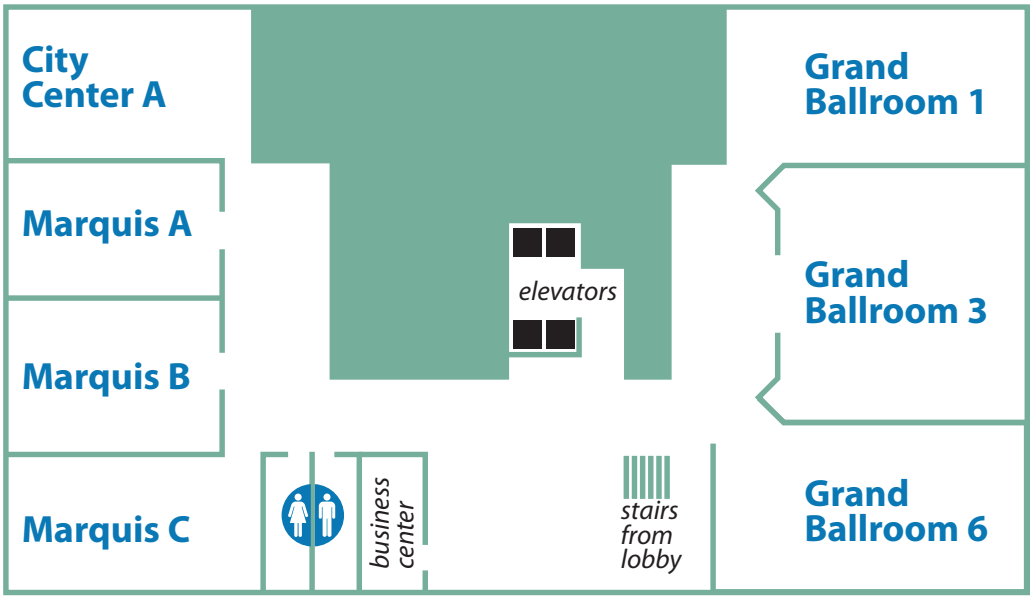
NACIS 2014 Pittsburgh

OCTOBER 8–11 CARTOGRAPHY AND TIME

Marriott City Center Second Floor



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It gives us great pleasure to officially welcome you to Pittsburgh for the 34th Annual Meeting of the North American Cartographic Information Society (NACIS). Thanks 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.

Nathaniel Vaughn Kelso, President

Cartography and Time

Cartographers have long examined the element of time in maps and with ever more advanced digital techniques, they are developing innovative ways to show change, reconstruct the past, and predict the future. We are excited to welcome you to Pittsburgh where you can share your mapping knowledge and learn more about cartography & time!

Alex Tait, Vice President & Program Chair

Conference at a Glance

Tue	NACIS Mapgiving Event, Carnegie Library, 621 Smithfield

Wed	
all day	Geographic Data Collections Day, City Center A
	Practical Cartography Day, Marquis A&B
7:30 pm	Opening Session, in Grand Ballroom 3 *followed by* Opening Reception and Map Gallery in Grand Ballroom 1

Thur	Marquis C	Marquis A	City Center A
8:30 am	Mapping History	Map Style	Narrative Maps
10:30 am	Changes in the Environment over Time	Typophiles' Retreat	Understanding Map Users
noon	NACIS Lunch & Business Meeting, Grand Ballroom 3		
2:00 pm	Cartographies of Energy & Environment	Literature, Criticism, & Forgotten Places	Visual Analytics & Big Data
4:00 pm	Online Mapping Education	Freelancer/Small Bus. Roundtable	Transportation Maps
7:30 pm	NACIS Night Out		

Fri	Marquis C	Marquis A	City Center A
8:30 am	Rendering the Past	Mapping Mobilities	Terrain
10:30 am	Treating Time in Atlases	Mapping with Your Hands	New Tools
noon	NACIS Lunch Bunch		
2:00 pm	Cartographic Education	Towards Spatial Justice: Show & Tell	Mobile Mapping
4:00 pm	History of Cartography	Mapping Population & Landscape	Open Source Mapping
6:30 pm	Banquet, Grand Ballroom 3 *followed by* GeoDweeb Geopardy! in Grand Ballroom 1		

Sat	City Center A	Grand Ballroom 6
8:30 am	Introduction to Web Cartography with TileMill	Let's Talk about Your Geostack
1:00 pm	Web Maps!	Using ArcGIS to Analyze and Map Space-Time Data
all day	Tours: Andy Warhol Museum, Downtown Walking Tour	

Tuesday, October 7

1:00–2:00 pm

NACIS Mapgiving Event

Carnegie Library, Downtown & Business Branch
612 Smithfield St.
Organizer: Tanya Buckingham

Daniel Huffman, somethingaboutmaps

Every day, maps tell us stories about the world around us, but most of us don't give a second thought to how they're made, who makes them, or whether we should accept what they're trying to say. Freelance cartographer & University of Wisconsin–Madison honorary fellow Daniel Huffman will introduce you to mapmakers and what they do.

Ginny Mason, *National Geographic* Magazine

Senior Graphics Editor Ginny Mason, will talk about the editorial process in making maps and graphics for *National Geographic* magazine. She will discuss research, design, and production for both print and digital media.

6:00–10:00 pm

NACIS Board Meeting I

Moderator: Nathaniel Kelso

Location to be announced.

8:15 am–12:00 noon

Morning Field Trip
Meet at NACIS Registration at 8:15 am

Visit the University of Pittsburgh from 9:00 am to 10:30 am, then walk down the street for a visit to the Carnegie Library of Pittsburgh (4400 Forbes Ave.) to see highlights of their map collection and learn about the preservation of their plat maps from 10:30 am to 12:00 noon. Break for lunch (on your own) at restaurants on S. Craig St (a block from Carnegie) before heading back to the conference hotel.

1:30–4:30 pm

Catalog and Share Your Map Collection Using a New Web App
Caitlin Scopel, Esri

There are massive collections of maps and images in digital format. But how can you manage them and make them easily accessible to your patrons? This presentation introduces a recently released, easy-to-use free web app for exploring and visualizing large scanned map and image collections. The workflows to build the underlying mosaic dataset and image service consumed by the application along with web app template configuration options will be presented. The USGS Historical Topographic Map Explorer, released by Esri with content from USGS, providing access to over 175,000 maps, will be demonstrated as an example implementation. Learn about these techniques and the resources available to you for managing and sharing your own map or image collections.

StreamStats, Flood Inundation Mapping Program, & PAMAP

Scott Hoffman, US Geological Survey Pennsylvania Water Science Center

The USGS Pennsylvania Water Science Center is part of several national programs using geographic information system technology to produce spatial datasets available for download. Three of these programs will be discussed: StreamStats is a national, web-based GIS application allowing users to easily obtain descriptive information, basin characteristics, and stream flow statistics for USGS stream gauges and ungauged stream locations. Flood Inundation Mapping Program helps communities understand flood risks and make cost-effective mitigation decisions. PAMAP is a new electronic map of Pennsylvania, based on the guidelines of the National Map Program for a series of base map layers in a seamless, consistent, high-resolution set of digital, geospatial data products. Penn Pilot, a library of digitally converted historic aerial photographs for Pennsylvania, will also be covered.

Census Bureau Mapping and Data Resources

Noemi Mendez Eliasen, US Census Bureau, Philadelphia Regional Office.

What Census data are available for public to download? What are the differences between Census data and American Community Survey data? What geographic level American Community Survey data are reported? How often are census data updated? What historical data are accessible from Census? The presentation will include a tour of the Census.gov page for GIS and geography data and files.

