizing the comprehensive plans of qualified local governments, shall assist the Governor in coordinated and comprehensive planning on the state level and throughout the state, including, but not limited to, assistance in the development of a comprehensive plan for the state." Based on the above law, many planners would say Georgia falls short of a comprehensive growth management program.

What does it take to have a statewide growth management? One definition often cited is that growth management 1) is provided under state legislative enactment; 2) mandates or encourages local governments to prepare plans; 3) mandates or encourages submittal of plans for review; 4) maintains system of incentives and disincentives. Under this definition Georgia definitely has a growth management program. The two largest deficiencies in Georgia's existing growth management program could arguably be the lack of required consistency to development regulations and the fact that funds distributed through Georgia DOT are not impacted by Qualified Local Government (QLG) status. QLG is the trigger that is used if a local government fails to adopt a plan.

So what does the current state of affairs say about state planning? We have many components of a state plan either completed or underway and we arguably have many state growth policies. Some of these growth policies may be distasteful to many planners, but none the less they have been supported by our state elected officials for many years.

We have many components of a comprehensive state plan. We have had a State Transportation Plan for many years. We have a Statewide Water Plan under development. We have a State Energy Strategy under development. We have a Land Conservation Partnership Plan and Comprehensive Wildlife Conservation Strategy. We have many Regional Plans. We even have a State Emergency Operations Plan and Pandemic Influenza Plan. Links to all these plans are provided at the end of this article. So what are we lacking in Georgia?

A Growth Management Plan for Georgia? Get a GRIP

By Dan Reuter—Georgia Planning Association

Planners would argue that the various state functional plans may not support one another, do not achieve economics of scale that may be available and may actually contradict one another. That may be true. But considering all the imperfections present in public sector planning from accurate forecasts to meaningful implementation, I am guessing that at a state level, even a well coordinated comprehensive state plan would have similar faults.

I believe a comprehensive growth management plan is not only achievable and likely in our future, but some of the components are already obvious. Take for example the Governors Road Improvement Program (GRIP). The stated purposes of the GRIP program on the Georgia DOT website are:

1. Connectivity in Rural Georgia: GRIP will connect 95% of Georgia cities with a population of 2,500 or more to the Interstate System and ensure that 98% of all areas in the state will be within 20 miles of a four-lane road.
2. Provide opportunities for growth: Several studies have provided evidence that GRIP fosters economic development.
3. Provide effective and efficient transportation for the growing statewide population.
4. Safer travel in rural areas: Accidents occur three times more often on 2-lane highways than on multi-lane divided highways—especially on corridors with the higher travel volumes.

As an element of any comprehensive state growth management plan, transportation investments would be a large component. GRIP was initiated in 1989 and originally consisted of 14 corridors with 2,690 miles of roadway, including 113 miles of truck access routes. During the 2001 and 2005 Legislative sessions, the General Assembly added new routes, including three truck access routes. The current length of the GRIP system has grown to 3,314 miles. The public investments in the GRIP program not to mention the Interstate system in Georgia are huge.

So can collective state policies and funding programs constitute a de facto growth management program? And if so, is the issue for Georgia planners that we desire a clear statement of statewide growth management or that we disagree with the current growth policies and investments? My guess is that the planner would be less concerned if we had a formal state plan if the public policy and investments were supporting rational development patterns.

(Continued on page 7)

A Growth Management Plan for Georgia? Get a GRIP—Continued

By Dan Reuter—Georgia Planning Association

The fact is that our current growth management system and state plans are “in-process”. Georgia has been reluctant to embrace growth management that cuts across functional areas, levels of government and disciplines but as further growth occurs that strategy will become increasingly problematic and offer diminishing returns. Many individuals would argue this is already the case. GRIP, for example, is a geographically fair method of building roadway infrastructure but on a per capita investment basis or a means for maximizing long term economic returns it is debatable. In a future with limited transportation funds this will become increasingly clear.

A Georgia comprehensive growth management plan will become more important in a global economy. Not because citizens and elected desire a top down method of directing growth, but because we will need the economic and fiscal benefits of a rational use of our collective state and local resources to compete and sustain our economy in the coming decades.

