NACIS**2013**

Greenville, SC
October 9th–12th

North American Cartographic Information Society

Hyatt Regency 1st floor

Teal Ballroom
above, on 2nd floor
opening reception
hospitality suite

out to
Beattie Pl
from
1st floor

Crepe Myrtle

Regency Ballroom B
exhibits

Regency Ballroom C
PCD-CGDCD lunch
Thursday lunch
Friday dinner

Regency Ballroom D
sessions

Regency Ballroom F
PCD, sessions

stairs to
2nd floor
Teal Ballroom
Studio 220
NACIS Night Out

ATRIUM

bar

stairs to
2nd floor
Studio 220
NACIS Night Out

elevators

out to Main St
from 2nd floor

Redbud
sessions

Map by Dennis McClendon

Welcome to Greenville!

It gives us great pleasure to officially welcome you to Greenville for the 33rd Annual Meeting of the North American Cartographic Information Society (NACIS).

Thank you for attending! In addition to enjoying the full schedule of presentations, we hope that you find time to reconnect with old colleagues and to build relationships with new friends. Our community is truly what makes NACIS a vibrant organization.

Data-driven map stories

Cartographers rely more than ever on technology and data science to craft engaging and informative narratives. As geographic data get bigger, how can we find and follow the story arc? How can we use technology to make the humble spreadsheet or personal narrative interactive and read just as well online as in print? We invite you to explore these topics with us in Greenville!

Neil Allen President

Nathaniel Vaughn Kelso Vice President & Program Chair

WED 8:30a–5:00p	**Practical Cartography Day**
7:00p–10:30p	**Kickoff Events: Welcome, Corlis Benefideo Award, Map Gallery and Poster Competition**
THU 8:15a–10:00a	**Online Tools and Templates**
10:15a–12:00p	**Open Source Web Mapping**
12:00p–1:45p	**Annual Business Meeting (with Lunch!)**
2:00p–3:30p	**Considering the (Mobile) User**
3:45p–5:15p	**Popular Design**
6:30p–9:30p	**NACIS Night Out at *Studio 220* (in the conference hotel)**
FRI 8:15a–10:00a	**New Visualizations for Old Data**
10:15a–12:00p	**Big Data and the Crowd**
12:00p–1:45p	**Lunch on your own or join a Lunch Bunch (check in at Registration Desk)**
2:00p–3:30p	**On Web Maps: Multiscale**
3:45p–5:15p	**Map Stories and the Web Tools to Create Them**
6:00p–11:00p	**Banquet with Keynote Address by Alberto Cairo; Geodweeb Geopardy**
SAT Varies	**Workshop (Half Day am): Hands on with Tile Mill** **Workshop: CartoDB (Half Day pm)**

Cartographic and Geographic Data Collections Day

New Views on Old Places

Mini-Workshop: Back to Basics

Experimental Practices

Mini-Workshop: Building Maps with a Solid Analytical Foundation

Aesthetics, Emotion, Design

Beck, Balls, Fracking & the Ocean

Recent Research

Online Basemaps and Web Atlases

Special Session: Cartographies of the South, General

Mini-Workshop: The Contemporary Web Mapping Application

Special Session: Cartographies of the South, Atlanta

Mini-Workshop: An Introduction to Map Projections

Panel: Two Approaches to a Deep Map of Atlanta

Mapping Living Environments

Criticism and Analysis

Teaching Cartography

Workshop (Full Day): Web Maps with ArcGIS Online

Field Trip (Full Day): Land of Waterfalls

Practical Cartography Day Regency F

Morning Presentations I 9:00a to 10:15p

Welcome
Mamata Akella & *Andrew Woodruff* PCD co-organizers

New Natural Earth Raster Data
Tom Patterson National Park Service
Daniel Huffman somethingaboutmaps

What's New in Natural Earth 3.x
Tom Patterson National Park Service
Nathaniel Kelso

Project Linework
Daniel Huffman somethingaboutmaps

Getting What You Want Out of OpenStreetMap
Melelani Sax-Barnett Urban Airship

Break and Raffle 10:15a to 10:40a

Morning Presentations II 10:40a to 12:15p

How To Use iD Editor for Easily Updating OpenStreetMap
AJ Ashton MapBox

Navigating a Labyrinth of Libraries: An Overview of Cartographic Software and Capabilities
Josh Stevens The Pennsylvania State University

Zero to Mash-Up in 1200 Seconds Flat
Carl Sack University of Wisconsin–Madison

Creating Maps on the Web with CartoDB
Andrew Hill Vizzuality

Lunch and Raffle 12:15p to 1:30p
Regency C

Afternoon Presentations I 1:30p to 2:55p

Publishing Customized Global Basemaps with MapBox
Dane Springmeyer MapBox

Esri StoryMaps
David Asbury Esri

Introduction to QGIS
Randal Hale North River Geographic Systems, Inc
Carol Kraemer North River Geographic Systems, Inc

What's New for Mapping in ArcGIS 10.2
Aileen Buckley Esri

Break and Raffle 2:55p to 3:20p

Afternoon Presentations II 3:20p to 4:45p

Tips and Tricks on Working with Map Data and Imagery in Adobe Creative Products
Tristan Lyttle Avenza

Don't Just Push That Button: Refining 3D Models with Manual Techniques
Miles Barger US National Park Service

Resources and User Testing for Creating Point Symbols
Carolyn Fish Esri

Mapping on a Deadline
Tim Wallace New York Times

Cartography & Geographic Data Collections Day

Morning Presentations I 8:40a to 10:15a
Redbud

Welcome
Abraham Parrish & Tsering W. Shawa CGDCD Co-organizers

Panel Discussion: Map Digitization Work flows
Salim Mohammed Stanford University
Janet Spitz Boston Public Library
Tsering Wangyal Shawa Princeton University

Break 10:15a to 10:40a

Morning Presentations II 10:40a to 12:10p
Redbud

**Developing Collections and
Sharing Cartographic Resources**

The State of Topographic Mapping of Latin America
Geoffrey A. Forbes LAND INFO Worldwide Mapping

OCUL's Scholars GeoPortal: Cartographic Considerations for Web GIS Portals
Jo Ashley OCUL Scholars Portal, University of Toronto
Leanne Trimble OCUL Scholars Portal, University of Toronto

Providing Access to the Geospatial Data Collections Using East View's GeoCloud
Carol McAuliffe University of Florida

Lunch 12:15p to 1:30p
Regency C

Afternoon Presentations 1:30p to 2:55p
Redbud

Accessing Geographic Data

Esri Image Server
Aileen Buckley Esri

MarineCadastre.gov: An Ocean of Information
Anna Verrill The Baldwin Group, NOAA Coastal Services Center

Late Afternoon Networking 3:00p to 4:00p
Redbud

Annual Conference Kickoff Events Regency D

Welcoming Remarks & Award Presentation
7:00p to 8:30p

Welcome
Neil Allen President of NACIS

Corlis Benefideo Award Presentation
Nat Case NACIS Corlis Benefideo Award Committee

Newton and Helen Mayer Harrison are the inaugural recipients of the Corlis Benefideo Award for Imaginative Cartography.

Among the leading pioneers of the eco-art movement, the Harrisons have worked for almost forty years with biologists, ecologists, architects, urban planners and other artists to initiate collaborative dialogues to uncover ideas and solutions which support biodiversity and community development.

The Harrisons' concept of art embraces a breathtaking range of disciplines. They are historians, diplomats, ecologists, investigators, emissaries and art activists. Their work involves proposing solutions and involves not only public discussion but extensive mapping and documentation of these proposals in an art context.

The Corlis Benefideo award is named after the central character in Barry Lopez's short story "The Mappist" and is intended to celebrate and draw attention to work that simultaneously respects the qualities of cartographic excellence and imaginatively pushes the boundaries of what cartography can do to make a future possible.

Opening Reception: Map Gallery and Student Map & Poster Competition Regency B
8:30p to 10:30p

Daniel Huffman Organizer

Pick up a ballot and choose the Student Map and Poster Competition winner! Student competition entries are indicated with a ∗.

∗ **Kelly Abplanalp** University of Wisconsin–Madison
Long Island, Washington

∗ **Hollie Auchterlonie** University of Wisconsin–River Falls
Iceland

  Eric Avant Colleton County Government
Colleton County At a Glance

  Eric Avant Colleton County Government
Walterboro-Colleton Lowcountry Regional Airport Landing Zones

  Eric Avant Colleton County Government
Colleton's ACE Basin Sports Complex

∗ **Matthew Ball** Ball State University
2004 Indian Ocean Tsunami

  James Carpenter The Providence Group
Zip Code Study Analysis: Using Sales Data to Track Customers

∗ **Miry Choi** University of Toronto
The Growing Epidemic of Lung Cancer: A Profile in Toronto

∗ **Scott Comeau** The Centre of Geographic Sciences (COGS)
Marc Lavoie, Universite Sainte-Anne
Robert Surette, Federation Acadienne de la Nouvelle-Ecosse
Acadian Settlement of the Belle-Isle Region 1636 - 1755

∗ **Mark A. Deka** The University of Akron
China and Neighboring Nations

  Mark Denil National Ice Center
Arctic Sea Ice 2007–2012

Maps and Posters (continued)

Chad Dettlaff Port of Portland
Oregon Agricultural Employment

Matt Dooley, Jacob Boyd, University of Wisconsin–River Falls
Rivers of the Maya Region

Martin Gamache National Geographic Magazine
USGS GEOPDF Topo Quads: A Critique

Brandon Garman Cleveland Metroparks
North Chagrin Reservation Trails Map

Debbie Gibbons, National Geographic Maps
Jonathan Nelson, Julie Ibinson, Rosemary Wardley, National Geographic Maps
Appalachian Trail

Debbie Gibbons, National Geographic Maps
John Kappler, Rosemary Wardley, Steve Wells, National Geographic Maps
Envision the Susquehanna

∗ **D.Tyler Harris** Georgia State University
Julianna Strock, Kourtney Stumpe, Christy Visaggi, Georgia State Univ.
Plastics on South Water Caye, Belize

Jodi Heitkamp Northern Illinois University
Charlie Smyth, Jeff Yockey, Gary Cziko, Champaign County Bikes
Champaign-Urbana-Savoy Bicycle Guide & Map, Share the Road

∗ **Alex B. Hill** Wayne State University
Homicides, City Parks, and Liquor Licenses: Detroit 2012

Alex B. Hill Wayne State University
Dwarf Migrations of the Four Ages

∗ **Andrew Hong** University of Toronto
Toronto Public Health DineSafe Infractions

Daniel Huffman somethingaboutmaps
Shaded Relief in Blender

Daniel Huffman somethingaboutmaps
Project Linework

∗ **Donghee Koh** Western Illinois University
Map of Indonesia, Downtown Pittsburg

∗ **Alexander Kovell** University of Wisconsin–Madison
Tanya Cunningham, Sector67
New Zealand Primary Wool Exports

✳ **Taylor Long** University of Minnesota
Madison Fork Ranch and Environs

✳ **Dylan Moriarty** University of Wisconsin–Madison
The Faces of State Street

✳ **Chelsea Nestel** The Pennsylvania State University
The National Map: Proposed Updates to Parks and Cultural Layers

Chelsea Nestel University of Wisconsin–Madison
Irumani

Maya Quinones, William A. Gould, US Forest Service
Jessica Castro-Prieto, University of Puerto Rico-Rio Piedras Campus
Sebastian Martinuzzi, University of Wisconsin–Madison
Spatial Analysis of Puerto Rico's Terrestrial Protected Areas

Caroline Rose University of Wisconsin–Madison
Bathymetric Book: Crater Lake

✳ **Carl Sack** University of Wisconsin–Madison
Passenger Rail in the United States: A Romantic Past, a High-Speed Future?

Jonathan Schroeder Minnesota Population Center, University of Minnesota
U.S. Metropolitan Populations, 1790-2010

✳ **Ian Shiland** University at Albany-SUNY
High Peaks Wilderness Area

✳ **Brita Swanson** University of Wisconsin–River Falls
Memory Roots

✳ **Aaron Taveras** University of Kansas
Sawtooth Wilderness, Idaho

Lauren Tierney University of Oregon
Old Growth of the Tongass

Jesse Varner Visible Terrain
Plan Oblique Relief Map of Colorado

✳ **Carolyne Vowell** The University of Montana
U.S. Wild Horses and Burros: Management Strategies

Becky Wilkes University of North Carolina at Chapel Hill
**The MEASURE Evaluation Project: Using Geographic Information to Improve
Decision-Making in Global Public Health**

✳ **Ian Wolfe** St. Cloud State University
Economic Indicators of the Appalachian Regional Commission

Early Morning Sessions

Online Tools and Templates Regency D

DIY Cartography in the Enterprise
Angela Daniels Greenville Technical College

A Practical Introduction to D3 Web Maps
Carl Sack University of Wisconsin–Madison

Mapping as Digital Public Work: New California Water Atlas
Chacha Sikes & Laci Videmsky New California Water Atlas

Mini-Workshop: Back to Basics Redbud

Take a break from the cutting edge of cartography to spend a little time learning about the fundamentals of mapmaking. Revisiting the basics is essential for the established professional. It is only when you've had some experience that you can truly appreciate and fully understand all that stuff that they were trying to teach you in school (and given that people only remember a fraction of what they hear

New Views on Old Places Regency F

Maps in Honduran Mosquitia for Collaborative Local Expressions of Territoriality and the Environment
John Kelly University of Kansas

Mapping in Early American Urban Sociology
Jonathan Lewis Benedictine University

The Interwoven Relationship Between Cartography and Dialectology: New Perspectives
Costanza Asnaghi
QLVL, Department of Linguistics, KU Leuven; Facoltà di Scienze Linguistiche e Letterature Straniere, Università Cattolica del Sacro Cuore, Milan.

Pictorial Maps in the Clark Library, University of Michigan
Tim Utter University of Michigan

in lecture, you might re-learn a few useful things you've forgotten). So come by for a refresher, or feel free to join us for your first go-around if you're a beginner!