Geographic Data Collections Day organizers: Abraham Parrish and Tsering W. Shawa

Wednesday, October 8

Unrequested Map Tips Part 1
John Nelson, IDV Solutions

You did not ask for them, and here they are! Throughout my cartographic seasons, I've considered what elements have made my mapping poor and what approaches result in goodness. I hope some fraction of these tips are helpful to other cartographers.

Beautiful—No, Good—Typography in ArcMap
Brian Greer, URS
I prefer a workflow that incorporates design software (Illustrator), but good typography is achievable in ArcMap. I'll take you through some examples of how to take control, plus some tips and tricks for label placement within the Esri workflow.

Processing Landsat 8 in Photoshop
Tom Patterson, US National Park Service
How to use Landsat 8 with Adobe Photoshop for a variety of image processing and mapmaking tasks, including the creation of natural color images, water body enhancements, and contrast stretching. Tutorial at: www.shadedrelief.com/landsat8/introduction.html

Optimizing Web Maps for Esri Story Maps
Jon Bowen and David Asbury, Esri
Map Journal, the newest Story Map template, allows you to fuse your content into rich storytelling experiences for the web. We'll show how to integrate your cartography with an engaging story, using the best techniques to configure basemaps, pop-ups, layers, and legends.

Vector Hillshades and Landcover
AJ Ashton, Mapbox
To enhance the designs being done with vector tiles and tools like Mapbox Studio, we developed global hillshades and landcover layers represented by vector polygons rather than raster grids. We'll outline the technical aspects of collecting and mosaicing the best-available raster data, developing a raster to vector pipeline using open-source utilities.

Adventures in Terrain Design
Kelly Abplanalp, University of Wisconsin–Madison
I'll be speaking about the development of my unique terrain depiction method. A hachuring attempt gone wrong (or perhaps right!) led to my hand-drawn/Photoshop-finished system for mapping the land.

Break 10:00–10:15 am

Practical Cartography Day

10:15 am–12:00 noon

Make a Map in 15 Minutes!
Leo Dillon and Iain Crawford, US Department of State
Try to keep up with Iain and Leo as they build a reference map from scratch for a demanding client—you—in 15 minutes! This demonstration will take you through the workflow these State Department cartographers use to (very) quickly create a professional-looking map using Natural Earth data, ArcGIS, and Adobe Illustrator.

Automatic Map Production with FME and Mapnik
Hans van der Maarel, Red Geographics
FME is an application for processing (geographic) data. Recently it introduced the MapnikRasterizer transformer, which uses Mapnik to render high quality rasters. This combination makes it a lot easier to use FME for automatic map production.

Shaded Relief in Blender
Daniel Huffman, somethingaboutmaps
Blender, a free 3D modeling program, can be used to produce shaded relief images superior than those generated by the standard GIS analytical hillshade algorithm. A 72-minute video tutorial is at bit.ly/1mpEvTM.

Designing a Global Basemap
Nicki Dlugash, Mapbox
We'll walk through the process of designing maps using the Mapbox Streets vector tile source, a data source largely based on continuously updating OpenStreetMap data. I'll highlight some of the design challenges of ensuring the entire world is styled optimally at all zoom levels, including considerations for worldwide language support, varying data densities, and varying combinations of map features.

Introducing ArcGIS Pro
Craig Williams, Esri
The next release of ArcGIS for Desktop will include ArcGIS Pro, a new desktop application for 2D/3D mapping, editing, and spatial analysis. See what's coming in this application with a focus on mapping and visualization capabilities including symbolization, labeling, and graphic export—plus the capabilities of the new display engine.

Unrequested Map Tips Part 2
John Nelson, IDV Solutions

12:00 noon–1:15 pm
Lunch for PCD attendees. Eat, drink, talk.

30 Years of Bike Map Design
Matthew Hampton, Oregon Metro
Metro first published its regional bike map on Tyvek in 1983. While a printed version is still being planned for 2015, a multi-scale digital version designed for both desktop and mobile is being developed to match users needs.

Park Tiles 2.0
Mamata Akella, National Park Service
The National Park Service basemap, Park Tiles, is now built with Mapbox Studio, taking advantage of the vector tiles format. I will talk about how we have created a basemap that follows the graphic traditions of printed park maps while also supporting a wide variety of NPS-specific web mapping applications and overlays.

Cartography at USAID
Safy Nurhussein, USAID
USAID's Geographic Information Unit produces cartographic products, web maps and data visualizations. We'll discuss how we acquire and convert data from OpenStreetMap.org and Ushahidi as well as data sources collected in the field. We'll discuss our cartographic process and standards, mostly using ArcGIS, QGIS, and Adobe Illustrator.

The J. B. Physical Map of the World
Nat Case, INCase, LLC
This map is part of an ongoing exploration of the style of the "golden age" of mapmaking at John Bartholomew and Sons a century ago. Attempting to recreate this look and feel taught me how available technology affects our design sense, and how the path of least resistance often ends up as a guide to what we later call "good design."

Map Projection Selection Tool
Bojan Šavrič, Bernhard Jenny, and Helen Jenny, Oregon State University
The Map Projection Selection Tool lets the user select a map's geographic extent by adjusting the rectangular border on a web map or by entering the extent's geographic coordinate boundaries into the user interface. Based on the selected distortion property, the application returns a proposed projection, along with the projection parameters and, if applicable, a PROJ.4 library code.

Unrequested Map Tips Part 3
John Nelson, IDV Solutions

Break 2:55–3:15 pm

Advanced CartoCSS Tricks
Alan McConchie, Kate Watkins, and Seth Fitzsimmons, Stamen Design
CartoCSS is becoming an ever more popular—and ever more powerful—tool for cartographic and data styling. Stamen designers and technologists will present some tips and tricks to make your next design sing: pixelation, use of dingbat fonts for texture and markers, post-facto label adjustment, alternate uses for text symbolization, where to find and use entropy, blending, and geometry manipulation.

Refining 3D Models with Manual Techniques
Miles Barger, US National Park Service
Push-button solutions often lack the clarity, generalization, and selective enhancement that are the hallmarks of a successful diagram. To create a model of the Grand Staircase, a major geologic feature in Southern Utah and Northern Arizona, we chose a workflow that combines techniques in Natural Scene Designer, Adobe Photoshop, and Adobe Illustrator.

Making Your First Web Map With Leaflet!
Lyzi Diamond, Code for America
Let's make a web map! This interactive session is designed for cartographers who have no programming experience and are interested in learning about creating and designing maps for the web. We'll walk through making our first web maps from scratch together, and touch on some of the tools you can use to customize the look and feel of your web maps. Please bring a laptop if possible. Beginners very welcome.

Disaster Mapping In Extreme Circumstances
Robert Banick, American Red Cross
Responders need informative, frequently updated maps but may lack color ink or strong Internet connectivity. We'll look at the tools and workflows we use at the Red Cross to make our maps, how we manage print-to-web transitions, and the design considerations involved in making maps that are actually useful for disaster responders. We'll look at how we manage the tension between good cartographic design and super-rapid timeframes. We'll be honest about our mistakes, limitations, and the corners we (have) cut.

Unrequested Map Tips Part 4
John Nelson, IDV Solutions

Practical Cartography Day organizers: Andy Woodruff and Rosemary Wardley

7:30–9:00pm
Grand Ballroom 3
Opening Session
Welcome: Nathaniel Kelso, President of NACIS

Taking the Measure of the Topographical City
Martin Aurand, Architecture Librarian at Carnegie Mellon University

Pittsburgh is among those human settlements that, in the words of Spiro Kostof, "respond so fatefully to the sculpture of the land that it is impossible to isolate the urban experience from earth-induced affects." When its romance with industry subsided, and the smoke cleared, Pittsburgh, the quintessential industrial city, was revealed to be what it had always been, the quintessential topographical city. Pittsburgh lies within the Appalachian Plateau, and is organized into topographical spaces or rooms—voids in the solid of the plateau—which contain the heterogeneity of urban growth. Pittsburgh's greatest room is the so-called Golden Triangle, the city's point of origin and downtown core. The Golden Triangle lies within a basin at the Forks of the Ohio—one of America's great natural settings—which is filled with rivers, landforms, urban plans, and buildings. We will take geographical, cosmological, civic, and architectural measures of the Golden Triangle across space and time, represented as drawings, paintings, diagrams, and maps.