Websites of interest:

Governors Road Improvement Program (GRIP)

<http://www.dot.state.ga.us/DOT/preconstruction/>

[SpecialSubjects/grip/index.html](http://www.gadnr.org/SpecialSubjects/grip/index.html)

[Georgia Statewide Water Plan \(under development\)](#)

<http://www.gadnr.org/gswp>

[Georgia Statewide Transportation Plan](#)

<http://www.dot.state.ga.us/DOT/plan-prog/planning/swtp/index.html>

[Georgia State Energy Strategy](#)

<http://www.georgiaenergyplan.org/>

[Land Conservation Partnership Plan](#)

Http://www.gadnr.org/glcp_old/Assets/Documents/GLCP_Final_Report_for_web.pdf

[Comprehensive Wildlife Conservation Strategy](#)

<http://www.gadnr.org/cwcs>

[Georgia State Pandemic Influenza Plan](#)

<http://health.state.ga.us/>

[Georgia Emergency Operations Plan](#)

<http://www.gema.state.ga.us/>



U.S. EPA's WasteWise Program

“Building America” and U.S. EPA's WasteWise program are partnering together to help cities and other organizations reduce their solid waste. WasteWise is a free, voluntary, EPA program through which organizations eliminate costly municipal solid waste and select industrial wastes, benefiting their bottom line and the environment. WasteWise is a flexible program that allows partners to design their own waste reduction programs tailored to their needs. All organizations within the U.S. may join the program. Large and small businesses from any industry sector are welcome to participate. Institutions, such as hospitals and universities, non-profits, and other organizations, as well as state, local and tribal governments, are also eligible to participate in WasteWise.

There is no fee for membership in WasteWise. WasteWise targets the reduction of municipal solid waste and selected industrial waste. Municipal solid waste includes materials that could end up in an organization's (or its customers') trash, such as corrugated containers, office paper, yard trimmings, packaging, and wood pallets. Participants can also address industrial wastes such as non-hazardous batteries, coal combustion products, foundry sand, non-hazardous sludges, oil filters, non-hazardous ink, and porcelain. WasteWise partners range from small local governments and nonprofit organizations to large, multinational corporations. Key aspects of successful WasteWise programs include: Management support; Waste assessments



The Hardening of Georgia: Impervious Surface Analysis from 1991 to 2005—Continued

By Dr. Liz Kramer—UGA

We completed the impervious surface data layers and are finalizing the tree canopy and land cover data layers. These new data products have enormous potential for a variety of environmental programs including water quality and quantity modeling, air quality modeling and green space planning.

To produce the impervious surface datasets from Landsat imagery, we start with a series of high resolution aerial photographs. In this case we used the 1993 and 1999 Digital Ortho Quarter Quads of Georgia. These photos have a ground resolution of 1 square meter. We created a binary map of impervious surface/pervious surface. We then layed a 30 meter grid over the binary maps and counted the percent of each 30 meter grid cell that is impervious. We created hundred of thousands of individual grid cells from the photo images that represented values from 0 to 100 percent. We selected a subset of 50,000 or so cells and built a regression model with these values and multi-dates of Landsat data, and other data such as a digital elevation model, and a date band model. The resulting model was then used to model our impervious surface map (http://narsal.ecology.uga.edu/atl_landcover/methodology.html).

Overall the State of Georgia has seen a steady increase in impervious surface coverage from 1991 to 2005 as illustrated in Figure 1 (page 9). The total area of impervious surface in 1991 was 468,323 acres, and the value of this parameter increased to 847,231 acres by 2005, almost doubling in the last 15 year period. The rate of increase was very different between 1991 and 2001 when the impervious area statewide increased by 60 acres per day. Between 2001 and 2005 it increased by 108 acres per day. In each time period, Gwinnett County led the way by increasing its impervious surface by 6 acres per day between 1991 and 2001 and by 9 acres per day between 2001 and 2005 as seen in Table 1 (page 9).

Table 2 (page 10) lists the top ten counties based upon their percent impervious surface for each year of mapping. Clayton County has the highest percent impervious surface for all three years. This is a small county with a very large airport. Figure 2 (page 10) identifies counties with greater than 10 percent impervious surface area at each time interval.

These data provide a great visual representation of land cover change in Georgia that can be used for a number of different planning and modeling activities, as well as educational uses. Activities include providing information for a variety of planning applications such as comprehensive, recreation, green space and other infrastructure. Areas of high impervious surface may need mitigation activities such as site design standards to reduce stormwater quantity and quality. Areas that may need additional tree planting to help with air quality and temperature mitigation can be identified.

These data are also useful for a variety of water quality and water quantity modeling applications. They are helpful for watershed modeling and planning activities, such as total maximum daily load (TMDL) implementation, the identification of potentially impaired waters, and as an assessment tool for future development activities on stormwater systems. They can be used to identify areas of potential flooding and may help improve the quality of floodplain maps. We also believe these data can provide great information to air quality and transportation modeling efforts.