Sarah Bennett University of Wisconsin–Madison
Brian Davidson
Martin Elmer

Open Source Web Mapping Regency D

Designing a Slippy Map Base Layer for Humanitarian and Developing Countries' Context Using OSM Data
Will Skora, Yohan Boniface, Brian Wolford, Severin Menard, and Jaakko Helleranta HOT (Humanitarian OpenStreetMap Team)

An Open Source Workflow for Building Online Maps
Mamata Akella US National Park Service

Speedy Delivery: Vector Tiles from Open Data
Michal Migurski Code for America

Chesapeake Bay Story Maps
John Wolf US Geological Survey

Mapping the News
Jeff Larson ProPublica

Mini-Workshop: More Than Just Coloring In: Building Maps with a Solid Analytical Foundation Redbud

Useful maps require more than good cartography. Without a good understanding of the data, and how they need to be processed and analyzed, even a good-looking map becomes compromised. This workshop will look at a number of different statistical and geostatistical approaches for

Experimental Practices Regency F

A Bathymetric Book: Adventures in Non-Digital Media
Caroline Rose University of Wisconsin–Madison

Photographic Georeferencing: Finding the Unseen in Historical Views of the Grand Canyon
Nicholas Bauch Stanford University

Lessons Learned from Experimental Film
Eric Theise

Imagery Painting in Maps
Bruce Daniel The Map Lab

The Arabian Peninsula Symbolized on Maps, Medieval to Modern
Naeema Alhosani United Arab Emirates University

spatial analysis. Using ArcGIS, we will explore many of the different approaches available for spatial analysis, look at assumptions that should be met, and understand how to choose appropriate techniques.

Linda Beale Esri

Annual Business Meeting Regency D

All NACIS Attendees

Lunch is provided at the Annual Business Meeting!

Chair
Neil Allen President of NACIS

Please join us for lunch and our society's annual business meeting. We will usher in a new board and update the membership on the year's accomplishments and ongoing activities. Thanks to the seemingly unending energy of our Board of Directors, the Editorial Board of *Cartographic Perspectives*, and many more volunteers from our enthusiastic community, we've had another productive year.

Here are a few highlights of how we have been serving you.

Cartographic Perspectives
Our flagship publication is a successful open-access journal: all content is freely accessible to map enthusiasts throughout the world. Editor Pat Kennelly and his team of Section Editors, with the assistance of an outstanding Editorial Board and numerous volunteer reviewers, ensure every article in the journal is of the highest quality. Assistant Editors Rob Roth and Daniel Huffman work tirelessly to guarantee each piece is attractively laid out and as flawless as possible. A special thanks to Laura McCormick who stepped down as Assistant Editor this year and is now Visual Fields Section Editor. If you're interested in publishing in *CP*, please contact Pat and find out what it takes to get published.

Online Membership Survey
In our never-ending quest to bring you the benefits you want through membership in NACIS, our board conducted a targeted, online membership survey over the summer. The results of that survey will be discussed along with suggestions of what benefits are most important to you.

Organizational Continuity
Now internally known as the "Continuity Portal," the board of directors has endorsed this tool by using it for daily operations and communication to better perform the work for which they were elected.

NACIS.org Refresh
The board continues to work tirelessly to prepare a redesign of our website. We have a contractor selected and will be working closely with them in the coming months. The refresh is much more than window-dressing: the new system will entail moving to a new content and member management system, and will help manage future conferences. For our members, it will serve as the gateway to NACIS benefits and will modernize our society's operations.

Get Involved!
Enthusiastic volunteers sustain NACIS every year by dedicating themselves to maintaining and enhancing the organization. There are plenty of opportunities to contribute: you can serve on the Board, organize part of the conference, or help with *CP*. If you are interested in serving NACIS or have ideas to enhance our beloved Society, please contact us to get involved!

Early Afternoon Sessions

Considering the (Mobile) User Regency D

Questions Facing Map Design in the Age of Mobility and Siri
Ryan S Mullins The Pennsylvania State University

Making Maps for Mobile Devices
Tristan Lyttle Avenza

Maps for Strangers
Nat Case INCase, LLC

Trail Map App
Stephen Mather Cleveland Metroparks

Beck, Balls, Fracking & the Ocean Redbud

New Balls Please
Hans van der Maarel Red Geographics

Beck to the Future
Kenneth Field Esri
William Cartwright RMIT University

Aesthetics, Emotion, Design Regency F

Achieving Aesthetics in Cartography
George F. McCleary, Jr.
University of Kansas

Empowering Users by Designing with Empathy
Karla Turcios
Esri

Web Mapping Aesthetics for Effectual Communication
Ian Muehlenhaus
University of Wisconsin–La Crosse

At the Intersection of Maps and Emotion: The Challenge of Spatially Representing Experience
Amy Griffin & Julia McQuoid
UNSW Canberra

Mapping North Dakota's Oil Boom
Ginny Mason National Geographic Magazine

Mapping Maritime Limits
Leo Dillon & Iain Crawford US State Department

Late Afternoon Sessions

Popular Design Regency D

3D Map Gotchas
Jinwu Ma
Esri

Cartography Connection: Mapmakers Publishing Content Online
Zach Mahan
GeoFact of the Day Blog

Planning for Reblogs: Cartography and Virality
Martin Elmer
MapHugger.com

The Open-Sourced City: First Steps
Nick Doiron City of Boston GIS Department
Michael Lawrence Evans City of Boston, Mayor's Office of New Urban Mechanics

Online Basemaps and Web Atlases Redbud

A Cloudless Atlas
Dane Springmeyer MapBox

An Updated and Improved World Hydro Basemap
Caitlin Scopel & Wes Jones Esri

Recent Research Regency F

Inspection of Topographic Distance Measurements within ArcGIS
Steven Bradshaw The Pennsylvania State University
Fritz C. Kessler Frostburg State University

Human Interpretation vs. Object-Oriented Image Analysis for Identifying Distinguishing Characteristics of Nuclear Power Facilities
Raechel A. Bianchetti The Pennsylvania State University
Kunwar K. Singh North Carolina State University

Application of Geocoding in Evaluation of Healthcare Program
Bangbo Hu Villanova University

Visualizing Domestic Energy Consumption of the UK
Sarah Goodwin, Jason Dykes & Aidan Slingsby
City University London

Metro Atlas 2010
Stuart Allan Allan Cartography
Aileen Buckley Esri

Designing An Online Multi-Scale Map Service (Using Lasers)
Matthew Hampton Oregon Metro

NACIS Night Out

Studio 220
in the conference hotel

**This is a ticketed event. Bring your ticket purchased in advance or $40 at the door (space permitting).**

Join us for the annual Thursday night social gathering! Ya'll come down to Studio 220 to begin the evening's social festivities for award-winning local microbrew beer and Carolina-style BBQ. Vegetarian options and soft drinks will also be served.

The night will continue out on Main Street for continued conversations, libations and fun.

**Studio 220
Hyatt Regency Greenville
220 North Main Street
Greenville, SC 29601
1-864-235-1234**

2013 NACIS membership

1 dot per member

51 members elsewhere
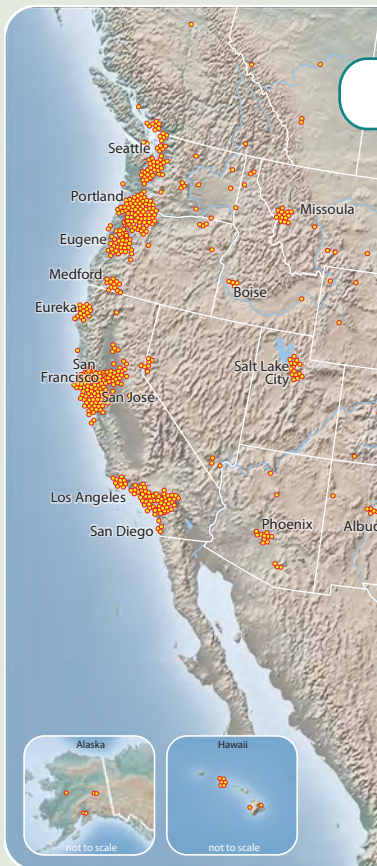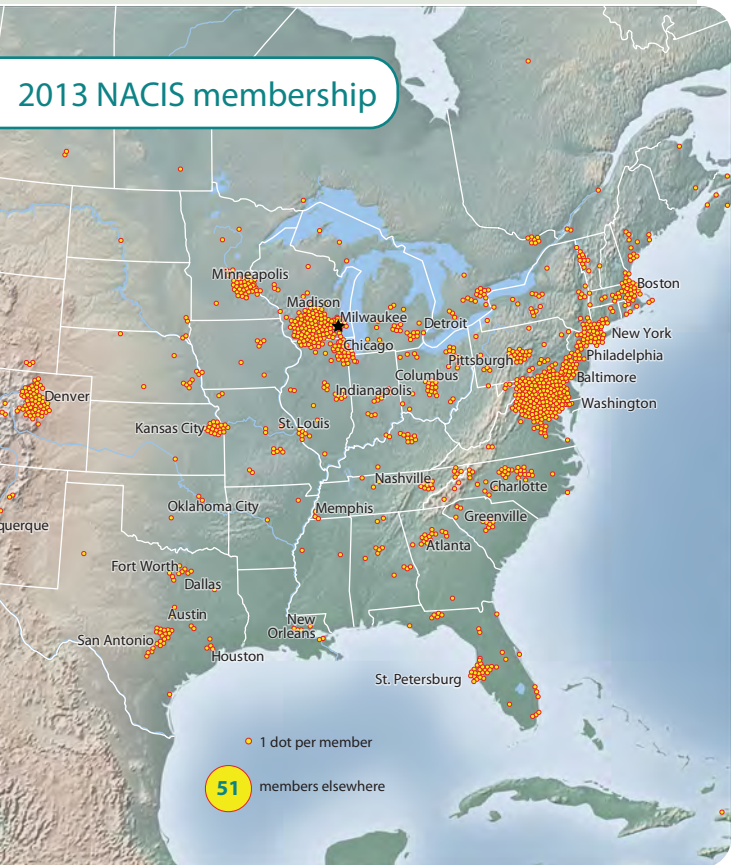
Map by Matthew Hampton

Early Morning Sessions

New Visualizations for Old Data Regency D

Symbol Sharing Tools for Cartographers at NASA
Susan Hulsey
NASA, Johnson Space Center

ArcGIS Bivariate Mapping Tools
Aileen Buckley Esri

Relating Hill Shading to Terrain Metrics
Patrick Kennelly Long Island University-Post

Storm Uncertainty Representation: User Responses to Novel Visualization
Jennifer Mason The Pennsylvania State University
Jason Dykes & Aidan Slingsby City University London

Mini-Workshop: The Contemporary Web Mapping Application Redbud

This workshop will be a front-to-back-to-front-again examination of a contemporary approach to building web mapping applications. Moving briskly, we'll cover sources of open data (Natural Earth & OpenStreetMap), a client-side mapping library (Leaflet), tile creation

**Special Session:
Cartographies of the South, General** Regency F

The Civil War in Four Minutes
Valerie Krejcie
Cartographic Consultants

Kenneth Slessor, John Speed, and the 'Southerne Sea'
Adele J. Haft
Hunter College of The City University of New York

The Coast, Contours, and Colors of Greenville
John Cloud
NOAA Central Library

(TileMill), geospatial databases (PostgreSQL and PostGIS),
and enhancements such as TopoJSON. Participants should
download software, do some background reading and
bring a laptop to the workshop.

Eric Theise

Late Morning Sessions

Big Data and the Crowd Regency D

Exploratory Visualization of Movement Patterns in Twitter Data
Alexander Savelyev & Alan MacEachren
The Pennsylvania State University

Getting Rid of Consumers of Furry Pornography, or How to Find Small Stories With Big Data
Ate Poorthuis University of Kentucky; FloatingSheep

Crowdsourcing Map Data
Steve Spindler
Steve Spindler Cartography; WikiMapping Developer

Markets, Neighborhoods, and CartoDB
Nick Martinelli
MarketSeer; University of Oregon

Mini-Workshop: An Introduction to (or Refresher on) Map Projections Redbud

For many cartographers map projections remain a mysterious, confusing, and sometimes intimidating subject. We might know a few rules of thumb to help us make choices, but many of us don't always understand the reasoning behind them. Good mapmaking requires good projections, and knowing a bit more about how projections

**Special Session:
Cartographies of the South, Atlanta** Regency F

"Congregational Watersheds" in Atlanta, 1928
Matthew Lawrence Pierce
Laney Graduate School, Emory University

Enabling Spatial Narratives: The Planning Atlanta: A New City in the Making, 1930s–1990s Collection
Joseph Hurley
Georgia State University Library

Mapping with Communities in Atlanta, Georgia to Understand Sustainability
Timothy L. Hawthorne
Georgia State University

work makes it easier for us to make the right choice. In this short introductory course, we'll go over the basics of projections: their many varieties, properties, and parameters, and why all this stuff matters. It will put you on a solid footing to make smarter decisions in your next map.

Daniel P. Huffman somethingaboutmaps

NACIS Lunch Bunch

LUNCH BUNCH!

The More, The Merrier

Consult a local or the Greenville map in the back of this program, then gather a small group to go to lunch together.

This will give you opportunities to better know your fellow NACIS members, new and seasoned, by casually talking maps, GIS, food, and all points in between.

Just remember to return and be seated by 2:00p for the start of the early afternoon sessions.

Please visit the registration desk to sign up for leading a group or joining one!

BREAKING NEWS!

Join us in Pittsburgh in 2014

NACIS will be heading to the Steel City for its annual conference a year from now. Here's what we know so far about what is looking to be a big event:

- Dates are October 8–10
- Hotel: Marriott City Center
- Keynote speaker: Anne Knowles
  Professor of Geography at Middlebury College
- Theme: Cartography and Time

There will be a brief presentation at the Friday Night Banquet by the local arrangements committee.