9:00–11:30 pm
Grand Ballroom 1
Opening Reception: Map Gallery and Student Map & Poster Competition
Organizer: Martha Bostwick

5:30 pm
NACIS Fun Run & Walk
Organizer: Carl Sack

meet in hotel lobby;
groups of varying speed

Map Gallery

**Student Map and Poster Competitition*

pick up a ballot and choose the Student Map and Poster Competition winner!

Kelly Abplanalp,
University of Wisconsin–Madison,
Mount Hood*

Ahmed Ahmouda, Mark Kumler,
University of Redlands,
Libyan Transportation Infrastructure Inventory*

Stuart Allan, Allan Cartography,
Aileen Buckley, Deniz Basaran, Esri,
Metro Atlas 2014

Jess Altamira, Ruijin Ma,
University of Redlands,
Introducing Web GIS to a Remote Island*

Blake Andrew, Blake Andrew,
Ken Kato, Jim Meacham,
University of Oregon InfoGraphics Lab,
High Quality Custom Interior Cartography

Elise Baker, Erin Gallagher, Adrienne Fricke, Physicians for Human Rights,
Anatomy of a Crisis: A Map of Attacks on Health Care in Syria

Sarah Bennett,
University of Wisconsin–Madison,
Landscape on Film*

Sarah Bennett,
University of Wisconsin–Madison,
Opportunities to Relate: Views from Posthumanism*

Margo E. Berendsen, Jeffrey D. Hamerlink; Gerald R. Webster; Nick C. Swartz, Wyoming Geographic Information Science Center,
Wyoming Student Atlas

Aileen Buckley, Esri,
Invasion of the Zebra Mussels

Gordon Campbell, Jonah Woodman, Bronwyn Fleet-Pardy, Centre Of Geographic Sciences/NSCC,
Historic Gardens of Annapolis Royal, N.S.*

George Cernetig,
Eastern Illinois University,
Locating Ideal Solar Panel Locations in an Urban Setting*

Riley Champine,
University of Oregon,
The North American Soccer Experiment: A Cartographic Visualization of Major League Soccer in 2014*

Daniel Coe, Oregon Department of Geology and Mineral Industries,
Lidar Explored 2015 Calendar and Lidar Intensified 2014 Calendar

Mark Denil, National Ice Center,
Northwest Passage: 2009-2014

Mark Denil, National Ice Center,
Tri-Variate Mapping of Sea Ice

Adam Dixon, Nirmal Bhagabati, Nasser Olwero, World Wildlife Fund,
Natural Capital in the Tanintahyi Region, Myanmar

Matt Dooley, Randy Johnston, Carson Giblette,
University of Wisconsin–River Falls,
Desiccate

Peder Engstrom, Paul West,
University of Minnesota Institute on the Environment,
Assessing Global Risk and Opportunity for Major Crops

Mehran Felfeli, Mark Kumler,
University of Redlands,
Solid Waste Collection Routes: Then and Now*

Carolyn Fish, Kirk Goldsberry, Grantland,
Pennsylvania State University,
Are You Blind to Change? Evaluating Change Blindness in Animated Choropleth Maps

Brandon Garman, Cleveland Metroparks,
Bedford Singletrack Mountain Bike Trail

Map Gallery

Casey Greene, Carla Majernik, Jennifer Milyko, Nathan Taylor, Melissa Thompson, Adventure Cycling Association,
Idaho Hot Springs Mountain Bike Route

Alexis Greenstreet,
University of Wisconsin–Madison,
Looming Collapse of Modern Agriculture?*

Alexis Greenstreet,
University of Wisconsin–Madison,
Memphis and Environmental (In)Justice, an Infographic*

Amy Griffin, Bob Hall, Andrew T. Ross, UNSW Canberra,
The Australian Counterinsurgency Campaign in the Vietnam War: The Ambush Battle

Matthew Hampton, Erica D. McCormick, Boring Maps,
Bland, Dull and Boring

Brooke Harding,
University of Wisconsin–Madison,
Vampires Over the Ages*

Chris Henrick,
Parsons, The New School For Design,
The Pacific Crest National Scenic Trail*

Morgan Hite, Hesperus Arts,
Charles Howard-Bury in the Tian Shan, 1913

Jeff Howarth, Kat James, Madeleine Li, Middlebury College,
A Palimpsest of Plans on Santa Cruz Island, California

Daniel Huffman, somethingaboutmaps,
A Physical Map of Michigan

Jinho Kang,
California State University, Long Beach,
Global Earthquake Map

Gakumin Kato, Ruijin Ma,
University of Redlands,
Sharing Community Resiliency Information Through a Mobile Web Application*

Meghan Kelly, University of Kansas,
Visualizing Trafficking and Torture: The experiences of Eritreans in Sudan and Egypt Through Multiple Lenses*

Megan Klein, Fang Ren,
University of Redlands,
Calculating Soil Loss on Yap Island, Federated States of Micronesia*

Erin Korris, USGS,
Volunteers of the National Map Corps

Jonathan Koser,
University of Wisconsin–Madison,
Liga Hanseatica Sal Commercium: The Hanseatic Salt Trade in Medieval Europe*

Katie Kowalsky,
University of Wisconsin-Madison,
Admitting to Our Emissions*

Laura Kurtzberg, Gustavo Faleiros, ecoLab,
Forest Fires in the Amazon

Rick Lederer-Barnes,
Independent GIS Specialist,
Water Resources and Watersheds of Rensselaer County

Gary Lucas,
Pennsylvania State University,
A Craft Project for GIS Students*

Nick Martinelli, Upper Left,
Portland Bridge Map

Dennis McClendon,
Chicago CartoGraphics,
Chicago region transit map

Fernando J Sanchez Menendez,
EOSGIS SL,
Mount Everest Map

Nancy Morales, Mark Kumler,
University of Redlands,
Tracking the Mill Creek Zanja*

Map Gallery

**Student Map and Poster Competitition*

Jonathan K. Nelson, Cynthia A. Brewer, Pennsylvania State University,
Exploring Across-Scale Relationships in Spatially Aggregated Data: Informing the Modifiable Areal Unit Problem*

Jonathan K. Nelson,
Pennsylvania State University,
Tour de France 2014*

Mary O'Brien, Watershed Sculpture,
Truckee Waters in Nevada: A Study in Time

Brandon Plewe,
Brigham Young University,
Zion: A Portrait

Mike Powers, Jesse Wickizer, Maps.com,
Montecito Trails Foundation Trail Map

Charles Preppernau, Bernhard Jenny,
Oregon State University,
3D Map of Volcanic Mudflow Travel Times for Mount Hood, Oregon*

Nicolas Roldos, Ruijin Ma,
University of Redlands,
iPhone Location Based Marketing Application for Music Retail Stores*

Caroline Rose,
University of Wisconsin–Madison,
Whitewater Paddling Festivals*

Carl Sack,
University of Wisconsin–Madison,
Madison Light Rail and Connecting Inter-City Lines

Maruf Sakib, Fang Ren,
University of Redlands,
Desalination Plant Site Selection to Support Marine Spatial Planning of San Diego County*

Mitchell Schaps, Nicholas Ronnei,
Univerity of St Thomas,
Mapping Bikeshare: Showing the Value of Bike Share Systems with GIS*