The 2001 data are currently available for download via the USGS seamless data server (<http://seamless.usgs.gov>) other dates will soon be made available via the Georgia GIS Clearinghouse (<http://gis.state.ga.us/>). We are currently designing our website (<http://narsal.ecology.uga.edu>) to provide maps and statistics for each county in Georgia, as well as a web-enabled mapping tool to allow users to look at various areas in Georgia. In addition, we will provide users with case studies and ideas for applications.

The Hardening of Georgia: Impervious Surface Analysis from 1991 to 2005-Continued

Statewide

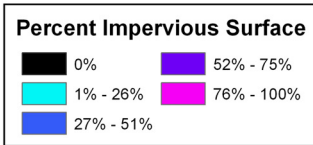
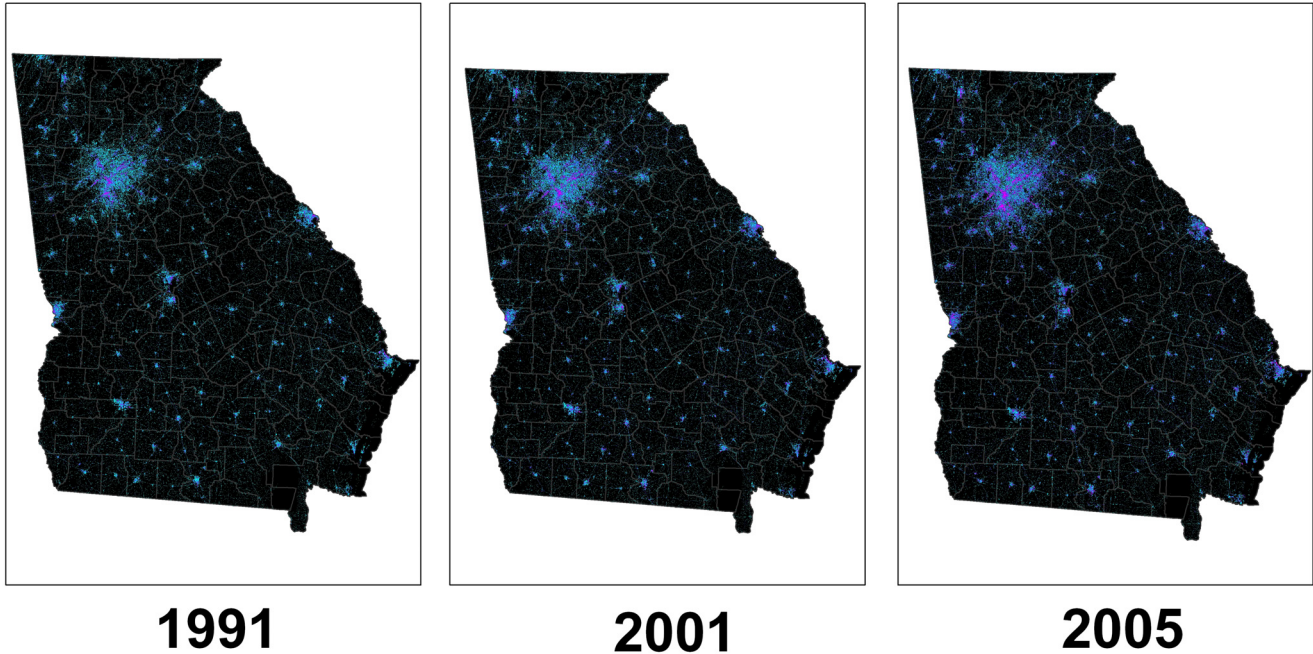


Figure 1. Impervious Surface Maps for the State of Georgia

Table 1. Average Rate of Daily Increase in Impervious Surface for the Top 10 Counties for Each Of the Time Periods Measures (Measures are in Acres Per Day)

County	Change acres/day 1991 - 2001	County	Change acres/day 2001 -2005
Gwinnett	6	Gwinnett	9
Fulton	5	Fulton	8
Cobb	4	Cobb	6
Dekalb	2	Dekalb	5
Forsyth	1	Henry	4
Clayton	1	Clayton	3
Henry	1	Chatham	3
Chatham	1	Paulding	3
Cherokee	1	Cherokee	3
Richmond	1	Muscogee	2

The Hardening of Georgia: Impervious Surface Analysis from 1991 to 2005- Continued