Pittsburgh, Pennsylvania: site of NACIS 2014

Early Afternoon Sessions

On Web Maps: Multiscale Regency D

Cartography for a Changing Map
AJ Ashton MapBox

Scaled Data Value Design in TileMill
Ian Villeda MapBox

Automated Attribute Enrichment for Automated Multiscale Maps
Paulo Raposo The Pennsylvania State University

Mapping Living Environments Redbud

EnvisionTheJames.org: A National Geographic Living Atlas
Frank Biasi National Geographic Maps
David Lambert National Geographic Maps

Refining National Tick Distribution Maps For Public Health Communication
R. Ryan Lash Centers for Disease Control and Prevention; University of Georgia
William Nicholson Centers for Disease Control and Prevention

Panel: Two Approaches to a Deep Map of Atlanta
Regency F

Jack Reed
Georgia State University, Department of Geosciences

Brennan Collins
Georgia State University, Department of English

Timothy Hawthorn
Georgia State University, Department of Geosciences

Joseph Hurley
Georgia State University, University Library

Ben Miller
Georgia State University, Department of English

Telling the Story of the Coast with the North Carolina Coastal Atlas
Tom Allen, Robert Howard, Karen Mulcahy, Michelle Covi, Joseph Thomas & J.P. Walsh East Carolina University

Climate Analogue 2
Nick Martinelli, Alethea Steingisser & Jacob Bartruff
University of Oregon

Late Afternoon Sessions

Map Stories and the Web Tools To Create Them
Regency D

Bill Bunge, D3.js and the Future of Critical Cartography
Rich Donohue University of Wisconsin–Madison
Ate Poorthuis University of Kentucky; Floatingsheep
Zachary Forest Johnson Independent Scholar

Telling Geographic Stories with Story Map Templates
David Asbury Esri
Allen Carroll Esri

**Map Viewers and Services at NOAA's
National Geophysical Data Center**
Jesse Varner University of Colorado, CIRES
John Cartwright NOAA National Geophysical Data Center

Teaching Cartography Redbud

Developing and Teaching an Online Course on Coordinate Systems through The Pennsylvania State University's World Campus
Fritz Kessler Frostburg State University
James L Sloan II The Pennsylvania State University

Maps and the Geospatial Revolution: Teaching a MOOC on Mapping

Criticism and Analysis Regency F

**The Forgotten Context: Technology and the
Interpretation of Early Maps**
Judith Tyner CSU Long Beach

The Canon's Roar
Mark Denil National Ice Center

Citation Explorer: Cartography Textbooks
Jenny Marie Johnson University of Illinois at Urbana-Champaign

Hope Amidst Uncertainty
Daniel P. Huffman somethingaboutmaps

Anthony Robinson The Pennsylvania State University

Crowdsourcing a Cartography Textbook
Brandon Plewe Brigham Young University

**Breaking the Software Demonstration Barrier—Live
Data Collection and GIS in the Classroom**
Kevin McManigal University of Montana

Alberto Cairo

**The Insightful Art
Maps, Charts and Diagrams for Communication**

To be successful, a visual representation of information (a map, a graph, a chart, a diagram) needs to be beautiful and functional, but it also needs to be insightful. Designers, journalists, and developers should not be limited to 'just' showing their data, but must try to put those data in context, label them, highlight what is most important in them, and even convey their meaning by means of stories.

Alberto Cairo is a professor at the School of Communication of the University of Miami since 2012. He has been a professor at the University of North Carolina at Chapel Hill (2005–2009), and director of infographics at *El Mundo*, the second largest newspaper in Spain (2000–2005), and at *Editora Globo*, the magazine division of the largest communication group in Latin America. He is the author of the book *The Functional Art: An Introduction to Information Graphics and Visualization* (2012). He has organized consulting and training programs at companies and educational institutions in more than 20 countries. His website is www.thefunctionalart.com, and he can be found on Twitter @albertocairo.

Banquet

The NACIS Banquet will feature dinner, our keynote speaker and these presentations:

- Student Map & Poster Competition Award
- Student Dynamic Map Competition Award
- Message from the Incoming President
- Preview of NACIS 2014 in Pittsburgh, PA on October 8–10, 2014 at the Marriott City Center

And at about 9:00p, don't miss the ever popular…

Geodweeb Geopardy!
with your host: Dennis McClendon

Art…I mean Dennis, has personally hosted this regular post-banquet fixture at the NACIS conferences for nearly a decade now.

Teams of people who have always dreamed of the day when their knowledge of geotrivia would pay off big time will compete for fabulous prizes!

If you want to play:

Please sign up at the registration desk in advance. Each team must include at least one first-time conference attendee.
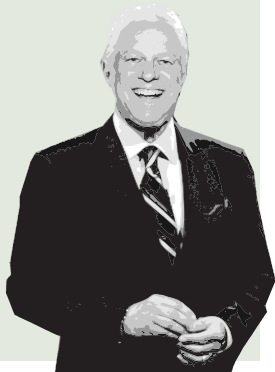
Workshops and Field Trip

Workshop (Half Day) 8:00a to 12:00p

Hands On With Tilemill: Designing And Publishing Fast Maps Online
Ian Villeda MapBox

TileMill is an open source design studio that enables easy publishing of maps online. This workshop will cover the basics of using TileMill—how to load various data formats, how to get quickly learn the CartoCSS styling language, and how to design for various online media and visualizations. It will also highlight new features in the latest releases of TileMill including advanced compositing options, image filters, fast data formats, raster classification, and more. This workshop will be a combination of lecture, demos, and hands on experimentation—come prepared to learn as a group, ask questions, and make maps on the fly.

Workshop (Half Day) 1:00p to 5:00p

Creating Maps on the Web with CartoDB
Andrew Hill Vizzuality

CartoDB an open source mapping platform that gives users the ability to design and publish maps online. CartoDB stands apart from other platforms in its ability to deliver maps built from dynamic data, styles, and filters. In this workshop, we will walk you through CartoDB, from the core features through to publishing dynamic maps that respond to changes in your data.

Workshop (Full Day) 8:00a to 5:00p

Creating and Sharing Web Maps with ArcGIS Online
Mark Stewart & Aileen Buckley Esri

This hands-on workshop provides an overview of the vast collection of GIS resources that are available through ArcGIS Online and how they can be leveraged to make quality online maps. Participants will learn best practices for finding and using different types of ArcGIS Online services to build Web maps and apps which can be shared publicly or within a private group and accessed on just about any web-enabled device. Participants will also learn how to add information and interactivity to their maps through the use of widgets such as notes, pop-ups and time sliders, and how to engage map readers by using story map templates. In addition, the workshop will cover management strategies for ArcGIS Online accounts.

Field Trip (Full Day) 8:00a to 6:00p

Land of Waterfalls
David Lambert NACIS Field Trip Host

Remember how much fun you had on the Lake Tahoe field trip? Then you will enjoy the beauty of the Blue Ridge. This all-day waterfall viewing tour includes the highest waterfall in the eastern U.S., Whitewater Falls (411 feet) and many others. Lunch on your own in Highlands, N.C.

Cost $75 (limit 23, minimum 15)

Mamata Akella US National Park Service
An Open Source Workflow for Building Online Maps
At the National Park Service, we are implementing an open source workflow for the maps we create for the web. During this presentation I will discuss the suite of tools that we've adopted for our maps including tools we use for data management and design. In addition, I will discuss the Park Service's adoption of OpenStreetMap and how we are incorporating these data into our mapping products and overall data collection efforts.
▪ *Open Source Web Mapping—10:15–12:00, Thursday*

Naeema Alhosani United Arab Emirates University
The Arabian Peninsula Symbolized on Maps, Medieval to Modern
Until the modern era the people of the Arabian Peninsula had little need for maps and created few, since most of them depended on traditional knowledge of desert landmarks, the movements of the stars, and the directions of the winds for wayfinding. In contrast, Europeans created many maps of Arabia for various reasons ranging from intellectual curiosity to political, economic, and military interests. This paper traces and seeks to explain the changing representation of the Arabian Peninsula on maps from the medieval period to the modern day. It considers the historical development of map symbols, like writing, from pictures to conventional pictorial signs to abstract symbols. It looks at the differences between Arabian and European mapmakers and their underlying cultural biases. It explores how the maps were designed to serve different purposes. Out of this study of map symbolization emerges a multi-faceted view of the Arabian Peninsula and its history as seen through the eyes of many mapmakers, medieval to modern.
▪ *Experimental Practices—10:15–12:00, Thursday*

Stuart Allan Allan Cartography
Aileen Buckley, Esri
Metro Atlas 2010
We review the Census 2000 Metro Atlas prototype and describe Esri's current adaptation of the design with 2010 data for web-based publication. Comprehensive national coverage at the block-group level and the potential range of comparative analyses raise many scale and design issues; this will be a status report on progress to date.
▪ *Online Basemaps and Web Atlases—3:45–5:15, Thursday*

Tom Allen East Carolina University
Robert Howard, East Carolina University
Karen Mulcahy, East Carolina University
Michelle Covi, East Carolina University
Joseph Thomas, East Carolina University
J.P. Walsh, East Carolina University
Telling the Story of the Coast with the North Carolina Coastal Atlas
The North Carolina coast is extensive, dynamic, and rich with natural and cultural resources. For decades, coastal researchers have been collecting information on these physical, biological, and human resources to describe complex ecosystems, patterns of change, and threats posed by natural hazards. However, there have been few ways to analyze the data and visualize them together. This presentation will describe the collaborative efforts led by East Carolina University and the North Carolina Division of Coastal Management, with other partners, to develop the North

Carolina Coastal Atlas (www.nccoastalatlas.org). Thematic maps developed for the atlas follow stories, such as that of a small town, vulnerable to flooding and sea level rise, whose leaders want to develop strategies to become more resilient. Another use case story is that of managers looking at the impact that development patterns along the estuarine shoreline have on erosion rates and marsh ecosystems.
▪ *Mapping Living Environments—2:00–3:30, Friday*

David Asbury Esri
Esri StoryMaps
Esri's ArcGIS Online platform provides a well-designed foundation for GIS users and the public to create beautiful maps using professional cartography. These maps can be used within online applications and templates that are expertly crafted to facilitate simple, logical and intuitive geographic stories. We will showcase some of the templates that are specifically designed for storytelling, how to use them, and why you or your clients might want to utilize them. These apps encourage better cartography through well thought-out design and through intuitive interfaces.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

David Asbury Esri
Allen Carroll, Esri
Telling Geographic Stories with Story Map Templates
Enabled by cloud, web, and mobile technologies, GIS has burst from the back office to serve and benefit everyone. Much of the time GIS data is thought of as just that—data—and is all too often displayed with poor symbolization. We'll show how you can liberate those data using well-designed cartography, combine them with dynamic multimedia and incorporate them into online apps to tell personal, organizational and professional stories. We'll describe how we approach map-based storytelling, and demonstrate how to use Esri's storytelling apps and templates to present beautiful, useful interactive maps and place-based narratives. Among the topics we'll cover: What makes a good story map? How can you conceive, plan, and build an effective story map? How can you use Esri's storytelling apps and templates to author your own story?
▪ *Online Tools and Templates—8:15–10:00, Thursday*

Jo Ashley OCUL Scholars Portal; University of Toronto Libraries
Leanne Trimble, OCUL Scholars Portal
OCUL's Scholars GeoPortal: Cartographic Considerations
for Web GIS Portals
The Ontario Council of University Libraries (OCUL) is a consortium of twenty-one university libraries in the province of Ontario, Canada that collaborates through collective purchasing and shared digital information infrastructure. OCUL's new Scholars GeoPortal service (geo.scholarsportal.info) uses Esri software to provide a set of online tools for identifying, exploring, and downloading licensed geospatial datasets for academic research and study in Ontario. The challenges of cartographic representation in an online portal environment were one of the major considerations in the development of Scholars GeoPortal. This session will introduce the GeoPortal's interface and discuss our attempts to "stay true" to commonly accepted cartographic conventions within a dynamic user interface, with hundreds

Ashton

of datasets available to overlay on the map view (in sometimes unexpected ways). These challenges are central to the discussion of the importance of cartography in web GIS.

▪ *Cartographic and Geographic Data Collection Day—8:40–4:00, Wednesday*

AJ Ashton MapBox
How to use iD Editor for Easily Updating OpenStreetMap
OpenStreetMap is a fast growing project to create the best free and open map of the world. Recently the iD editor project was launched to provide s simple and enjoyable way to learn to edit and contribute data to OSM. Already translated into more than a dozen languages and shipping with an engaging interactive tutorial, this talk will provide a practical introduction to using iD and discuss when to use iD versus the other OSM editors.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

AJ Ashton MapBox
Cartography for a Changing Map
Global web basemap design is hard: taking into account display at multiple zoom levels, regional languages, unique geographical features, high and low density data, and tradeoffs between design and performance creates major challenges for the cartographer. And now, with fast-growing and constantly-improving sources of data like OpenStreetMap available, the challenge, and opportunity, for living basemaps is expanding. This talk asks the question: what techniques can be used to design for changing data?

▪ *On Web Maps: Multiscale—2:00–3:30, Friday*

Costanza Asnaghi QLVL, Department of Linguistics, KU Leuven; Facoltà di Scienze Linguistiche e Letterature Straniere, Università Cattolica del Sacro Cuore, Milan
The Interwoven Relationship Between Cartography and Dialectology: New Perspectives
Dialectologists have been mapping dialect areas since the beginning of their explorations at the end of the nineteenth century. Their main focus has been to produce an accurate and practical report of the data they collect on linguistic behavior, leaving little space to refine the map design. The goal of this paper is to provide an overview of current trends in cartographic representations for dialect research, as well as as to provide new perspectives on integrating dialect data into beautiful, effective linguistic maps. Innovative models for visualizing regional linguistic variation in California English and in Italian will be discussed.

▪ *New Views on Old Places—8:15–10:00, Thursday*

Miles Barger US National Park Service
Don't Just Push That Button: Refining 3D Models with Manual Techniques
We at the US National Park Service were recently asked to create a block diagram of the Grand Staircase, a major geologic feature in southern Utah and northern Arizona. While today's software makes it possible to create sophisticated-looking 3D products by importing data, fiddling with a few settings, and hitting GO, these push-button solutions often lack the clarity, generalization, and selective enhancement that are the hallmarks of a successful diagram. To create our final product, we paired the ease and efficiency of computer-generated 3D scenes with the advantages

of manual methods. In this presentation, I'll explore our process, demonstrating a workflow that combines techniques in Natural Scene Designer, Adobe Photoshop, and Adobe Illustrator into an integrated whole.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Nicholas Bauch Stanford University
Photographic Georeferencing: Finding the Unseen in Historical Views of the Grand Canyon

Enchanting the Desert is a research initiative that revives and augments an early-twentieth-century narrated, photographic slideshow of the Grand Canyon in an online, interactive format. Geo-coded information from a variety of disciplines—e.g. folklore, biology, geology, art history—is merged within the photographs themselves, 'enchanting' the region of the Grand Canyon and turning the photos from a set of disorienting (if beautiful) images into a collection of places imbued with meaning and history that can be controlled and understood by the end user. The aims of the project are theoretical, technical, pedagogical, and artistic. In this presentation I will show my process of photographic georeferencing, as well as a printed viewshed map of the Grand Canyon based on the photographer's original station points. Both emerged from the research process and contribute to the final online product.