Katrina Schweikert, Middlebury College,
Landscape of Midcoast Maine

Sarah Scott,
University of Wisconsin–Madison,
Mars: An Ocean Hypothesis*

Heather Smith,
Nova Scotia Community College,
Antigonish, Nova Scotia*

Heather Smith,
Nova Scotia Community College,
UNESCO World Heritage Sites of Canada*

Stephen Smith, MapSmith.net,
The United States: Her Natural and Industrial Resources

Alina Taalman, Duke University,
The Spectral Signature of Past Lives*

Aaron Taveras, Map Design Studio,
Great Basin National Park

Amr Thameen, Middlebury College,
Garden of Eden: Iraq's Marshland*

Lauren Tierney, University of Oregon,
Tongass National Forest

Maegan Leslie Torres, GreenInfo Network,
Protecting Solano's Open Space

Robin Wallace,
Harrisburg Area Community College,
Part II Crimes in Pennsylvania, 2008–2012*

Nate Wessel, University of Cincinnati,
Cincinnati Bike Map*

Jeff Wielki, Mount Pleasant Maps,
Chart of Saint-Elias Isles

David Wiggins, Jay Primus,
Wiggins/Primus Design,
San Francisco Muni Transit Map

Derek S. Wilson, Ohanapecosh Maps,
Seattle Public Art Pioneer Square

Thursday, October 9 — 8:30–10:00 am

Marquis C
Mapping History
Chair: Fritz Kessler

How the Dutch Created The Netherlands
Hans van der Maarel, Red Geographics

The Land Patents of Western Maryland
Paul D McDermott, Montgomery College; Phil Mobley, Federal Government (ret.)

Master Title Plats in ArcGIS
Frank Lahm III, Bureau of Land Management, Oregon State Office

A New Series of Maps of the Oregon Country
Morgan Hite, Hesperus Arts

Marquis A
Map Style
Chair: Maggie Smith

Personality, Aesthetics, and the Human Touch
Martin Elmer, MapHugger.com

Adapting Theories of Form, Style, and Meaning for Map Design
Ian Muehlenhaus, James Madison Univ.

A Stylistic Look at Woodblock, Copperplate & Lithograph Maps
Vanessa Knoppke-Wetzel, Univ. of Wisconsin–Madison

The Cartographic Logo as a "Gateway Drug" to Illustrator
Kevin McManigal, Univ. of Montana

City Center A
Narrative Maps
Chair: Amy Griffin

Five Ways to Enhance your Animated, Narrative Map
Richard Treves, Southampton Univ.

Storytelling within a Geographic Context
Jon Bowen and David Asbury, Esri

Introducing Students to the Cartographic Essay
Robert Gerard Pietrusko, Harvard Univ.

Why Are Timelines Maps?
Ren Vasiliev, SUNY College at Geneseo

Learning Mapping and GIS through Problem Solving
Aileen Buckley, Esri

Marquis C

Changes in the Environment over Time

Chair: Brandon Plewe

Managing Water Resources with Time-Enabled Image Services
Caitlin Scopel and Daniel Siegel, Esri

Spatial-Temporal Displays of Daily Climate Data
Christopher League, Long Island Univ.–Brooklyn; Pat Kennelly, Long Island Univ.–CW Post

Change Detection Research for the US Topo
Kristin Fishburn and Andrew Stauffer, USGS

Modeling and Mapping Sand Dunes Encroachment Risk Using Satellite Data
Abdelgadir Abuelgasim and Naeema Alhosani, United Arab Emirates Univ.

Marquis A

Typophiles' Retreat

Organizers: Daniel Huffman, somethingaboutmaps; Elaine Guidero, Pennsylvania State Univ.

This is a place for typography nerds to gather. It will be an audience-driven session, with two facilitators encouraging a free-flowing discussion structured around a number of activities. You'll get a chance to geek out with your colleagues as we talk about great typefaces, tips for using type on maps, and/or whatever else we all decide sounds like fun. Come prepared to share your knowledge, experience, and enthusiasm with your colleagues!

City Center A

Understanding Map Users

Chair: Erik Steiner

Examining Novice Misconceptions of Satellite Imaging
Raechel Bianchetti, Michigan State Univ.

How do "Six Americas" of Sarasota Students See Sea Level Rise Uncertainty?
David Retchless, Pennsylvania State Univ.

Considering the Map User...
George McCleary, Univ. of Kansas

Interactive Mapping: Moving Maps Forward for Backwards People
Iain Crawford, US Department of State

Thursday, October 9 12:00 noon–2:00 pm

Grand Ballroom 3

NACIS Lunch & Business Meeting

Moderators: Nathaniel Kelso, Alex Tait

Lunch provided for all conference attendees, NACIS members and nonmembers. This is also the official yearly members business meeting: find out about the activities of your society!

Marquis C

Cartographies of Energy & Environment

Chair: Brooke Harding

Skytruthing the Impact of Human Activity on the Environment
David Manthos, SkyTruth

The Coast Survey and the Cartography from the Inland Seaport of Pittsburgh
John Cloud, NOAA Central Library

Mapping Unconventional Oil and Gas Activity on FrackTracker.org
Matt Kelso and Samantha Malone, FracTracker Alliance

South Bronx Waterfront Maps in Times of Environmental Struggles
Monxo Lopez, Catholic Univ. of Puerto Rico

Marquis A

Literature, Criticism, & Forgotten Places

Chair: Alethea Steingisser

Flashes on the Map: Forgotten or Short-Lived Places
Leo Dillon, US Department of State

A Pocket Anthology of 20th Century Map Poems in the United States
Adele Haft, Hunter College of the City Univ. of New York

Mapping Narratives: The Spatiotemporal in Digital Literary Cartographies
Leah Thomas

A Pragmatic Approach to Criticism, Critical Theory, and Critique
Mark Denil, US National Ice Center

City Center A

Visual Analytics & Big Data

Chair: Martha Bostwick

Spatio-Temporal Data Visualization with Interactive Maps
Alice Rühl, Scott Pezanowski, and Frank Hardisty, Pennsylvania State Univ.

Mapping the Intersection between Social Media and Open Spaces
Alan McConchie, Stamen Design

SPoTvis: A Geovisual Analytics Tool for Discovering Multi-Scale Spatial Patterns
Jonathan Nelson, Sterling Quinn, Brian Swedberg, Wanghuan Chu, Maggie Houchen, Todd Bodnar, and Alan M. MacEachren, Pennsylvania State Univ.

VisMatch: A Web Tool for Selecting Visualization Techniques
Joanna Merson, Arizona State Univ.

Marquis C

Online Mapping Education in the 21st Century

Organizer: Matthew Zook
Panelists: Mathew Wilson, Jeremy Crampton, and Richard Donhue, Univ. of Kentucky; Anthony Robinson, Pennsylvania State Univ.; Chris Lukinbeal, Univ. of Arizona

This session explores how changes in mapping technology and practice is changing mapping education and educators.

- What is the future of the map?
- What is the future of the mappable?
- How do we continue to teach the key theories and questions in mapping?
- How do we ensure that we provide quality mapping education in online settings?

Marquis A

Freelancer/Small Business Roundtable

Organizer: Nat Case, INCase, LLC

How are independent and small business mapmakers adapting to the changing mapping environment? How are you integrating interactive and mobile development (or old-fashioned printed mapping) into your business model? How are you carving out niches of expertise, and maintaining those niches? What software and workflow are you using, and how do you see that changing? How are you getting the word out and finding clients? Any words of wisdom from more established freelancers/small businesses to people putting their toes in the water?