Counties With Greater than 10% Impervious Surface

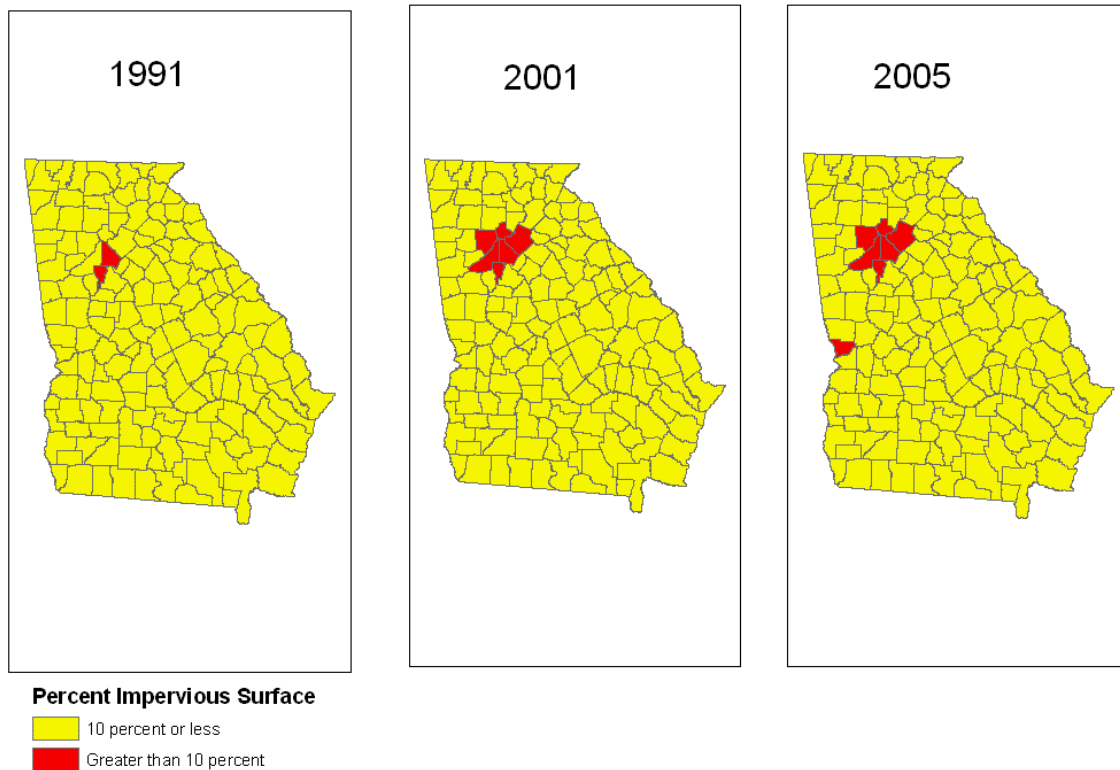


Figure 2. Counties With Greater Than 10 Percent Impervious Surface for Each of the Time Intervals

Table 2. The Top 10 Counties Ranked by Percent Impervious Surface for each the Years Mapped

1991		2001		2005	
County Name	Percent Impervious Surface	County Name	Percent Impervious Surface	County Name	Percent Impervious Surface
Clayton	14.3	Clayton	19.9	Clayton	24.8
Dekalb	13.5	Dekalb	18.1	Dekalb	22.0
Fulton	10.3	Cobb	16.3	Cobb	20.1
Cobb	10	Fulton	15.3	Gwinnett	19.2
Gwinnett	7.3	Gwinnett	14.9	Fulton	18.65
Muscogee	6.9	Muscogee	9.3	Muscogee	11.8
Richmond	6.7	Richmond	8.8	Richmond	9.9
Bibb	5.8	Clarke	7.9	Clarke	9.7
Clarke	5.2	Bibb	5.8	Rockdale	8.8
Rockdale	4.2	Rockdale	6.8	Bibb	8.1

What's Going On in Environmental Education and Research at Georgia's Institutions of Higher Learning? Profile: Georgia Institute of Technology—Modeling Material Flows for Sustainable Industrial Systems for Urban Regions



Professor Nancey Green Leigh is the Principle Investigator of an interdisciplinary and multi-institutional team from Georgia Tech, University of Washington, and West Virginia University for a planning grant the hypothesis of which is that urban centers, which hold the largest share of population and material and energy flows associated with the use and disposal of products, are critical factors in the human influence on the environment.

Urban centers contain a significant and growing fraction of population and material and energy flows associated with the use and disposal of products. Re-engineering the flows of materials—particularly the patterns of their disposal—is critical to achieving sustainable systems within national boundaries, and across generations. Yet, the urban landscape and population, and their associated material flows, have been underrepresented in models of sustainable industrial system growth.