▪ *Experimental Practices—10:15–12:00, Thursday*

Linda Beale Esri
More Than Just Coloring In: Building Maps with A Solid Analytical Foundation

Useful maps require more than good cartography. Without a good understanding of the data, and how they need to be processed and analyzed, even a good-looking map becomes compromised. Over time, more tools have become available for spatial analysis, while the line between analyst and cartographer has blurred, and it becomes important to understand what analysis can offer to support better mapping. This workshop will look at a number of different statistical and geostatistical approaches for spatial analysis. Using ArcGIS, we will explore many of the different approaches available for spatial analysis, look at assumptions that should be met, and understand how to choose appropriate techniques. The workshop will include statistical descriptors, proximity analysis, distributions and comparisons, and surface and interpolation analysis. Some tips and tricks will be also discussed so that cartographers have a better understanding of what is available and how it supports their mapmaking endeavors.

▪ *MINI WORKSHOP—10:15–12:00, Thursday*

Sarah Bennett University of Wisconsin–Madison
Marty Elmer, University of Wisconsin–Madison
Brian Davidson, University of Wisconsin–Madison
Cartography 101: Back to Basics

Take a break from the cutting edge of cartography to spend a little time learning about the fundamentals of mapmaking. Revisiting the basics is essential for the established professional. It is only when you've had some experience that you can truly appreciate and fully understand all that stuff that they were trying to teach

you in school (and given that people only remember a fraction of what they hear in lecture, you might re-learn a few useful things you've forgotten). So come by for a refresher, or feel free to join us for your first go-around if you're a beginner!

▪ *MINI WORKSHOP—8:15–10:00, Thursday*

Raechel A. Bianchetti The Pennsylvania State University
Kunwar K. Singh, North Carolina State University

Human Interpretation vs. Object-Oriented Image Analysis for Identifying Distinguishing Characteristics of Nuclear Power Facilities

Visual interpretation of fine resolution large-scale remotely sensed images, such as IKONOS or Quickbird, can be essential to disaster response efforts. Manual interpretation has been shown to be much faster than automated methods, and the flexibility of human reasoning capabilities is unmatched at this point. In this study we compare human ability to identify key facilities in nuclear power plants against object-oriented image analysis software, e-cognition. The objective of this study is to compare how sensitive human annotation is to infrastructure boundaries to OBIA performance and to determine what key features of a nuclear power facility make it discernible from other types of power facilities. The results of this work are then used to create an identification key for nuclear facilities to support visual interpretation of imagery during disaster response. We suggest that this bottom up approach to creating identification keys can also be used to support infrastructure protection.

▪ *Recent Research—3:45–5:15, Thursday*

Frank Biasi National Geographic Maps
David Lambert, National Geographic Maps

EnvisionTheJames.org: A National Geographic Living Atlas

An overview of National Geographic's "Living Atlas" multimedia publishing and engagement platform, which combines collections of interactive maps, articles, multimedia "geostories" and map-based "geopolls." We'll examine how this platform is being used to support EnvisionTheJames.org, an initiative to engage communities across Virginia's James River watershed in creating a collective vision for protecting, restoring, and promoting the region's natural and cultural heritage.

▪ *Mapping Living Environments—2:00–3:30, Friday*

Steven Bradshaw The Pennsylvania State University
Fritz C. Kessler, Frostburg State University

Inspection of Topographic Distance Measurements within ArcGIS

GIS software measures geodetic distances using a spheroid model of the earth called a reference ellipsoid. However, geodetic distances do not take into account changes in elevation between two points. It will be argued that topographic distance measurements should be considered when carrying out measurements where elevation changes exist. This presentation will discuss the results of a research that investigated the need for topographic distances within a GIS environment. To test this need, a section of highway in New Mexico will be surveyed and geodetic and topographic distances measurements of the actual surface distance will be compared. The basic results suggest that the greater the elevation changes, the greater the difference between the topographic and geodetic distance. A successful project will call for further research by academics and GIS software vendors in developing a topographic distance utility. The presentation will discuss the project, results and need for further research.

▪ *Recent Research—3:45–5:15, Thursday*

Aileen Buckley Esri
What's New for Mapping in ArcGIS 10.2
ArcGIS 10.2 includes additional and improved functionality for cartography. In this demonstration, I introduce enhancements to the software for mapmaking, including labeling, symbology, map elements, data management, and exporting. Improvements to the ArcGIS for Desktop interface are also shown.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Aileen Buckley Esri
Esri Image Server
Serving topographic maps and historical aerial photos
▪ *Cartographic and Geographic Data Collection Day—8:40–4:00, Wednesday*

Aileen Buckley Esri
ArcGIS Bivariate Mapping Tools
Bivariate maps show two themes on the same map. The graphic marks used to represent the themes may be different, as with proportional symbols on a choropleth map, or they may be the same. Bivariate choropleth and bivariate point symbol maps fall into the latter category. Although ArcGIS does not have any out-of-the-box tools to make these same-symbol bivariate maps, in this presentation I introduce a new set of tools that can be used to ease the compilation of these maps. Combined with standard tools, it is now easier and faster to make bivariate maps in ArcGIS.
▪ *New Visualizations for Old Data—8:15–10:00, Friday*

Nat Case INCase, LLC
Maps for Strangers
Catherine Delano Smith's early history of navigational maps in Europe suggests that itineraries, not maps, are historically the fundamental way people communicate knowledge about route-finding. Given this insight, what makes maps such a fundamental mode of route-finding communication today? Is there some cultural tipping point that made a map a better choice than an itinerary? I propose two answers: first, that modern maps make it possible to navigate anonymously, in the same way that other reference tools (e.g. recipes and IKEA assembly instructions) posit an anonymous user and an absence of personal guidance; second, that while we tend to design navigational tools as guides for strangers to a territory (after all, why would someone very familiar with an area need a map or an itinerary?), such maps also serve a deeper purpose as *aides memoire*, both for navigation and to frame an overall understanding of geographic spaces. Navigation itself then is not just about point-to-point travel, as we tend to understand it in the moment, but is part of an overall process of understanding these geographic spaces more fully.
▪ *Considering the (Mobile) User—2:00–3:30, Thursday*

John Cloud NOAA Central Library
The Coast, Contours, and Colors of Greenville
NOAA is descended from the Coast Survey. Given the agency's name, it may be surprising that the American south including Greenville has been the focus of some of the Survey's best and most important cartography. This began with the Survey's 1861 map of the distribution and density of slave populations in the slave-holding states, based on the suppressed data from the 1860 Census. Later, the Survey initiated a new map series of the terrain of the Confederacy east of the Mississippi,

beginning with the Blue Ridge mountains immediately north of Greenville, based on the pioneering work of Arnold Guyot, the Swiss immigrant, first American geographer. In 1925 the Survey received responsibility for all civilian aviation mapping in the United States. One of the very first of these aeronautical charts presents Greenville in regional context on the eve of the modern era of highways and great changes in American life.

▪ *Special Session: Cartographies of the South (General)—8:15–10:00, Friday*

Brennan Collins Georgia State University
Michael Page, Emory University
Two Approaches to a Deep Map of Atlanta
The concept of "deep maps" comes from a literary tradition focused on small rural areas, but new technologies in GIS and database-driven interfaces allow for incredibly rich interdisciplinary explorations of cities. Two such projects are currently being built in Atlanta. Georgia State University's ATLMaps project combines archival maps, geospatial data visualization, and multimedia location 'pinpoints' to allow users to layer an increasing number of interdisciplinary data sets about Atlanta, allowing material to be cross-compared in novel ways. Emory University's Center for Digital Scholarship is developing an application similar to Google Maps for Atlanta from the late 1920s through the early 1950s that has the potential to change the way Jim Crow Atlanta is studied. In this panel, speakers will briefly explain these two projects and their different approaches to deep maps, and then discuss the ways schools can work together to create robust tools for university and community researchers.

▪ *Special Session: Cartographies of the South (Atlanta)—10:15–12:00, Friday*

Bruce Daniel The Map Lab
Imagery Painting in Maps
To date the advancement of map imagery has been defined by one factor: resolution. But what about palette, atmosphere, texture, and lighting? Once we get past 'accurate' representation, what about evocative imagery that has a visual or emotional point of view? Techniques for imagery painting include: using of additional Landsat bands (the "natural" color bands are only a subset of the tools we have at our disposal, in my opinion); adding highlights and shadows generated from DEMs; using land cover data to apply texture in defined areas; and using lidar first-return data to enhance edges and textures. Integrating aerial imagery into basemaps moderates the need to choose between standard, satellite, or terrain views. Embracing imagery as a cartographic design tool can change the future
look of maps.

▪ *Experimental Practices—10:15–12:00, Thursday*

Angela Daniels Greenville Technical College
DIY Cartography in the Enterprise
As map use has permeated most organizations and data are driving many day to day decisions, the concept of the "cartographer" being one person in the organization who can make maps is giving way to the concept of enabling those who need data visualized on a map to become DIY Cartographers. Standards-driven "background" maps supplied via web services with tools that allow live, dynamic data to be overlain and manipulated are no longer the sole purview of powerhouse GIS shops with

highly paid GIS programmers. A variety of new, simple tools allow smaller organizations with fewer resources to provide these services to their staff and management on demand. Now you can tell them to "DIY!"

▪ *Online tools and templates—8:15–10:00, Thursday*

Mark Denil National Ice Center
The Canon's Roar
We know good maps when we see them because maps are always judged against a horizon of other maps. The orienting landmarks of laudable practice on this horizon comprise a canon of models for what a map is and what a map can be. The question then arises of how maps (not specific maps, but any maps at all) come to be selected for inclusion or marked for exclusion in the canon. We pay a different form of attention to maps in the canon. We see them as both timely (relevant now) and timeless (relevant for all time), in a manner that is often considered to be natural, but is wholly artificial. This talk will try to situate the canon in the overall theoretical framework that allows maps to exist and function, including the dichotomy between knowledge and opinion, and issues such as nature verses custom.

▪ *Criticism and Analysis—3:45–5:15, Friday*

Leo Dillon US State Department Office of the Geographer
Iain Crawford, US State Department Office of the Geographer
Mapping Maritime Limits
Over the last couple of decades, the effort to define maritime boundaries and limits, both political and economic, has exploded as countries with coastlines seek to exploit the economic resources of the world's oceans and seas. Knowledge of the principles behind mapping maritime limits is a growing asset to the professional cartographer. The United Nations Convention on the Law of the Sea (UNCLOS), the most important mechanism for defining the economic rights of countries to maritime space, is not well understood by many, including cartographers who are asked to map maritime limits. This presentation is meant to be a basic primer on UNCLOS and the principles behind it as they relate to the working cartographer.

▪ *Beck, Balls, Fracking & the Ocean—2:00–3:30, Thursday*

Nick Doiron City of Boston GIS Department
Michael Lawrence Evans, City of Boston Mayor's Office of New Urban Mechanics
The Open-Sourced City: First Steps
Take a look inside the City of Boston's process of incorporating free and open-source tools into its GIS department. To bring open-source methods and tools into City Hall, we need to integrate open-source libraries with Boston's existing datasets, adopt tools such as GitHub and Heroku for collaboration and hosting, and experiment with new approaches, such as in-browser Python. This change will affect the way open data is created and shared in our city and ideally in many more. We also hope that our story can guide a variety of GIS organizations coming to terms with open source. This talk will cover the early stages of adopting open source in City Hall, with practical experience from two developers from the City of Boston and the Mayor's Office of New Urban Mechanics, former Code for America fellows Nick Doiron and Michael Lawrence Evans.

▪ *Popular Design—3:45–5:15, Thursday*

Donohue

Rich Donohue University of Wisconsin–Madison
Ate Poorthuis, University of Kentucky; Floatingsheep
Zachary Forest Johnson, Independent Scholar
Bill Bunge, D3.js, and the Future of Critical Cartography
This talk considers the work of William Bunge in light of recent developments in
digital cartography using open web standards. Bunge worked as a radical cartog-
rapher in the second half of the 20th century and lore around his work continues
to inspire geographers and cartographers. Today we ask what Bunge's approach
to geography would look like given recent advances in mapping technology and
current political concerns. We begin by re-visiting Bunge's *Nuclear War Atlas* using
the Data-Driven Documents JavaScript visualization library (D3.js) to recreate some
of the original maps and graphics as web maps. Pushing beyond the original static
maps, we explore what possibilities are afforded within a dynamic and interactive
mapping environment, how this changes the nature of maps, and how this new
mapping medium may either enable or constrain Bunge's original vision. We
conclude by proffering a general call to renew the radical potential of mapping and a
practice-based critical cartography using D3.js and similar open
visualization platforms.
▪ *Map Stories and the Web Tools to Create Them—3:45–5:15, Friday*

Martin Elmer MapHugger.com
Planning for Reblogs: Cartography and Virality
Web 2.0, with its emphasis on the sharing of content, has revolutionized the way
maps are disseminated. A map's success is now measured by its accrual of retweets,
comments, likes, and pageviews; by extension, cartographers find themselves eager-
ly hoping their next big project will end up going viral. To go viral, however, a map
must resonate with the peculiar and often fickle tastes of the vast Internet populous.
What opportunities and challenges await cartographers trying to have their maps
hit it big on the Web? To what degree do the qualities that propel a map to Internet
stardom conflict with those qualities valued by us as cartographic professionals?
This talk will examine the most popular maps of recent memory and will relate the
author's own experience in having a map go viral, in the hopes of better understand-
ing how cartographers should adapt to this share-driven world of Internet culture.
▪ *Popular Design—3:45–5:15, Thursday*

Kenneth Field Esri
William Cartwright, RMIT University
Beck to the Future
Using Harry Beck's 1933 *London Underground* map as a case study, we show how
we use design cues in mapping and how simply copying established maps and
using their approach out of context has undesirable consequences. Beck's map is an
effective communicator, and whilst the geography of London is distorted, it retains
the status of 'the' map of London. Symbols are clear and well crafted; composition
and layout remains beautifully balanced; and the design has remained relatively
unchanged, creating stability in appearance confidence in its use. However, Beck's
map is over-used in myriad ways. The abuse dilutes its place in cartographic history.
Many official iterations have not always successfully married Beck's design ideas
with network changes; other metro maps have tried to imitate but with mediocre
success; and the map is perpetually used as a template for mimics and alternatives.
The map has become a model for parody.
▪ *Beck, Balls, Fracking & the Ocean—2:00–3:30, Thursday*