City Center A

Transportation Maps

Chair: Matthew Hampton

Mapping and Analysis Using GTFS Data
Daniel McGlone, Azavea

Untangling Pittsburgh (by Deconstructing the Road Map)
Robert Firth, Informing Design

Rethinking the Urban Bike Map
Nate Wessel and Michael Widener, Univ. of Cincinnati

Mapping the Idaho Hot Springs Mountain Bike Route
Casey Greene, Adventure Cycling

5:30–6:30 pm

CP Editorial Board Meeting

Editor: Patrick Kennelly

Meeting of the board for *Cartographic Perspectives,* the journal of NACIS. Contact Patrick Kennelly with any questions about *CP* or the meeting. Location to be announced.

7:30–11:00 pm

NACIS Night Out

Join us at the Blue Line Grill for the annual Thursday night social gathering! Includes dinner and a live band. Cost at the door: $40. ($30 for those who pay when registering for conference.)

Marquis C

Rendering the Past

Chair: Leo Dillon

The Zaira Problem: Mapping Past Events on an Island of California
Jeff Howarth, Middlebury College

1 Minute to 100,000 Years: Mapping The Out of Eden Walk Project
Jeff Blossom, Center for Geographic Analysis, Harvard Univ.

The Chesapeake Bay: Time is of the Essence
John Wolf, USGS

The Zeon Files Mapped: Sign, Sign, Everywhere a Sign
Eric Theise

Marquis A

Mapping Mobilities

Chair: Michael Hermann

Updating the Rogue River Float Guide
Paul Fyfield, Mattye Walsworth, and Jim Rounds, Bureau of Land Management Oregon State Office

Disconnected Cities: Mapping Personal Mobilities
Nicholas Perdue, Amy Lobben, Univ. of Oregon

Representing Spatio-Temporal Wildlife Migration Data
Lauren Tierney, James E. Meacham, Alethea Y. Steingisser, and Emily L. Nyholm, InfoGraphics Lab, Univ. of Oregon

Applying GIS to the Prayer Circles and Prayer Direction Circles
Ahmad Massasati, Univ. of Pittsburgh at Johnstown

City Center A

Terrain

Chair: Tom Patterson

Curating the Terrain
Travis White and Aaron Taveras, Univ. of Kansas

Small Scale Historical Landscape Reconstruction Using Vue
Erik Steiner, Stanford Univ.

The Technology Evolution of Raised-Relief Maps
Michael Higgins, Summit Terragraphics

Visual illusions in Cartography
Arzu Çöltekin, Univ. of Zürich

Marquis C

Treating Time in Atlases

Organizer: Stephen Hornsby

Geographers and cartographers have long wrestled with the treatment of time in their work. A panel will discuss how they treated time in recent atlases:

Stephen Hornsby, Univ. of Maine, and **Michael Hermann, Purple Lizard Maps,** will discuss the *Historical Atlas of Maine*

James Meacham, InfoGraphics Lab, Univ. of Oregon, will discuss the *Atlas of Yellowstone* and other projects

Brandon Plewe, Brigham Young Univ., will discuss his attempts to tell space-time stories in the historical atlas *Mapping Mormonism*

Marquis A

Mapping with Your Hands

Chair: Hans van der Maarel

Digital to Analog: Explorations in Nontraditional Media
Matt Dooley, Univ. of Wisconsin–River Falls

Past Practices, Contemporary Applications
Jake Coolidge, Jake Coolidge Cartography

Using Kickstarter to Fund a Cartographic Project
Nicholas Martinelli, Upper Left Maps

Auditory Symbology for a GIS
Megen Brittell, Amy Lobben, and Michal Young, Univ. of Oregon

City Center A

New Tools

Chair: Kevin McManigal

A Manual Approach to Cartogram Construction using Triangular Lattice Transformation
Barry Kronenfeld, Eastern Illinois Univ.

Using Python to Reverse Engineer Exported Graphics
Mike Foster, MIT

Dimensions of Uncertainty Visualization Research
Jennifer Mason, David Retchless, and Alexander Klippel, Pennsylvania State Univ.

Thematic Mapping with Free Software PhilCarto
Kazimierz Zaniewski, Univ. of Wisconsin–Oshkosh

Space and Time with Cubes and Coxcombs
Kenneth Field, Esri

12:00 noon–2:00 pm

NACIS Lunch Bunch

Join other NACITES in small groups for lunch on the town, each group with a special guest! Sign up at registration desk.

12:00 noon–2:00 pm

NACIS Board Meeting II

Moderator: Alex Tait

Location to be announced.

Marquis C

Cartographic Education

Chair: Anthony Robinson

Times Change: Out of the Classroom, into the MOOC
Trudy Suchan, US Census Bureau; Jennifer Hamelman Milyko, Adventure Cycling Association; Jenny Marie Johnson, Univ. of Illinois at Urbana-Champaign

Adaptive Cartography for Situated Learning
Chelsea Nestel and Carl Sack, Univ. of Wisconsin–Madison

DesignLab: A New Way to Teach and Learn Design
Sarah Bennett, Univ. of Wisconsin–Madison

Help and Learning Materials for Online Mapping
Rashauna Mead, Univ. of Wisconsin–Madison

Using Interactive Maps in Teaching Geography in the UAE
Naaema Alhosani, United Arab Emirates Univ.

City Center A

Towards Spatial Justice: Show & Tell

Organizers: Lize Mogel, OurMaps;Tim Stallmann, Univ. of North Carolina–Chapel Hill

A Conversation About Community-based/ Grassroots Mapping

This session creates a space to think through important questions around grassroots mapping and community cartography. Participants will share, pecha-kucha style, their work in grassroots mapping and counter-cartography

Marquis A

Mobile Mapping

Chair: James Meacham

Rethinking and Researching Scale for Mobile Device Maps
Craig Dalton, Bloomsburg Univ. of Pennsylvania

High Quality Custom Interior Cartography for Mobile
Ken Kato, Jacob Bartruff, and Brook Eastman, Univ. of Oregon InfoGraphics Lab

Cartographic Design for Mobile Devices: an Interactive Campus Map
Brian Davidson, Univ. of Wisconsin–Madison

Mobile Vector Cartography: Designing for Infinite Scale Factors
Justin Miller, Mapbox

Marquis C

History of Cartography

Chair: Adele Haft

From Ruling Pen to GIS: Women Cartographers in the 20th Century
Judith Tyner, California State Univ., Long Beach

Contours, Cross Sections and Cartographic Relief in the Age of Big Data
Andrea Hansen, Harvard Univ. Graduate School of Design

Projections Appearing in World Atlases: Rise of the Pseudocylindrics
Fritz Kessler, Frostburg State Univ.; Daniel Strebe, Mapthematics, LLC

Mapmaking and Geography in Ancient Arabia
Amna Alzeyoudi, Naeema Alhosani, Abdelgadir Abuelgasim, United Arab Emirates Univ.

City Center A

Mapping Population & Landscape

Chair: Trudy Suchan

A Participatory Mapping Approach to Document Indigenous Landscapes
Derek Smith, Carleton Univ.

Metro Atlas of the US: Methodology and Moving Targets
Stuart Allan, Allan Cartography
Aileen Buckley, Esri

Foodshed Mapping for Calgary
Jeff Wielki, Mount Pleasant Maps

Mapping Urban and Agricultural Changes in Al Ain City
Laila Alkhater, Tahani Almujurfi, Aisha Alhammadi, Moza Alqaydi, Abdelgadir Abuelgasim, and Naeema Alhosani, United Arab Emirates Univ.

Marquis A

Open Source Mapping

Chair: Neil Allen

The Open Geoportal Cloud Federation
Patrick Florance, Tufts Univ.