In developing models and tools to shape the next generation of industrial systems for materials *mined from urban centers*, the spatial distribution of these material resources must be integrated because successful design of sustainable systems cannot occur in a geographical vacuum. *In recognition of the symbiotic material flow relationship between manufacturing companies and urban regions*, this multi-disciplinary collaborative research effort will develop a framework for modeling and assessing the impact of redesigning urban materials flows to advance the mutual goals of sustainable industrial and urban systems. The research groups common focus is on the mining specific products and associated materials from urban centers through new recycling networks and facilities for the Atlanta and Seattle metropolitan regions,

and on modeling the economic development and environmental effects of different material flow scenarios on these regions.

In the groups work, they will connect Geographic Information Systems data to demographic data, to consumer behavior models, to Input-Output and Social Accounting Matrix models, and to transportation and environmental impact assessment models. The resulting framework and models will be applied to evaluate specific techno-economic-policy scenarios of interest to the Cities of Atlanta and Seattle in carpet and electronics recycling in terms of material flows, transportation, economic development, and environmental impact. Recognizing the global need for such models and analysis systems, the groups work includes a problem-based international educational component focused on the dumping of electronic waste in Africa.

The group expects the research insights generated by this project will help in closing the significant gap in thinking on sustainability that has resulted from treating industrial systems separately from urban systems. Closing this gap is a necessary condition for fully mitigating the environmental impacts of industry. Outcomes will include improved modeling of material flows for the urban scale that will help in developing market-based collection and recycling systems which take into account the impacts of consuming greenfields, inner city economic revitalization, and landfill reduction. Thus, this research is intended to encourage new manufacturing activity via waste diversion in distressed areas — a promising economic development strategy that promotes urban sustainability.

What is “CAFÉ”?

By Ashley Besaw—Georgia EPD Air Protection Branch

“CAFÉ”, the “Continuous Atlanta Fleet Evaluation” project is conducted by the Georgia Tech Research Institute and uses Remote Sensing technology to collect data from vehicles traveling in and around metro Atlanta. The data obtained by remote sensing is used to evaluate the effectiveness of Georgia’s I/M program and to identify “Gross Polluter” vehicles; those with exhaust gases measuring more than 5x the cut points. Remote Sensing sites are set up to appear as roadside surveys. As a vehicle passes through the remote sensing lane, a detector measures the exhaust gases and a camera captures the license plate. The data is then sent to a computer for matching. If a vehicle has been identified and verified as a “Gross Polluter” and is registered in a non-attainment county, the owner is notified to contact the EPD I/M unit to schedule a supervised Emission Test.



Mission Statement:

Our mission is to promote a cleaner, safer environment in Georgia by focusing on air and waste issues. We achieve our mission through information transfer, technology exchange, education and environmental leader-

WE NEED YOUR HELP!

Please submit articles for future newsletters to Susan Jenkins at susan_jenkins@dnr.state.ga.us

Deadline for receipt of articles for the Winter 2006-2007 newsletter is December 31, 2006.

VISIT OUR UPDATED WEB SITE!

www.gaawma.org

You now can join or renew as a chapter associate online, and we now accept payment online using a credit card!

All of our upcoming events are listed on the site, including online registration and payment.

A searchable directory is now available to National A&WMA and Georgia Chapter Associate Members.

Organization Officers

Thomas P. Sweat, P.E., Chair
Environmental Planning Specialists, Inc.
tsweat@envplanning.com

Vacant Position, Vice Chair

Les Engel, Treasurer
ERM
lester.engel@erm.com

Hillary Sencer Edelstein, Secretary
Owens Corning Atlanta Roofing Plant
hillary.edelstein@owenscorning.com

Directors

Marlin Gottschalk, Director 2005-2007

Georgia EPD
marlin_gottschalk@dnr.state.ga.us

Richard (Rick) Turner, Director 2006-2008
Georgia-Pacific Resins, Inc.
roturner@gapac.com

Della Ridley, Director 2004-2006
Website Chair
Solvay Pharmaceuticals
della.ridley@solvay.com

Committee Members

Melissa Eller, Membership Chair
Southern Petroleum Laboratories
spl_ga@bellsouth.net

Susan Jenkins, Publications Chair
Georgia EPD, Air Protection Branch
susan_jenkins@dnr.state.ga.us

Joan Sasine, Programs Chair
Powell Goldstein
jsasine@pogolaw.com

Vacant Position, Awards Committee

Rochelle Routman, Education Chair
Georgia Power
riroutma@southernco.com

Jill Stachura, Past Chapter Chair
Brown & Caldwell
jstachura@brwncald.com