Carolyn Fish Esri
Resources and User Testing for Creating Point Symbols
Development of iconic point symbols that characterize incidents of a wide variety is often very difficult. Designers struggle with developing pictorial images with strict constraints. These types of graphics need to convey often complicated themes within just a few pixels. Symbol sets also must allow users to differentiate between the various point designs while still maintaining a similar look and feel across the entire set. This talk will introduce the process of creating pictorial symbols by discussing great resources to give designers a starting point, technological tips for designing and displaying point symbols on maps, and simple modes for testing point symbols for accurate comprehension during projects with strict time constraints.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Geoffrey A. Forbes, MS LAND INFO Worldwide Mapping
The State of Topographic Mapping of Latin America
I will give an overview of the state of large-scale topographic mapping of all of the territory in the Western Hemisphere south of the United States (primarily Latin America). This includes national and colonial maps as well as American and Russian military maps. We will also discuss the use of some online free resources, the importance of indices, and the ease or difficulty of data acquisition. Formats (paper and digital) and copyright concerns will be addressed, as well as currency of the maps.
▪ *Cartographic and Geographic Data Collection Day—8:40–4:00, Wednesday*

Sarah Goodwin City University London
Prof. Jason Dykes, City University London
Aidan Slingsby, City University London
Visualizing Domestic Energy Consumption of the UK
Growing populations and pressure to reduce worldwide CO_2 emissions has lead to an increased need to better understand the key drivers of domestic energy consumption. Despite energy consumption being a popular research topic in recent years, there is still a limited understanding on the relationship between energy use and measurable characteristics of the population. This presentation, of a UK-based Ph.D. research project, reports on the exploration of this issue using data classification and geo-visualization techniques to identify geographic and demographic variations in domestic energy consumption characteristics. Such data classification enhances the ability to segment the domestic energy market, allowing for utility companies to group their consumers by typical traits and provide more tailored tariffs and services, while also enabling consumers to more reliably understand their household's usage against others.
▪ *Recent Research—3:45–5:15, Thursday*

Amy Griffin UNSW Canberra
Julia McQuoid, UNSW Canberra
At the Intersection of Maps and Emotion: The Challenge of Spatially Representing Experience
Only relatively recently have cartographers taken up the emotional component of the human relationship with space. Calls for a more humanized version of geospatial technologies have been heard since the mid 1990's, but only a relatively small cartographic effort have been made in this direction because, perhaps, of the difficulties in data collection and representation that mapping emotion entails. This

presentation reviews recent humanistic cartography, including the representation of emotion in maps as well as the use of maps to collect emotional data. The role of maps in evoking emotion in map readers is also discussed. Finally, potential future intersections of cartography and emotion are explored.
▪ *Aesthetics, Emotion, Design—2:00–3:30, Thursday*

Adele J. Haft Hunter College-CUNY
Kenneth Slessor, John Speed, and the 'Southerne Sea'
Midway through composing his five-poem sequence *The Atlas* in 1930, Australian poet Kenneth Slessor suddenly wrote 'Southerne Sea' in his journal (bit.ly/16w-fIGK). He'd just chosen John Speed's famous world map *A New and Accurat Map of the World*, 1651/1676, as the epigraph of his fourth poem 'Mermaids.' Unlike the cartographic epigraphs introducing the other poems, however, Speed's map has little to do with 'Mermaids'–riotous romp through seas of fantastic creatures, and a paean to the maps that gave such creatures immortality. The map features a vast 'Southerne Unknowne Land' and 'Mar del Zur,' but no mythical beasties. And while it names 'Southerne Sea' obliquely, in a legend, neither 'Mermaids' nor *The Atlas* mentions Australia or 'Southerne Sea.' Moreover, although Slessor's sailors are 'staring from maps in sweet and poisoned places, it's 'portulano maps' that 'Mermaids' describes. My paper retraces Slessor's creative process to reveal why he chose Speed's map.
▪ *Special Session: Cartographies of the South (General)—8:15–10:00, Friday*

Randal Hale North River Geographic Systems, Inc
Carol Kraemer, North River Geographic Systems, Inc
Introduction to QGIS
QGIS is a user-friendly open source GIS desktop project. It runs on Linux, Mac, and Windows computers and has a very strong user community. This versatile GIS desktop software can be used to display multiple vector and raster data formats, perform complex analyses, and create cartographic products that can be exported to PDF, multiple image formats, and printed maps.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Matthew Hampton Oregon Metro
Designing an Online Multi-scale Map Service (Using Lasers)
Oregon Metro has redesigned its Metro Map application using a new basemap that leverages the strengths of ArcMap's advanced cartographic toolset. This new multi-scale set of map tiles includes tapered streams, multiple direction oblique weighted hillshading, highest-hit lidar shading, vegetation coloring, mixed-case labels, and more. Multiscale Maplex rules provide an elegant set of labels that can be placed effectively over operational layers, resulting in a properly designed map service. Using RLIS data that are updated quarterly, Metro's new map service provides a visually appealing and authoritative basemap for your data. This presentation will focus on the cartographic workflow and tools (including lasers) used to create this multi-scale map of our region.
▪ *Online Basemaps and Web Atlases—3:45–5:15, Thursday*

Timothy L. Hawthorne Georgia State University
Mapping with Communities in Atlanta, Georgia to Understand Sustainability
The growing subfield of community geography places explicit emphasis on identifying the spatial thinking and local knowledge that emerge from neighborhood residents' experiences, and seeks to effect positive community change in a variety of

ways. As an integrated research and education framework dedicated to community-engaged scholarship and citizen science, the subfield holds much promise for developing a more inclusive and societal relevant discipline of geography. In this presentation, I discuss community geography as a way to broaden participation of under-represented groups in geographic research and to increase spatial knowledge production in local neighborhoods around Atlanta, Georgia. I focus specifically on the development and implementation of participatory smart phone mapping applications and crowd-sourced mapping platforms to understand urban sustainability issues around Atlanta.

▪ *Special Session: Cartographies of the South (Atlanta)—10:15–12:00, Friday*

Andrew Hill Vizzuality
Creating Maps on the Web with CartoDB
CartoDB is a powerful, flexible, and beautiful solution for making maps and integrating geospatial data on the web. The platform is built on open source technologies and allows user to go from a spreadsheet to a beautiful, fully interactive map published on the web in seconds. It has been built for speed without ever losing sight of aesthetics; CartoDB users create some of the most interesting and beautiful maps on the web. A fundamental advantage of using CartoDB is that it is built for dynamic data. This means that if you want your maps to change when you update or add new data to your datasets, CartoDB works perfectly. This presentation will introduce you to the diversity of CartoDB use-cases. We will show you how flexible CartoDB can be by demonstrating basic to advanced techniques for creating beautiful maps quickly. The presentation will be useful to both those that have never used CartoDB previously and to those that have already started using the platform but would like to learn more.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*
▪ *Workshops—8:30-5:00, Saturday*

Bangbo Hu Villanova University
Application of Geocoding in Evaluation of Healthcare Program
Geocoding is a process to transform text format locational data, such as street addresses, from spread sheet or database to a layer of graphic points on a map. These points can then be analyzed using Geographic Information Systems. This paper discusses how geocoding is applied in a project to evaluate healthcare programs. One of the purposes of the project is to transform the text format data of healthcare providers and patients from Microsoft Excel files to a map to visualize how they are distributed spatially and to examine if it fits the model of the healthcare program on family income. The result shows that there is a significant gap between spatial distribution patterns of the healthcare providers and patients and the model of the family income. This research provides valuable findings for the healthcare foundation to make decisions to improve their healthcare program.

▪ *Recent Research—3:45–5:15, Thursday*

Daniel P. Huffman somethingaboutmaps
Project Linework
Project Linework is a library of handcrafted vector linework for cartography, each set designed in a unique aesthetic style. It's meant to break us away from the default line paths that we so often rely on, by providing some more visually-interesting

and stylized alternatives. I'll discuss the Project's motivations, and show off a few example maps featuring different linework sets. I'll also attempt to encourage you to make use of it in your own work, and to think about contributing.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Daniel P. Huffman somethingaboutmaps
An Introduction to (or Refresher on) Map Projections
For many cartographers, novice and veteran alike, map projections remain a mysterious, confusing, and sometimes intimidating subject. We might know a few rules of thumb to help us make choices, but many of us don't always understand the reasoning behind them. Good mapmaking requires good projections, and knowing a bit more about how projections work makes it easier for us to make the right choice. In this short introductory course, we'll go over the basics of projections: their many varieties, properties, and parameters, and why all this stuff matters. It will put you on a solid footing to make smarter decisions in your next map, with a minimum of fuss and confusion.

▪ *MINI WORKSHOP—10:15–12:00, Friday*

Daniel P. Huffman somethingaboutmaps
Hope Amidst Uncertainty
Twenty years ago a map was a piece of paper, now it's a bunch of pixels on your smartphone. Amidst all this technological change, a lot of mapmakers have become uneasy, wondering if 'cartographer'–is soon to be listed alongside 'cooper'–and 'cartwright'–in the tally of yesteryear's occupations. But I believe the future is bright, so long as we take the time to thoughtfully articulate the role we can play in the new mapmaking landscape. Tools may change, but there remains a need for people who can tell attractive, well-designed spatial stories.

▪ *Criticism and Analysis—3:45–5:15, Friday*

Susan Hulsey NASA, Johnson Space Center
Symbol Sharing Tools for Cartographers at NASA
NASA consists of ten specialty research centers that are located in eight states. Each center hosts GIS users who produce maps to support a wide variety of programs. Many areas have overlapping mapping needs within the agency, but one that requires consistent map design is emergency management mapping. Emergency maps are likely to be shared between NASA centers during disasters. The ability to standardize how an emergency is represented on maps in a timely manner is critically important. The Symbol Store is a web-based symbol sharing tool designed to help users discover, download, upload, and review point symbols. This presentation discusses recent extensions to the Symbol Store and the results of an evaluation with NASA mapmakers of new symbol reviewing tools. Using a task analysis and survey evaluation methodology with members of the NASA GIS users group, we hope to inform the next phase of Symbol Store development.

▪ *New Visualizations for Old Data—8:15–10:00, Friday*

Joseph Hurley Georgia State University Library
Enabling Spatial Narratives: The Planning Atlanta: A New City in the Making, 1930s—1990s Collection
The Georgia State University Library provides students and researchers with material to tell compelling spatial narratives through a new and innovative digital collection of over 1900 historical Atlanta city planning maps, aerial photographs,

publications, and unique demographic data sets. Designed as an educational digital humanities platform, 'Planning Atlanta: A New City in the Making, 1930s-1990s' is utilized in courses across a wide spectrum of disciplines including Geography, History, Sociology, Public Policy, and English. With the goal of promoting innovative use of this material, the Planning Atlanta collection follows open data principles and provides free access to various file types, such as GeoTIFFs, high resolution JPEGs, CSVs, and KMZ and PNG overlays. Built to be an interactive digital collection for research, educators, and the general public, the Planning Atlanta collection provides a vivid portrait of the city's built environment and depicts structural conditions of buildings, segregated neighborhoods, and land use patterns.

▪ *Special Session: Cartographies of the South (Atlanta)—10:15–12:00, Friday*

Jenny Marie Johnson University of Illinois at Urbana-Champaign
Citation Explorer: Cartography Textbooks
Citation analysis and mapping create a new perspective on the development of academic cartography in the United States. The titles cited by cartography texts produce a web of citations that entwines the texts across decades and authors. The web converges on some titles, perhaps exposing them as core readings in cartography, and displays a pattern of outliers: rarely-cited items. Examining the topics of the titles cited by English-language texts published between 1900 and 2010 highlights changes in map-making technology as the discipline has moved from a hand-drawn art to a computing-driven merger of art and science. Additionally, changes in publication practices, as scholars have moved away from focusing on book-length titles to articles and participation in contributed and edited volumes, are displayed.

▪ *Criticism and Analysis—3:45–5:15, Friday*

John Kelly University of Kansas
Maps in Honduran Mosquitia for Collaborative Local Expressions of Territoriality and the Environment
From 2007 through 2013, students at the University of Kansas, under the supervision of Dr. Peter Herlihy, have worked with indigenous leaders from the Miskitu and Tawahka regions of Honduras to create maps which express the territorial concepts of local peoples through local-language toponyms (place names) and land use locations. Data sources included extensive participatory mapping work conducted in the late 1990s as well as recent remote sensing imagery. The maps, in both paper and digital form, are already proving to be valuable tools as the region's residents interact with Honduran government agencies and other stakeholders during the present time of important land tenure (ownership) changes and clarifications, including changes regarding the role of conservation protected areas (e.g., the Rio Platano Biosphere Reserve).

▪ *New Views on Old Places—8:15–10:00, Thursday*

Patrick Kennelly Long Island University-Post
James Stewart, Queens University
Relating Hill Shading to Terrain Metrics
Hill shading assigns shades of gray to terrain elements based on an illumination vector and the orientation of surfaces, which can be expressed in terms of slope and aspect. Surfaces with steeper slopes and aspects oriented away from the direction of illumination are generally hill shaded in darker shades of gray. Traditional hill shading, however, does not account for the elevation of surface elements or the effect of nearby terrain elements. Using illumination throughout the sky (sky models) for hill

shading results in surrounding terrain blocking some sky illumination, generally following the principle of 'the less sky visible, the darker.' The resulting hill shadings show some correlation of shades of gray to elevation, as well as different patterns of shades of gray to slope and aspect.

▪ *New Visualizations for Old Data—8:15–10:00, Friday*

Fritz Kessler Frostburg State University
James L Sloan II, The Pennsylvania State University
Developing and Teaching an Online Course on Coordinate Systems through The Pennsylvania State University's World Campus
Map Projections for GIS Professionals is a graduate-level course offered through The Pennsylvania State University's World Campus. The course's lecture topics include datums, map projections, and grid systems. Originally, the course was delivered as a one-credit elective through the online program in Masters of Geographic Information Systems. Beginning in the summer of 2007 this five-week course has been taught twice yearly. Course topics are introduced through concept galleries, assignments are explored through ArcMap, quizzes test student comprehension of material, and weekly discussion questions prompt interaction among students. Overall, student feedback on this course has been positive but many thought the topics were too thinly covered. This sentiment and other student feedback were catalysts used to expand the course into a three-credit offering. This newly redesigned course lasting ten weeks allows for a more detailed examination of the topics. This presentation will report on the decisions involved, planning for, and the outcome of teaching this three-credit course.

▪ *Teaching Cartography—3:45–5:15, Friday*

Valerie Krejcie Cartographic Consultants
The Civil War in Four Minutes
The Civil War in Four Minutes follows the course of the war with moving battle lines ranging across a map of the eastern United States. Explosions occur to denote battles, and an "odometer of death" keeps a running total of Union and Confederate casualties as the war progresses. The presentation graphically illustrates war strategy, campaigns, and the high cost in human lives of the Civil War. I will provide background information on who was involved in developing the map for the museum and the public's response. The film is from the Abraham Lincoln Presidential Library and Museum, Springfield, IL.