Building Digital Maps for the National Park Service
Mamata Akella, National Park Service

Working with Semi-public APIs: Visualizing Kickstarter Data
Jim Thatcher, Univ. of Washington–Tacoma; Josh Gray, mapvocate.net

Whither the Wikimap?
Carl Sack, Univ. of Wisconsin–Madison

Open Data and Tools for Better Visualization and Analysis
Sarah Cordivano, Avazea

6:30–9:00 pm
Grand Ballroom 3

Banquet

Moderator: Alex Tait

Do Maps Really Tell Stories? The Problem of Narrative Time in Cartography

Anne Kelly Knowles, Professor of Geography, Middlebury College

What does it mean to say that maps tell stories? Do they, really? To answer these questions we will consider scholarship on spatial narrative, exemplary work by cartographers and graphic artists, and our own work with oral testimonies of Holocaust survivors. We will propose that mixed methods of inductive visualization to reveal the spatial and temporal structure and content of narrative could change geographers' approach to telling spatial stories.

9:00 pm
Grand Ballroom 1

GeoDweeb Geopardy!

Play GeoDweeb Geopardy! with Dennis McClendon channeling Art Fleming (the original Jeopardy! host). Form a team and test your geographic knowledge. Sign up at registration desk—and remember at least one team member must be a first-time attendee.

City Center A

Introduction to Web Cartography with TileMill

Instructor: Ian Villeda

Learn to make beautiful interactive web maps. We'll cover the basics designing fast maps for web and mobile. Then we will dive into the cartographic possibilities offered by CartoCSS: the CSS-like language used to design maps for Mapbox, the *Financial Times,* National Park Service, and more. Lastly we'll learn to how to design maps with live data from OSM, all the way down to the street level for the entire world—using TileMill2. Each participant will need to bring their own computer, with TileMill already installed. TileMill can be downloaded for free from mapbox.com/tilemill.

Grand Ballroom 6

Let's Talk about Your Geostack

Instructor: Eric Theise

This workshop is designed for cartographers and analysts who wish to set up an open source geospatial software stack on their own laptop. We'll begin by talking about the stack components and how they fit together. We'll import data from an OpenStreetMap extract of Pittsburgh into a PostgreSQL database, wire TileMill up to use that data, then create & serve simply styled tiles. Next, we'll create a trivial webserver to return selected POI data from our PostgreSQL database and use Leaflet to layer it over the tiles created earlier. We'll step up our game and modify the server to return GeoJSON, then talk about the use of properties to affect display characteristics such as color, opacity, and when to display particular entities. Plan to devote a few hours in advance of the conference to installing software and downloading data. Guides will be available well in advance of the workshop.

City Center A

Web Maps! An Introduction to QGIS, TileMill, and Interactive Mapping

Instructor: Andrea Hansen

What is a web map, and why would I want to make one? Web maps are great for explaining concepts to broad audiences. They are flexible, interactive, and familiar to all kinds of people. What kind of data do I need, and where can I find it? And finally, which tools are best for different situations? I will cover the basics of QGIS, TileMill, D3, and Leaflet and by the end of the workshop each participant will have created their own interactive web map. This session is open to coders and non-coders alike, though some GIS experience will be helpful.

Grand Ballroom 6

Using ArcGIS to Analyze and Map Space-time Data

Instructor: Aileen Buckley

Level: Beginner. Space-time information is available now more than ever, and although cartographers have developed a variety of methods for displaying space-time data, not all are familiar with these display techniques. In this workshop, you will learn many of the methods that can be used to visualize space-time data. We'll will also cover marginalia, such as titles, legends, charts, and graphs, for space-time maps. In addition, we'll examine a very important aspect of making maps with space-time data—the delivery method.

Saturday, October 11 Field Trips

10:00 am–1:00 pm

Warhol Workshop at the Andy Warhol Museum

Workshop includes a tour of the permanent collection as well as hands on time in their studio learning about Warhol's process and creating some art work of your own. www.warhol.org

2:00–4:00 pm

Walking Tour: Downtown's Best Special Places & Spaces

Provided by the Pittsburgh History & Landmarks Foundation, tour the heart of Pittsburgh and see more than 25 architectural landmarks, spectacular interiors, and significant urban spaces. Hear how Pittsburgh developed from a military outpost in the 18th century to a 21st-century city. www.phlf.org

Abuelgasim, Abdelgadir and Naeema Alhosani, United Arab Emirates University

Modeling and Mapping Sand Dunes Encroachment Risk Using Satellite Data

Sand dune encroachment into urban areas and transportation networks is a frequently occurring phenomenon in the United Arab Emirates (UAE). The UAE is located in one of the world's largest arid regions, with strong prevalence of sand dunes movement and encroachment into urban areas, particularly in the last few years. The primary purpose of this study is to develop a land surface process model that models the sand dunes movements and further generate an index hazard map of potential encroachment risk areas in the UAE. For this task we use land cover maps generated from Landsat TM and Landsat OLI data coupled with meteorological information of wind direction, wind speed and precipitation. Using the developed sand dunes movement model a sand dunes encroachment risk map is generated to help decision makers in making informed decision that mitigate the effects of sand dunes encroachments in the UAE. Changes in the Environment over Time, Thursday 10:30–12:00 noon

Akella, Mamata, National Park Service

Building Digital Maps for the National Park Service

The NPMap team has an ambitious goal: Creating an accessible, custom, and dynamic ("real-time") map for each of the 400+ National Park Service sites that can be used in both web maps and mobile applications. To support this goal, the team has built a flexible geospatial platform on top of a number of open source software projects, including PostgreSQL/PostGIS, Node.js, Mapbox, CartoDB, OpenStreetMap, Leaflet, Twitter Bootstrap, and Maki. This platform eliminates the technical hurdles that have traditionally been associated with building digital maps. This talk will go into detail about the NPMap team's geospatial platform and how we are enabling parks to build and maintain their own maps. Open Source Mapping, Friday 3:30–5:00 pm

Alhosani, Naaema, United Arab Emirates University

Using Interactive Maps in Teaching Geography in the UAE

Students in United Arab Emirates (UAE) schools are facing many difficulties with geographic skills. Skills such as geographic resource interpretation, geographic resource construction, communication, social, and fieldwork skills are seriously lacking due to the nature of the geography discipline that requires creative and critical thinking. Nowadays, with the information technology revolution, the Internet, and the information boom that has been created, it is essential to use Internet-based tools for enhancing the teaching and learning process in the classroom and to attract students to the geography discipline. The aim of this study is to investigate the geographic skills of students learning with interactive maps via the web versus students using

printed static maps. Results indicated that students using interactive maps have better performance than students using printed maps. It is concluded that using Internet-based technologies in geographic education improves the wide understandings of geographical concepts and improves students' geographic skill. Cartographic Education, Friday 1:30–3:00 pm

Alkhater, Laila, Tahani Almujurfi, Aisha Alhammadi, Moza Alqaydi, Abdelgadir Abuelgasim, and Naeema Alhosani, United Arab Emirates University

Mapping the Urban and Agricultural Changes in Al Ain City

The city of Al Ain in the United Arab Emirates is the fourth largest city in terms of population and economic growth. Al Ain experienced extensive urban growth from 1990 to 2013 and has changed from a small desert oasis to a thriving modern city. In this study we use archival and recent Landsat image data to identify and map the urban and agricultural growth in the city. A series of multitemporal Landsat data from 1990, 2003, and 2013 were used in a supervised classification approach to map the changes within the city. Land cover classes identified in the images were desert, urban areas, agricultural areas, and mountain ranges. The results indicate about 40% increase in the urban areas due to population expansion and further 30% expansion in the agricultural areas, particularly palm farms, due to Al Ain fertile soil and large reserves of groundwater. Mapping Population & Landscape, Friday 3:30–5:00 pm

Allan, Stuart, Allan Cartography, and Aileen Buckley, Esri

Metro Atlas of the US: Methodology and Moving Targets

The *Metro Atlas of the United States* was originally conceived as fixed-crop maps (of urban footprint, density, race/ethnicity, and income) of all large American cities. Esri has taken the work to a whole new level, covering the entire country for web distribution. Four cartographic issues are particularly challenging: Elimination of "unpopulated" portions of block group data for the US; the newly-available Census "Urban Area" definitions; the 2010 shift in Census race/ethnicity classifications; and the inconsistencies inherent in place names data set classes (Incorporated, Unincorporated, and Census-Designated Places). We illustrate and discuss our approaches to each of these issues. Mapping Population & Landscape, Friday 3:30–5:00 pm

Alzeyoudi, Amna, Naeema Alhosani, Abdelgadir Abuelgasim, United Arab Emirates University

Mapmaking and Geography in Ancient Arabia

The evolution of mapmaking is linked to the development of geographic research starting from the first human map of the world to modern digital, interactive, and descriptive maps. The purpose of this research is to describe the mapmaking science in ancient Arabia. With the expansion of Arab dominance in the post-Islam era, it was a recognized necessity to excel in maps and develop an accurate representation

of the world. Arab geographers like Ibn Hawqal put significant emphasis in geographically describing and mapping Dar al-Islam and the world beyond. Further, he worked in correcting previous maps that lead to an extraordinary leap in geographic knowledge at the time. His geographic science went beyond physical boundaries to include a human geographic component. In his book *Earth Picture* he describes map making and geography as "a unique science to kings, politicians and the gentleman of all classes". History of Cartography, Friday 3:30–5:00 pm

Bennett, Sarah, University of Wisconsin–Madison

DesignLab: A New Way to Teach and Learn Design

DesignLab is like a writing center for design at UW–Madison. We're the first of our kind. We consult on posters, presentations, infographics, video, websites, and yes, you guessed it, maps! DesignLab's mission is to democratize the ability to make digital media in a college setting. I've worked with dozens of students in the past year, helping them brainstorm and picture how they'll respond to cutting-edge assignments that ask them to make their point in comic form, or create a mash-up autobiography in Google Earth. I also provide coaching and feedback in the basic tenets of good design and argumentation. In this talk, I'll discuss our approach, the lessons we've learned, and the potential of the DesignLab model to teach good design. Cartographic Education, Friday 1:30–3:00 pm

Bianchetti, Raechel, Michigan State University

Examining Novice Misconceptions of Satellite Imaging

Remote sensing images are available to the general public through media outlets, navigational tools, and other tools. Novice users are asked to complete increasingly complex tasks with images. User conceptions have implications for their ability to understand scenes, both in isolation and as base maps. After the disappearance of Malaysian Airlines Flight MH370, novices began voicing their opinions regarding the use of satellite imagery in the search. Novices also assisted in the search of wreckage by TomNod, a well-established program for crowd-sourcing image analysis tasks. The conceptions held by TomNod users, and novice users in general, have important implications on their analysis results. To assess current novice understanding of remote sensing two methods were used. First, a survey was conducted of novices concerning their understanding of remote sensing. Second, news site comments, regarding MH370, were also mined. Here we present results from these sources and framework for a larger study. Understanding Map Users, Thursday 10:30–12:00 noon

Blossom, Jeff, Center for Geographic Analysis, Harvard University

1 Minute to 100,000 Years: Mapping The Out of Eden Walk Project

The Out of Eden Walk Project involves writer Paul Salopek walking from Afri-

ca to Tierra del Fuego, South America, following the path of human migration, and writing stories along the way. Assisting this project in the form of map production is Jeff Blossom of the Center for Geographic Analysis at Harvard University. Creating compelling visualizations for temporal scales that span a one-minute walk along a street to the 60,000 year long journey of human migration to an international online audience is the cartographic challenge of this project. Map design considerations, cartographic techniques used, successes, and lessons learned from the first year of this seven-year project will be presented. Rendering the Past, Friday 8:30–10:00 am

Bowen, Jon, and David Asbury, Esri
Storytelling within a Geographic Context
Over the last year, web-based, map-centric applications focused on expressing geographic narratives and telling a "story" have become ubiquitous. In order to help author these stories and to create well-designed maps, we've built several easy to use templates that offer smart UI/UX elements, beautiful basemaps and intuitive authoring interfaces. These templates allow the writer to combine maps, photos, video and text to create a captivating and fun experience. We'll talk about our experience developing these applications and describe some of the design decisions we made that enable nascent cartographers to create attractive and engaging maps. Not only will we show you a representative sample of story maps created both by our team and the wider community, we'll show how to make your own, because as cartographer like yourself, who doesn't have a story tell? Narrative Maps, Thursday 8:30–10:00 am

Brittell, Megen, Amy Lobben, and Michal Young, University of Oregon
Auditory Symbology for a GIS
Working toward a GIS that is accessible to people who are blind, we have designed and implemented a minimal geographic information system (mGIS) that presents classed thematic data through an auditory display. The mGIS dynamically generates non-speech audio to represent the map data based on the location of a cursor. Two substantial challenges in the design are the mismatch of the dimensionality of the geospatial data compared to that of the auditory display, and the suitability of the symbology for the specific tasks under consideration (e.g., locating and selecting a border of an enumeration unit). To address these challenges, we leveraged proprioceptive feedback and modified symbol design based on user feedback. The presentation will narrate the evolution of our auditory symbology using the mGIS as a case study, and discuss our experience developing an auditory display that is independent of any visual feedback. Mapping with Your Hands, Friday 10:30 am–12:00 noon

Buckley, Aileen, Esri
Learning Mapping and GIS through Problem Solving
MappingCenter was a web site dedicated to helping people learn how to use ArcGIS for mapping. Learn

ArcGIS is a new web site that has an even bigger goal—teaching people how to solve spatial problems and build geographic knowledge with GIS. Real-world examples are used to illustrate how to make, and more importantly how to use maps, and they demonstrate how GIS is used to conceptualize, organize, analyze, and visualize geographic information. The examples come to life when learners try it themselves in an interactive and engaging social learning environment. With the ArcGIS platform, all the maps, data, and tools are online, so anyone can learn by doing at anytime, anywhere, as long as they have Internet access. Through interactive storytelling, hands-on applications, and real problem solving, learners build a progressive understanding of the entire GIS platform. Narrative Maps, Thursday 8:30–10:00 am

Cloud, John, NOAA Central Library
The Coast Survey and the Cartography from the Inland Seaport of Pittsburgh

Some ships of the Coast Survey/NOAA have been custom-built, but most have come from other government agencies. When the Industrial Revolution first went to sea, in iron ships powered by iron steam engines, they could be built in only a few specialized sites where coal, water, iron and skilled workers converged, which is how Pittsburgh became an important ship-building inland seaport before the Civil War. A class of Revenue Marine cutters made there later became legendary Coast Survey ships. The scientific work from the decks of the *George Bibb* and the *Robert Walker* was foundational to modern oceanography, and their cartography was critical in the Civil War, even though the *Walker* was sunk in 1860. Its cartography continues to the present, as NOAA discovered the ancestral wreck in 2013 using geo-positioned multi-beam sonar. This presentation will return the cartography of the *Walker* to the city where it was forged. Cartographies of Energy & Environment, Thursday 1:30–3:00 pm

Çöltekin, Arzu, University of Zürich
Visual Illusions in Cartography

Some visual illusions are extremely important for the legibility and interpretation of cartographic products; such as the terrain reversal effect in shaded relief maps (in which we perceive convex shapes as concave and vica versa), or change blindness (in which we can't detect the change from one scene to another). Some others, such as Müller-Lyer illusion or Ebbinghaus illusion may also be relevant in estimating distances and areas. This talk provides a brief overview of illusions in cartography and presents results from an empirical study on terrain reversal effect. Terrain, Friday 8:30–10:00 am