▪ *Special Session: Cartographies of the South (General)—8:15–10:00, Friday*

Jeff Larson ProPublica
Mapping the News
Maps and news have long been best friends. At ProPublica, we have mapped everything from redistricting plans to flood maps. We've created our own mapping framework and have wrangled 100 of gigabytes of data to make 3d maps. Jeff will take you on a tour of ProPublica's maps.

▪ *Open Source Web Mapping—10:15–12:00, Thursday*

R. Ryan Lash Centers for Disease Control and Prevention; University of Georgia
William Nicholson, Centers for Disease Control and Prevention
Refining National Tick Distribution Maps for Public Health Communication
Maps are invaluable for communicating information produced by the Centers for Disease Control and Prevention (CDC). This presentation reports on our

ongoing effort to refine the design of maps for the CDC website that show the national distribution of ticks that are of concern for public health. We survey the cartographic styles historically used for printed tick maps, show the progression of design styles developed for CDC tick maps, and discuss map design decisions in light of producer and user needs and expectations. Specifically, map producers have been interested in improving the visual communication of spatial uncertainty about tick distributions due to the limited spatial and temporal scale of tick survey data. While the revised maps have been widely seen, receiving 90,000 page views over the last 12 months, user studies are needed to validate design decisions in light of changing user demands and expectations of federal government-produced maps and geospatial data.

▪ *Mapping Living Environments—2:00–3:30, Friday*

Jonathan Lewis Benedictine University
Mapping in Early American Urban Sociology
Maps were often at the center of early American urban sociological studies. In the late 1890s, both Jane Addams and W.E.B. DuBois created maps depicting minority neighborhoods. This paper examines the appearance, rise, and fall of maps created by the University of Chicago sociologists who developed urban ecology. These maps employed concentric circles to argue that industrial development created common patterns of land use which fit a wide range of cities. Urban ecologists also invested these concentric zones with cultural and psychological significance, arguing that they attracted individuals from some groups and generated distinct patterns of life captured by writers and artists residing in those areas. Briefly influential, urban ecology's concentric zone maps met with intense criticism which led to a split between urban ecologists (who developed alternative mapping schemes) and sociologists (who saw urban ecology as too specialized to provide insight into emerging social and cultural developments).

▪ *New Views on Old Places—8:15–10:00, Thursday*

Tristan Lyttle Avenza
Tips and Tricks on Working with Map Data and Imagery in Adobe Creative Products
This presentation will demonstrate and discuss a number of creative and interesting methods for working with GIS map data and spatial imagery in the Adobe creative environment. Included in the presentation will be the use of Adobe Photoshop on DEM data to generate shaded relief and 3D models, how to easily and quickly georeference a non-referenced map in Adobe Illustrator, how to convert Adobe Illustrator artwork to shapefiles and other GIS data formats, creating interactive Flash and HTML5 maps in Adobe Illustrator and generating geospatial PDF map documents.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Tristan Lyttle Avenza
Making Maps for Mobile Devices
This presentation will demonstrate and discuss a simple and efficient method for creating maps for mobile devices and tablets, distributing them to those devices, and ultimately using them on mobile devices. In an era in which maps are increasingly being used on mobile devices, publishers and cartographers must adopt practices and workflows which allow them to produce maps for these devices and repurpose

existing map libraries and documents for mobile use. Included in this presentation will be a demonstration on how any existing map, even ones initially designed for print, can be easily and quickly repurposed for mobile devices.
▪ *Considering the (Mobile) User—2:00–3:30, Thursday*

Jinwu Ma Esri
3D Map Gotchas
The popularization of GIS makes many computer users instant cartographers. Yet the quality of maps seems out of control, and 3D GIS only seems to have aggravated the problem. However, this may not be apparent to untrained eyes. This paper attempts to analyze pertinent 3D mapping scenarios in the context of data visualization vs. information graphics in the self-exploration to information explanation/presentation continuum. Four layers of data presentations, representation, presentation, visual perception, and cognition amplification are identified to help illustrate the point. The advantages and constraints of 3D maps are enumerated in terms of realistic vs. non-realistic 3D maps in applications using ArcGIS. How are XYZ coordinates, or longitude, latitude, and elevation/height in that order related to each other? How does the Z differ from the XY, and how is it best used in a 3D map and in what way?
▪ *Popular Design—3:45–5:15, Thursday*

Hans van der Maarel Red Geographics
New Balls Please
Several years ago Red Geographics was involved in the production of the Oolaalaa Globe Chairs. We are now working on a new set of maps for a similar product, using our experience as well as new datasets and software to make a better product.
▪ *Beck, Balls, Fracking & the Ocean—2:00–3:30, Thursday*

Zach Mahan GeoFact of the Day Blog
Cartography Connection: Mapmakers Publishing Content Online
The World Wide Web has millions of maps, but only a fraction of them are popular and viral. Maps of this caliber employ exceptional digital design and cartographic techniques. Building off my experiences of making maps on my GeoFact of the Day Blog, I present ideas that may make your maps more enjoyable, appealing, and popular for cartographic experts and novices alike. I will also present examples of viral maps that are found on social media sites and how cartographers can make effective maps to share with a potentially broad audience that uses social media.
▪ *Popular Design—3:45–5:15, Thursday*

Nick Martinelli MarketSeer; University of Oregon
Alethea Steingisser, University of Oregon
Jacob Bartruff, University of Oregon
Climate Analogue 2
A collaboration between the University of Oregon, Oregon State University, and the USGS, the Climate Analogue Mapper is a web site intended to provide a simple window into complex climate modeling by showing users the location of predicted future climates which are analogous to a selected origin point. With zero clicks, general users are presented a result based on their location, while more interested users can drill down and instantly switch between origin locations and climate model settings, as well as download original data and maps. This presentation will focus on the use of open source tools to store, access, and display the analogue layers.

Tools used include THREDDS Data Server for the storage and quick serving of grid data stored in NetCDF files, Leaflet, Proj4Leaflet, and Mapquest's Nominatim OSM search API. We seek feedback from the community on the cartographic display and usability of the site.

▪ *Mapping Living Environments—2:00–3:30, Friday*

Nick Martinelli MarketSeer, University of Oregon
Markets, Neighborhoods, and CartoDB
During the last year I have been using CartoDB to help me make some maps! It has been great fun and I would like to share some ways in which I have incorporated it into work and play projects over the last year. For work, CartoDB has facilitated the move to mobile friendly sites for our clients. An interesting speed bump for us was the loss of hover interaction on touch devices. I will discus our solution for that problem, and how, with CartoDB, we used it for a simple geo selection and market building tool. For fun, I used CartoDB to store and display data at a site I built to collect neighborhoods drawn by volunteer contributors in three Pacific Northwest cities. The site can be found at pnwmaps.com/neighborhoods. This was a really fun project, which was both a success and a failure. I'll talk about what worked and what didn't collecting volunteer data, and the use of CartoCSS and CartoDB to live render neighborhoods nicely using what I called opacity stacks.

▪ *Big Data and the Crowd—10:15–12:00, Friday*

Ginny Mason National Geographic Magazine
Mapping North Dakota's Oil Boom
Since 2006, oil production in North Dakota has more than tripled making it the second highest domestic supplier of oil, behind Texas and ahead of Alaska. Technological advances in hydraulic fracturing, or 'Ëœfracking', is accountable. This controversial technique involves the use of pressurized chemical injections underneath the earth's surface to help facilitate the extraction of oil and gas resources. In this talk, I'll walk through the reporting process for *National Geographic Magazine*'s mapping and graphic coverage of North Dakota's fracking boom (published in the March 2013 issue). We'll take a look at how advances in industry policies differ from place to place and how fracking has transformed landscapes and economies.

▪ *Beck, Balls, Fracking & the Ocean—2:00–3:30, Thursday*

Jennifer Mason The Pennsylvania State University
Jason Dykes, City University London
Jo Wood, City University London
Aidan Slingsby, City University London
Storm Uncertainty Representation: User Responses to Novel Visualization
Numerous existing hurricane visualizations represent spatial uncertainties (e.g., uncertainty in magnitude, the central track, etc.) that vary for different upcoming points in time. Several studies have evaluated current hurricane visualizations and found common misinterpretations among the general public. We present new hurricane visualizations that utilize existing data from the National Hurricane Center Database aiming to represent hurricane track and magnitude uncertainty in ways that make these misinterpretations less likely. This study evaluates these new designs and their effect on users including preferences, readability, and behavioral intention. The uncertainty visualizations are inspired by existing cartographic and uncertainty techniques with the goal of: 1) increasing the readability of maps so that users can

more accurately identify and compare spatial uncertainties among different locations with increased confidence and 2) assessing how these visualizations impact user perceptions and behavioral intention for an approaching hurricane.

▪ *New Visualizations for Old Data—8:15–10:00, Friday*

Stephen Mather Cleveland Metroparks
Thomas Kraft, Cleveland Metroparks
Trail Map App
Cleveland Metroparks, in partnership with Southwest General Health Center and GreenInfo Network, has created a 'Trails App,' which is an intuitive way for Cleveland Metroparks users to discover new trails through a desktop and mobile optimized web application. The design is straightforward, providing complete information about trails, hiking, biking and horse riding. As Cleveland Metroparks' first web map app, effort was focused on cartographic quality and custom interactivity. The app can be used in the field on mobile devices where it will give proximity alerts and sort search results by location, or as a desktop web app, which allows the users to print their maps to high-resolution PDFs. The entire software stack is open source and leverages TileStache, GeoServer, MapFish, PostGIS, jQuery and jQuery mobile. The app is currently in the process of being open sourced, adapted, and generalized by a Code for America Brigade in Summit County, Ohio.

▪ *Considering the (Mobile) User—2:00–3:30, Thursday*

Carol McAuliffe University of Florida, Map & Imagery Libraries
Providing Access to the Geospatial Data Collections Using East View's GeoCloud
The University of Florida's Map & Imagery Library has spent years collecting terabytes of geospatial data from all over the world. However, patrons can only find and use data if the library provides them adequate access. So then, what is the best way to provide patrons access to huge, complex geospatial datasets? How can those data be made easily-searchable, viewable, and download-able? What interface works best for a variety of users and multiple types of geospatial data? The University of Florida has come together with the data provider East View to try and solve these issues by developing an innovative geovisualization and access tool.

▪ *Cartographic and Geographic Data Collection Day—8:40–4:00, Wednesday*

George F. McCleary, Jr. University of Kansas
Achieving Aesthetics in Cartography
Arthur Robinson introduced, informally, a simple approach to appraising maps. He pointed out that when the map has 'snap' (he snapped his fingers) in the initial visual appraisal, it 'looks right': there is nothing that is problematic in the visual impression, all of the pieces and parts are working together, and nothing assumes a position of inappropriate importance. Such a map has 'harmony' and 'unity,' two of the basic principles of design (along with balance, contrast, emphasis, and more). Maps with 'snap' have an aesthetic characteristic. In fact, much of the literature about aesthetics suggests that the aesthetic experience with an object occurs early in the human information processing activity, at the outset, before there is a 'perceptual image' (Kosslyn) and definitely before the temporally- and intellectually-consuming consideration of the map within the cognitive process.

▪ *Aesthetics, Emotion, Design—2:00–3:30, Thursday*

Kevin McManigal The University of Montana
Breaking the Software Demonstration Barrier—Live Data Collection and GIS in the Classroom
Tips and strategies for overcoming the problems of working with GIS on-screen, in front of the classroom. Live demonstrations can be a great way to engage students and demonstrate concepts in an applied manner. However, the daunting specter of software glitches and embarrassing digital failure shelves many attempts before they get off the ground. This talk will outline the practical steps of preparation, execution, and recovery from the inevitable snafu.
▪ *Teaching Cartography—3:45–5:15, Friday*

Michal Migurski Code for America
Speedy Delivery: Vector Tiles from Open Data
Pre-rendered bitmap tiles are old news. Vector data tiles rendered right in your browser are emerging from the open source software community, catching up to the high-speed, beautiful and low-bandwidth cartography already available in mobile map applications like Google and Apple Maps. The OpenStreetMap US Foundation is supporting work on global, up-to-date tiled vector data available now. This is a speculative talk about a possible near future for digital maps. I'll cover data formats like GeoJSON and TopoJSON, free data sources like OpenStreetMap and Natural Earth Data, rendering environments like D3 and WebGL, and new rendering community experiments pushing the boundaries of digital cartography and data distribution.
▪ *Open Source Web Mapping—10:15–12:00, Thursday*

Ian Muehlenhaus University of Wisconsin–La Crosse
Web Mapping Aesthetics for Effectual Communication
In our rush to design web maps that users find intuitive and awe-inspiring, less time has been spent looking at how to design them for effective communication. This presentation highlights several key concepts to consider and keep in mind when designing web maps meant to communicate specific information in an aesthetically effective, memorable manner. It is argued that web map aesthetics need to be more effectively harnessed to reinforce and promote a map's particular message or argument. Several holistic web map design suggestions are provided concerning visual hierarchy, map layout, and map element/interface design. The presentation reviews several principles to help web cartographers craft effectual maps rather than just "cool-looking" ones.
▪ *Aesthetics, Emotion, Design—2:00–3:30, Thursday*

Ryan S. Mullins The Pennsylvania State University
Questions Facing Map Design in the Age of Mobility and Siri
Mobile devices present distinct interaction and design challenges for cartographers and developers. As these technologies continue to evolve, interaction will more easily be facilitated by multi-modal interfaces driven by a person's touch and voice, giving rise to new interface design questions. How do we design a symbol that visually cues a user to interact with it using touch or voice? How do we design an experience that smoothly transitions between touch and voice? In addition, there are important questions of symbol ambiguity and content accessibility that will drive not only how

we design maps, but how people engage with and create content. I will discuss these questions, and examine how existing projects and future research are positioned to address them.

▪ *Considering the (Mobile) User—2:00–3:30, Thursday*

Tom Patterson US National Park Service
Daniel P. Huffman, somethingaboutmaps
New Natural Earth Raster Data
The Natural Earth product line now includes two new raster datasets. *Gray Earth:* This monochromatic terrain introduces a new presentation technique, locally-enhanced hypsometric tints. Instead of using a linear scale to calculate elevation colors worldwide, as do traditional hypsometric tints, locally-enhanced tints depict the elevation of terrain relative to its surrounding region. As a result, the lower terrain that predominates Earth receives more emphasis and is easier to see.. *USGS National Atlas:* Created through an interagency agreement, this classic-style Natural Earth relief/land cover complements National Atlas 1 million scale vector data. It includes the 50 US states, plus Puerto Rico and the US Virgin Islands. The dataset is large–the contiguous US measures nearly 50,000 pixels in width, more than 16 feet at 254 DPI–with each pixel representing 100 meters on the ground. Tom will discuss the new techniques and data sources needed to develop Natural Earth images at larger scale.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Tom Patterson US National Park Service
Nathaniel Vaughn Kelso
What's New in Natural Earth 3.x
In the four years since Natural Earth was released with vectors, a lot has changed and usage has skyrocketed. Let's review vector improvements, highlight overlooked gems, and brainstorm about the future.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Matthew Lawrence Pierce Emory University
"Congregational Watersheds" in Atlanta, 1928
The Atlanta Maps Project of Woodruff Library at Emory University has recreated both the road network of and an absolute geocoder for Atlanta in 1928, based upon the library's collection of historic maps. My research combines the geocoder with church directories and census data in order to examine 'congregational watersheds'—the area from which a congregation drew its membership. Determining a congregation's watershed, in turn, allows us to analyze the impact of public and private transportation on church membership patterns. Because the first round of analyses uses five contiguous churches of the same denomination, the 'boundaries', both physical and social between congregational watersheds may be determined. Incorporation of census data allows us to consider the relationship between social class and the size and density of congregational watersheds.

▪ *Special Session: Cartographies of the South (Atlanta)—10:15–12:00, Friday*

Brandon Plewe Brigham Young University
Crowdsourcing a Cartography Textbook
Open curricula resources (materials that are contributed and distributed without cost or restriction) can be very attractive to faculty and students. However there are many issues: who will be willing to contribute without any promise of reward?

How will accuracy and quality be ensured? I have been experimenting with having students writing textbook-style content for introductory cartographic design in the form of public wiki encyclopedia articles in fulfillment of readings assignments. There are issues, but the approach has promise for generating basic content.
▪ *Teaching Cartography—3:45–5:15, Friday*

Ate Poorthuis University of Kentucky; FloatingSheep
Getting Rid of Consumers of Furry Pornography∗, or How to Find Small Stories With Big Data
Although the onset of Web 2.0 and the Geoweb has given geographers and cartographers a myriad of novel and rich spatial data sources, it remains a challenge to use those data in meaningful ways. Not helped by the limited capabilities of the early online mapping frameworks, many maps based on Geoweb data fall prey to *xkcd*'s pet peeve #208 (∗http://xkcd.com/1138/): they are basically reflecting underlying population. Although this is not necessarily a problem, it often obscures much more interesting smaller spatial phenomena. Partly based on DOLLY, an ongoing effort to collect, analyze and visualize spatial big data in meaningful ways at the University of Kentucky, I present a methodology that allows one to visually tease out these smaller, interesting, spatial phenomena from large (millions of data points) spatial datasets in an interactive environment.
▪ *Big Data and the Crowd—10:15–12:00, Friday*

Paulo Raposo The Pennsylvania State University
Automated Attribute Enrichment for Automated Multiscale Maps
Automated generalization procedures often depend on ancillary data for calibration. Typically these data do not preexist, and need to be calculated within and between map layers. This research presents several examples of using automated procedures to calculate such data for multiscale topographic map making. Within ArcGIS, data are ingested into Python script tools that calculate either geomorphologic or cultural attributes for each map feature. Data are stored in new attribute fields which are then referenced by scale-specific SQL queries while producing multiscale map layers. Example data calculated in this research include summit prominence, airport relative importance and type, and roadway network traffic and labeling class (given many route designations). We then demonstrate the use of these data in multi-scale map making.
▪ *On Web Maps: Multiscale—2:00–3:30, Friday*

Jack Reed Georgia State University
Brennan Collins, Georgia State University
Timothy Hawthorn, Georgia State University
Joseph Hurley, Georgia State University Library
Ben Miller, Georgia State University
ATLMaps—Building a research and community focused mapping platform
ATLMaps is a collaborative research- and community-focused mapping tool which aims to bring together disparate types of information in order to visualize them in a single web accessible experience. The platform integrates historical maps, user-generated content, and quantitative information to provide new interactions for and relationships between seemingly unrelated geospatial content.
▪ *Panel: Two Approaches to a Deep Map of Atlanta—2:00–3:30, Friday*

Robinson

Anthony Robinson The Pennsylvania State University
Maps and the Geospatial Revolution: Teaching a MOOC on Mapping
Massive Open Online Courses (MOOCs) have emerged as a vibrant trend in distance education. By their nature, MOOCs provide new levels of access to courses without tuition costs to students, and they challenge traditional models for university education which emphasize high levels of one-on-one contact between instructors and students. In this presentation I describe experiences from designing, developing, and teaching one of the first MOOCs on mapping. The course, called Maps and the Geospatial Revolution, was offered through Coursera, a major MOOC platform. Tens of thousands of students enrolled to take the class, signaling a large demand for basic cartographic education. A wide range of challenges and opportunities around MOOCs for Cartography will be highlighted in this presentation. Research on map use and design, as well as education and outreach to improve exposure to our discipline, could stand to benefit from engagement with thousands of students in MOOCs.
▪ *Teaching Cartography—3:45–5:15, Friday*

Caroline Rose University of Wisconsin–Madison
A Bathymetric Book: Adventures in Non-Digital Media
In my *Bathymetric Book*, mapping meets book arts, where the book is treated as a three-dimensional space for creative communication. By representing the underwater relief of Crater Lake in stacked layers of paper, this unique piece possesses a tactile quality that no digital map could offer. In this session, I'll describe the challenges, solutions, and insights generated by this adventure in non-digital cartography. I'll also talk about the future of the project: thanks to the positive response this project has sparked, I'm hoping now to scale up to an edition of 50 to 100 copies. I'm tackling this challenge by joining a collaborative makerspace in Madison, Wisconsin, where I have access to a laser cutter and other technology as well as a community for sharing expertise.
▪ *Experimental Practices—10:15–12:00, Thursday*

Carl Sack University of Wisconsin–Madison
Zero to Mash-Up in 1200 Seconds Flat
Got some data? Want to make an interactive web map? Sure, you can rely on some point-and-click application for an automatic (and sub-optimal) solution—but what fun is that? No, you're here because you are a do-it-yourselfer who wants to know how to get the most design flexibility and make the coolest possible mash-up. This session will get you going with a lightning start-to-finish example using the open-source Leaflet mapping library that knocks the GUIs out of the game.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Carl Sack University of Wisconsin–Madison
A Practical Introduction to D3 Web Maps
For years, we cartographers have suffered the burden of watching the high standards of our practice eroded on the Internet by shoddy mash-up after shoddy mash-up. Like Sisyphus we have labored to explain to our bewildered friends and colleagues that, in fact, Web Mercator is not a proper projection for a choropleth map (it isn't even on an ellipsoid, for god sakes!). Yet, like Plato's cave men, they merely answer back, 'choro-what?'—and go on publishing their data on top of Flat-Earth-Society raster tiles. Well, no more shall we sit idly by! Today, thanks to some clever chaps who care about how maps are made on the Web, we have the tools to do better. The

presenter, who by no means claims to be an expert, will nevertheless bravely delve into the realm of Mike Bostock's Data-Driven Documents library, and demonstrate how, with a little learning curve, it can be fun to use and create state-of-the-art, all-vector, good interactive web maps.

▪ *Online Tools and Templates—8:15–10:00, Thursday*

Alexander Savelyev The Pennsylvania State University
Alan MacEachren, The Pennsylvania State University
Exploratory Visualization of Movement Patterns in Twitter Data
The cartographic display of movement has a long history and has produced a number of well-known artifacts, including Minard's flow maps and Hagerstrand's space-time models. The volume of data associated with modern-day geospatial data-sets makes many well-established movement visualization techniques impractical. Multiple new approaches have already been identified, including automated flow map construction, density mapping and edge bundling. However, good cartography depends as much on understanding the properties of data under investigation as it does on development of novel visualization approaches, and understanding millions of records of movement data presents a formidable challenge of its own. In this talk I attempt to address this challenge and will demonstrate a geovisualization environment that supports the free-form exploration of spatial movement patterns in large (millions of records) collections of Twitter data. The resulting environment combines multiple small technique, dynamic, user-controlled animation and on-the-fly filtering of movement data.

▪ *Big Data and the Crowd—10:15–12:00, Friday*

Melelani Sax-Barnett Urban Airship
Getting What You Want Out of OpenStreetMap
Whether you personally edit OpenStreetMap or not, it can be an excellent source of data for your cartographic products. It can provide everything from coastlines and parks to roads, bike lanes, coffee shops, and much more. In fact, nonprofits, private companies, and even governments use OSM data for their maps right now, and their numbers increase every day. In this talk, I will present a few different tools that can help you download and process OpenStreetMap data for use in your paper and web mapping projects. I will also go over the basics of how to interpret the OSM tagging system and provide an OSM tag translation for a list of common features that you may want to use.

▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Caitlin Scopel Esri
Wes Jones, Esri
An Updated and Improved World Hydro Basemap
The World Hydro Basemap, a reference map of our world's surface water, has continued to progress in the nearly three years of its existence. In 2013, the map underwent a complete review and redesign: in addition to updating the US scales with the latest NHDPlus data, a number of cartographic improvements were made to feature generalization, labeling, symbology, and feature density. The World Hydro Basemap emphasizes surface water features, helping readers understand relatively how much water is present in each river as well as the general relationship between the overland drainage pattern and the landscape. Use this authoritative basemap in your water projects.

▪ *Online Basemaps and Web Atlases—3:45–5:15, Thursday*

Shawa

Tsering Wangyal Shawa Princeton University
Salim Mohammed, Stanford University
Janet Spitz, Boston Public Library
Panel: Map Digitization Workflows
▪ *Cartographic and Geographic Data Collection Day—8:40–4:00, Wednesday*

Chacha Sikes New California Water Atlas
Laci Videmsky, New California Water Atlas
Mapping as Digital Public Work: New California Water Atlas
We will talk about the New California Water Atlas, a project to make water understandable for Californians. This is a new kind of digital public work. We will talk about collaborative mapping, what we have learned about the state of open water data, and how we are using open government strategies to work with government agencies for improving data for journalists, community organizations, non-profits and others. http://ca.statewater.org @CAWaterAtlas
▪ *Online Tools and Templates—8:15–10:00, Thursday*

Will Skora Humanitarian OpenStreetMap Team (HOT)
Yohan Boniface, HOT
Brian Wolford, HOT
Severin Menard, HOT
Jaakko Helleranta, HOT
Designing a Slippy Map Base Layer for Humantiarian and Developing countries' Context Using OSM Data
The HDM Map (Humanitarian Data Model) by HOT is a multi-zoom level base map that is designed to display OpenStreetMap data used in humanitarian contexts and developing countries. Since its creation in 2010 in response to the Haitian Earthquake, HOT (Humanitarian OpenStreetMap Team) facilitates the creation and distribution of free geographic data remotely for humanitarian response and economic development. The HDM Map highlights features not typically found in online base maps including road smoothness and surface, craftsmen, service agencies, NGO offices, sanitation facilities, and SRTM terrain. With its open-source license and design written in CartoCSS (used in TileMill), it's able to be easily customized and deployed for specific humanitarian crises. https://github.com/hotosm/HDM-CartoCSS/.
▪ *Open Source Web Mapping—10:15–12:00, Thursday*

Steve Spindler Steve Spindler Cartography; WikiMapping Developer
Crowdsourcing Map Data
Steve Spindler Cartography created a crowdsourcing web application called WikiMapping to improve bike planning and make better bike maps. It doesn't have fancy graphics, but several bike planners use it daily to collect and process public input. Wikimapping is being used for city bike plans, bike share planning, and grassroots mapping for a gubernatorial campaign. Steve will demonstrate how a WikiMapping project improves his ability to help clients make better maps, communicate with constituents, and improve bicycle opportunities. Prior to the presentation, people are welcome to register and set up a project using WikiMapping.com so they can see how it functions.
Links to some WikiMapping projects:

http://wikimapping.net/wikimap/Chapel-Hill-Bike-Plan.html
http://wikimapping.net/wikimap/Nice-Ride-Suggestions.html
http://wikimapping.net/wikimap/Howard-County-Bicycle-Master-Plan1.html
▪ *Big Data and the Crowd—10:15–12:00, Friday*

Dane Springmeyer MapBox
Publishing Customized Global Basemaps with MapBox
MapBox provides an easy web interface for creating global custom basemaps and for sharing them online. Basemap features like language, color palettes, opacity, and place of interest markers can be adjusted on the OpenStreetMap-based streets layer and combined with terrain and gorgeous imagery. Because rendering is done dynamically any edits you make to OpenStreetMap will show up within minutes, allowing your customized basemaps to be a living canvas for data you overlay. This talk with demo these features and practical uses for them.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Dane Springmeyer MapBox
A Cloudless Atlas
The Cloudless Atlas is a project by MapBox to create the clearest view of the world from space using 2 years worth of images from NASA's LANCE-MODIS. The final product is a uniquely seamless and beautiful map of the world–as if you could see every spot on Earth on a gorgeous spring day. This talk will cover the methods used for sifting through over 300,000 source images in order to filter out clouds, sun glints, and atmospheric haze, leaving a clear image of the ground.
▪ *Online Basemaps and Web Atlases—3:45–5:15, Thursday*

Josh Stevens The Pennsylvania State University
Navigating a Labyrinth of Libraries: An Overview of Cartographic Software and Capabilities
It is an exciting time to be a cartographer. There are presently more tools, techniques, and technologies for creating maps than ever before. The list of options is only growing as new software becomes available by the day. With so many cartographic tools to choose from, mapmakers new and old may be daunted by the task of selecting the right tool for the job. Where does one begin? Which libraries are best suited to visualization? Which are best for analysis? Where are the overlaps? This talk will broadly cover some of the most popular mapping software currently available, highlighting the strengths and potential weaknesses of each. Mapping software will be discussed within the contexts of visualization, analysis, desktop/mobile, and cloud-based solutions. Positioning mapping software in this way will prepare you to navigate the labyrinth of libraries and identify the tools that best align with your project goals.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

Mark Stewart Esri
Aileen Buckley, Esri
Creating and Sharing Web Maps with ArcGIS Online
This hands-on workshop provides an overview of the vast collection of GIS resources that are available through ArcGIS Online, and how they can be leveraged to make quality online maps and applications. Participants will learn best practices for finding and using different types of ArcGIS Online services to build Web maps and apps which can be shared publicly or within a private group and accessed on just

about any web-enabled device. Participants will also learn how to add information and interactivity to their maps through the use of widgets such as notes, pop-ups and time sliders, and how to engage their map readers by using story map templates. In addition, the workshop will cover management strategies for ArcGIS Online accounts, including publishing and administration.

▪ *Workshops—8:30-5:00, Saturday*

Eric Theise
Lessons Learned from Experimental Film
During the 1960s, 70s, and 80s, American avant-garde filmmakers expanded the boundaries of cinema by experimenting with perception, duration, and narrative expectations. The libraries and frameworks for online mapping have evolved to a point where an examination of how these experimental film strategies might be applied to interactive cartography seems ripe. This presentation will pair maps with canonical film works of the American avant-garde, and might well form the core of an impractical cartography day.

▪ *Experimental Practices—10:15–12:00, Thursday*

Eric Theise
The Contemporary Web Mapping Application
This workshop is a front-to-back-to-front-again examination of a contemporary approach to building web mapping applications. Moving briskly, we'll cover sources of open data (Natural Earth & OpenStreetMap), a client-side mapping library (Leaflet), tile creation (TileMill), and geospatial databases (PostgreSQL and PostGIS), as well as enhancements for performance and maintainability, such as TopoJSON, JavaScript model-view-controller frameworks, and tools and strategies for caching. Participants should be prepared to do some work in advance of the workshop–downloading recommended software and doing some background reading–and should bring a laptop to the workshop.

▪ *MINI WORKSHOP—8:15–10:00, Friday*

Karla Turcios Esri
Empowering Users by Designing with Empathy
Any talk about designing digital products has to address the problems users are facing now, in order to empower them with better tools tomorrow. Learn from a case study of a web application design that started with a handful of user interviews and how provisional mental models uncovered a key feature that pivoted the definition of the solution. See ways to uncover user problems in narrow timeframes and how empathy, not sympathy, can motivate designers, product managers, and developers to collaborate on solutions. Discover how employing empathy in user testing can lead to validation of solutions using just prototypes.

▪ *Aesthetics, Emotion, Design—2:00–3:30, Thursday*

Judith Tyner California State University–Long Beach
The Forgotten Context: Technology and the Interpretation of Early Maps
Brian Harley wrote in 1990 "More than many other texts, maps are ... mediated by a series of technical activities, each performed by a different 'author,'" and noted that how a map was made in a technical sense was the first step in interpretation of early maps. However, despite similar comments by others in cartography, this aspect of interpreting and evaluating maps in history has been neglected in many recent studies. As a result, over-the-top readings of the meaning and significance of maps

are found. This paper draws on examples of questionable interpretations in the literature and discusses how knowledge of technology is important even in critical studies in history of cartography.

▪ *Criticism and Analysis—3:45–5:15, Friday*

Tim Utter University of Michigan
Pictorial Maps in the Clark Library, University of Michigan
Pictorial representation has been used on maps for hundreds, if not thousands, of years, yet its use as a cartographic device has waned. The Clark Library has a collection of several hundred pictorial maps, many of which are heavily used, including 'Europe as a Woman' (ca. 1550), the maps of Jo Mora, the murals by Miguel Covarrubias, and those of the art deco style to name a few. The presentation will cover a brief history of pictorial maps using important pieces from the Clark Library's collection.

▪ *New Views on Old Places—8:15–10:00, Thursday*

Jesse Varner University of Colorado; CIRES
John Cartwright, NOAA National Geophysical Data Center
Map Viewers and Services at NOAA's National Geophysical Data Center
The mission of NOAA's National Geophysical Data Center (NGDC) in Boulder, CO is to provide long-term scientific data stewardship for the nation's geophysical data, ensuring quality, integrity, and accessibility. A suite of interactive web maps and map services provides data discovery and access to much of the data stewarded at NGDC. These maps are implemented using ArcGIS for Server and the ArcGIS API for JavaScript. Several of the maps can be toggled between Web Mercator, Arctic, and Antarctic projections. This presentation will cover cartographic products and services for various datasets at NGDC, including high-resolution bathymetry DEM visualizations, ship tracks for multibeam and marine geophysical surveys, hydrographic survey data, marine geological samples, historical tsunami data, historical magnetic declination models, and the international GEBCO Gazetteer of Undersea Feature Names.

▪ *Map Stories and the Web Tools to Create Them—3:45–5:15, Friday*

Anna Verrill The Baldwin Group, NOAA Coastal Services Center
MarineCadastre.gov: An Ocean of Information
Within the past decade, marine spatial planning efforts have gained momentum, especially in the realm of offshore renewable energy. The increased interest has led to a need for authoritative ocean data and a place to house it. MarineCadastre.gov was developed to fulfill this need through a partnership between the NOAA Coastal Services Center (Department of Commerce) and the Bureau of Ocean Energy Management (Department of the Interior). The website was designed to support offshore renewable energy siting, but it's also being used for other ocean-related efforts. MarineCadastre.gov is an integrated marine information system that provides data, tools, and technical support for ocean and Great Lakes planning. Most of the project effort focuses on data discovery, delivery, and access. The data, which come from a variety of partners, are compiled into a data registry, the website's National Viewer, and the map gallery.

▪ *Cartographic and Geographic Data Collection Day—8:40–4:00, Wednesday*

Villeda

Ian Villeda MapBox
Scaled Data Value Design in TileMill
Within TileMill, the expressiveness of CartoCSS labeling and the dynamic power of PostGIS can be combined to present data in ways that build upon and have distinct advantages over choropleth and proportional symbol techniques. In this talk I will describe the steps used to design a unique map of food access by US county using data from the USDA. Details of zoom-dependent styling and the usage of SQL for sorting data will be discussed, with the goal of fast and easy publishing to the web.
▪ *On Web Maps: Multiscale—2:00–3:30, Friday*

Ian Villeda MapBox
Hands on with TileMill: designing and publishing fast maps online
TileMill is an open source design studio that enables easy publishing of maps on-line. This workshop will cover the basics of using TileMill—how to load various data formats, how to get quickly learn the CartoCSS styling language, and how to design for various online media and visualizations. It will also highlight new features in the latest releases of TileMill including advanced compositing options, image filters, fast data formats, raster classification, and more. This workshop will be a combination of lecture, demos, and hands on experimentation—so come prepared to learn as a group, ask questions, and make maps on the fly.
▪ *Workshops—8:30-5:00, Saturday*

Tim Wallace New York Times
Mapping on a Deadline
If a breaking news graphic is to be published while its content is salient, there's no time to waffle over design. Immediate decisions must be made and quick action taken. This talk will discuss how the graphics department at *The New York Times* turns around breaking news graphics for print and the Web.
▪ *Practical Cartography Day—9:00–5:00, Wednesday*

John Wolf USGS, Eastern Geographic Science Center
Chesapeake Bay Story Maps
The Chesapeake Bay Program (CBP) is a unique regional partnership that leads and directs Chesapeake Bay restoration and protection. The leaders of the CBP Partnership, which is celebrating its 30th anniversary in 2013, are developing a new Chesapeake Watershed Agreement outlining a series of goals and outcomes to guide conservation and restoration actions over the next decade. As one of the most studied ecosystems in the world, the CBP has a wealth of environmental and socioeconomic data to support this effort. To coincide with the 30th anniversary of the Partnership, we have been developing a range of data-driven story maps to help communicate both technical and non-technical concepts relating to water quality, habitats and watersheds, sustainable fisheries, and public recreation opportunities throughout the Bay watershed. This presentation will highlight a few of those data-driven map stories, including cooperative visualization projects with both Stamen and Esri.
▪ *Open Source Web Mapping—10:15–12:00, Thursday*

	RESTAURANT Cuisine	Phone	Cost
1	**Roost** American	864-298-2424	$$$
2	**Bertolo's Pizza & Wine Bar**	864-467-9555	$
3	**Vic's Pizza**	864-232-9191	$
4	**Groucho's Deli** Sandwiches	864-552-1541	$
5	**Tsunami** Sushi	864-467-1055	$$
6	**Jack & Diane's** Piano Bar	864-509-6414	$$
7	**Corner Pocket** Billiards, Pub	864-235-5297	$$
8	**City Tavern** Pub, American	864-239-2202	$
9	**The Green Room** American	864-335-8222	$$$
10	**Dark Corner Distillery** Moonshine	864-631-1144	$$
11	**Sushi Koji**	864-631-1145	$$$
12	**Jersey Mike's** Subs	864-242-2223	$
13	**Grille 33** Burgers	864-552-1970	$
14	**Blue Ridge Brewing Co.** Pub	864-232-4677	$$
15	**Subway** Subs	864-242-4041	$
16	**Azteca Mex**	864-250-9991	$$
17	**Addy's Dutch Cafe & Rest.**	864-232-2339	$$
18	**Sharkey's Pub**	864-552-9822	$
19	**Lemon Grass Thai**	864-241-9988	$$
20	**Ristorante Bergamo** Italian	864-271-8667	$$$
21	**Coffee Underground**	864-298-0494	$$
22	**Trio- A Brick Oven Cafe** Italian	864-467-1000	$$
23	**Charlie's Steakhouse**	864-232-9541	$$$
24	**Sassafras** Southern	864-235-5670	$$
25	**Tupelo Honey** Southern	864-451-6200	$$
26	**Handi Indian Cuisine**	864-241-7999	$$
27	**21 East** Steak, Seafood	864-271-0533	$$
28	**Sully's Steamers** Bagel sandwiches	864-509-6061	$
29	**Never on Sunday** Greek	864-232-2252	$$
30	**Barley's Taproom** Pizza, Billiards	864-232-3706	$$
31	**Rare Steakhouse on the Plaza**	864-239-0164	$$$
32	**Trappe Door** Belgian	864-451-7490	$$
33	**Wild Wing Cafe** Wings	864-242-9453	$$
34	**Sushi Murasaki**	864-271-2452	$$
35	**The Orient on Main** Asian	864-787-6241	$$
36	**Cantinflas** Mexican	864-250-1300	$$
37	**Yap** Malaysian	864-263-3561	$$
38	**Red Fin Sushi**	864-236-8408	$$
39	**Jamaica Mi Irie** Jamaican, Carib.	864-271-8620	$$
40	**Takosushi**	864-271-5055	$$
41	**The Cazbah** Tapas	864-241-9909	$$
42	**Sticky Fingers** Ribs, Barbeque	864-331-7427	$$

RESTAURANT Cuisine	Phone	Cost
43 **Pita Pit**	864-239-0192	$
44 **Jimmy John's** Subs	864-235-5775	$
45 **Nose Dive** Gastropub	864-373-7300	$$
46 **Carolina Ale House** Sports bar	864-351-0521	$$
47 **Two Chefs** Deli, Sandwiches	864-370-9336	$$
48 **Greektown Grille** Greek	864-233-5505	$$
49 **Stellar** Tapas	864-438-4954	$$$
50 **Trattoria Giorgio** Italian	864-271-9166	$$$
51 **Bellacino's** Italian	864-242-6009	$
52 **Spoonbread** Southern	864-421-9700	$$$
53 **Northampton Wines & Cafe** Wine	864-271-3919	$$$$
54 **Soby's on the Side** Salads, Sandwiches	864-271-8431	$
55 **Connolly's Irish Pub**	864-467-0300	$$
56 **Soby's New South Cuisine** American	864-232-7007	$$
57 **Rick Erwin's Nantucket Grill** Seafood	864-546-3535	$$$$
58 **Grill Marks** Gourmet burgers	864-233-5825	$$
59 **Larkins on the River** Steakhouse	864-467-9777	$$$
60 **The Lazy Goat** Mediterranean, Tapas	864-679-5299	$$
61 **Papi's Tacos**	864-373-7274	$
62 **O Cha Tea Room**	864-283-6702	$
63 **High Cotton** Southern	864-335-4200	$$$
64 **Starbucks** Coffee	864-240-6299	$
65 **Spill the Beans** Coffee, ice cream	864-242-6355	$
66 **Passarelle Bistro**	864-509-0142	$$
67 **Mary's Restaurant** at Falls Cottage	864-298-0005	$$
68 **Rick's Deli & Market**	864-312-9060	$$
69 **Gringo's** Mexican	864-509-6344	$$
70 **Chicora Alley** Caribbean, Cajun	864-232-4100	$$
71 **Pomegranate on Main** Persian	864-241-3012	$$
72 **Rick Erwin's West End Grille** Steak	864-232-8999	$$$
73 **Ford's Oyster House**	864-233-6009	$$
74 **American Grocery Rest.** American	864-232-7665	$$$
75 **Grape Leaf** Mediterranean	864-271-2525	$$
76 **Mac's Speed Shop** BBQ, Burgers	864-239-0286	$$
77 **Liberty Tap Room + Grill** Burgers, Bar	864-770-7777	$$
78 **Compadre's Mex Mex Grill** Mexican	864-282-8945	$$
79 **Smiley's Acoustic Cafe** American	864-282-8988	$$
80 **The Growler Station** Beer	864-400-8327	$$
81 **Saffron's West End Cafe** Sandwiches	864-241-0401	$$
82 **The Velo Fellow** British Empire	864-242-9296	$$
83 **The Mellow Mushroom** Pizza	864-233-9020	$$
84 **Smoke On The Water** Barbeque	864-331-7427	$$

HERITAGE HISTORIC DISTRICT

HERITAGE GREEN
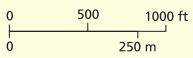
Upcountry History Museum

Hughes Main Library

Greenville County Museum of Art

Children's Museum

Little Theatre

Sargent-Wilson Museum & Gallery at Heritage Green

McPherson Park

War Museum

Kilgore-Lewis House

Confederate Memorial

Springwood Cemetery

BI-LO Center

PETTIGRU STREET HISTORIC DISTRICT

Café and Then Some

HYATT

NACIS

County Courthouse

Piazza Bergamo

ONE

Federal Bldg.

DOWNTOWN

Centre Stage

Linky Stone Park

Reedy

Swamp Rabbit Trail

City Hall

Peace Center for the Performing Arts

Art Crossing at RiverPlace

RiverPlace

Michelin on Main

Liberty Bridge

WEST END HISTORIC DISTRICT

Falls Park

College

Governor's School for the Arts and Humanities

West End Market

Warehouse Theatre

SC Children's Theatre

County Square

Shoeless Joe Jackson Museum and Library

Fluor Field

Rock Quarry Garden

Swamp Rabbit Trail

CLEVELAND PARK

ATLANTA

KEY

RESTAURANTS
- Sit down
- Quick food
- Coffee/Tea
- Bar/Brewery

Information
Courthouse
Theater
Parking garage
Parking lot