Coolidge, Jake,
Jake Coolidge Cartography
Past Practices, Contemporary Applications

This talk will reflect upon recent experiences drawing large, geographically complex regions by hand, a practice that brings into sharp relief the many decisions at the core of

the cartographer's craft—generalization and abstraction, label placement, the symbolization of features, among others—in an era where geographic information systems can automate many of these tasks and obscure the process from the map designer. I use hand-drawn mapmaking to reconnect with these processes in a tangible way, while invoking pre-digital maps made in the mid-20th century. I argue that reclaiming these practices in a contemporary context allows us to augment how we imagine places and to rediscover a broader set of tools for graphically expressing geographic phenomena. Mapping with Your Hands, Friday 10:30 am–12:00 noon

Cordivano, Sarah, Avazea
Open Data and Tools for Better Visualization and Analysis
Civic data published by government agencies serves as a valuable asset to citizens because it enables them to access information that may have been previously unobtainable or costly. Most importantly for cartographers and spatial analysts, open data can encourage the improvement of data quality because it provides oversight in data maintenance and organization. Additionally, there has been a recent increase in the range of open source analytical and visualization tools that are simple to use and either free or very low cost. Readily available and community supported, these tools provide an incredible wealth of resources to produce high quality and sophisticated spatial analysis and visualization to GIS professionals and hobbyists alike. This talk will explore how the combination of open data and open source analysis tools create new possibilities both within the cartographic community and more broadly for the analysis and visualization of data. Open Source Mapping, Friday 3:30–5:00 pm

Crawford, Iain, US Department of State
Interactive Mapping: Moving Maps Forward for Backwards People
A challenge facing many cartographers in organizations, private or public, is the structural inertia surrounding "how things are done." The last decade has seen an incredible explosion in both the power and general use of interactive cartographic products. Unfortunately this growth has not always translated into new ways that customers at the top of the chain consume cartographic products: many of these "senior" clients still think of maps as static products designed to be printed out or inserted in a slide deck. This presentation will highlight some of the methods that the State Department Office of the Geographer has implemented to help nudge the technologically adverse into the world of interactivity. Understanding Map Users, Thursday 10:30–12:00 noon

Dalton, Craig, Bloomsburg University of Pennsylvania
Rethinking and Researching Scale for Mobile Device Maps
Scale, a core concept in cartography, is changing in both theory and practice. Mobile device map applications, such as Google Maps, can shift scale and emphasize a local focus for users located in the field. Moreover, scale is described as

a "zoom level" rather than a representative fraction. Recent theorizations of scale as socially constructed in human geography are useful to understanding these changes. This paper proposes using focus groups to better understand how map users both conceptualize and practice scale using mobile device mapping applications. I hypothesize that a particular kind of scale is constructed through design of mobile web maps, the service's underlying purpose for parent companies such as Google, and the interaction of users. Through this construction, the concept of scale on maps on mobile devices is simple, fast, and hyperlocal, but not wholly effective for users trying to understand a place. Mobile Mapping, Friday 1:30–3:00 pm

Davidson, Brian, University of Wisconsin–Madison
Cartographic Design for Mobile Devices: A Case Study Using the UW–Madison Interactive Campus Map
Smartphones have become an integral part of the daily lives of citizens not only in the United States, but also around the world. It is estimated that by 2016, 80% of the United States population will be using a mobile phone and 50% will be using a tablet. This study investigates the default map scale and level of detail appropriate when designing for mobile maps using the University of Wisconsin–Madison interactive campus map as a case study. Participants were asked to complete wayfinding and identification tasks and were measured based on accuracy, response time, and emotion. Overall, the goal is to provide design considerations for mobile cartography and help open the possibilities for future research in the field of mobile. Mobile Mapping, Friday 1:30–3:00 pm

Denil, Mark, US National Ice Center
A Pragmatic Approach to Criticism, Critical Theory, and Critique
Critique is a method of disciplined, systematic analysis of a discourse. In its strong manifestations, cartographic critique involves critical examination of both the artifact and its foundational assumptions, and of the interrelationships between the two. At times, it also involves challenges to accounts of legitimacy. Strong critique is not widely practiced in the cartographic community. This is unfortunate, because critique is a significant tool for evaluation, analysis, planning, design, and problem solving. The application, however, of faulty theoretic postulates, or of weak critical analysis, usually leads to unsatisfactory results. Utility demands adoption a pragmatic approach to cartographic critique. Pragmatism is a philosophical tradition that contends that the value of an analysis is best judged in terms of the practical use of the results. This talk will elaborate a usable framework for pragmatic cartographic critique, and to show the value of adopting it. Literature, Criticism, and Forgotten Places, Thursday 1:30–3:00 pm

Dillon, Leo, US Department of State
Flashes on the Map: Forgotten or Short-Lived Places
It is said that as soon as a map is published, it's obsolete, and certainly

change is a constant in the world of cartography. In the lifetime of some still among us, dozens of republics, enclaves, colonial outposts, puppet states, and dubious islands appearing on reputable maps have come and gone. Join the presenter as he takes you across the world over more than a century to have a look at these footnotes in the history of cartography. Literature, Criticism, and Forgotten Places, Thursday 1:30–3:00 pm

Dooley, Matt, University of Wisconsin–River Falls

Digital to Analog: Explorations in Nontraditional Media

Using non-traditional media in cartography provides exciting possibilities for engaging map readers. In this presentation, I explore the use of alternative media, namely clay and gun powder, to portray river systems in parts of the Great Plains and Upper Midwest. While not a replacement for standard cartography, I argue that the physicality of tangible media offers unique possibilities that cannot be achieved in the digital realm. These techniques might also provide new opportunities to engage a different kind of map reader, and perhaps, challenge them to see the world differently. Mapping with Your Hands, Friday 10:30 am–12:00 noon

Elmer, Martin, MapHugger.com

Personality, Aesthetics, and the Human Touch

Most guidelines on cartographic design emphasize minimalism and objectivity, encouraging a map aesthetic that appears clean, professional-looking, and authoritative. When these design values become over-emphasized, however, we may be left ill-equipped to appreciate (and design) maps with more personable and whimsical sensibilities. This talk will examine the role of personality and the 'human touch' in cartography. It will discuss perspectives from the fields of identity design and emotional design, investigating how aesthetics and personality may be employed to communicate geographic information in more efficient, ethical, and engaging ways. Map Style, Thursday 8:30–10:00 am

Field, Kenneth, Esri

Space and Time with Cubes and Coxcombs

Mapping multivariate data over time is a challenge for cartography. In this presentation I review two techniques that perhaps haven't seen as much love as they deserve and show how we might dust them off for a new generation of mapmakers. Florence Nightingale worked to improve sanitary conditions in military hospitals. Her reports included rose diagrams (colloquially referred to as a coxcomb). Here, we explore the structure of the coxcomb and introduce a tool to create data-driven, spatially located coxcombs using ArcGIS. Swedish geographer Torsten Hägerstrand proposed the space-time cube (STC) as a framework for studying interaction and movement of individuals in space and time in 1970. Here, we show how to construct a STC in ArcGIS and publish directly to a 3D interactive web scene in a way that overcomes many of the difficulties.. Now that technology is catching up with these techniques it's time that we,

as cartographers, put them to work. New Tools, Friday 10:30 am–12:00 noon

Firth, Robert, Informing Design
Untangling Pittsburgh (by Deconstructing the Road Map)
Twenty-five years ago, Pittsburgh finished a new highway into the city, completing a pentagon of expressways around its downtown. Chaos ensued. Even nuclear engineers at Westinghouse were getting lost along eight-lane highways. How was this possible? Pittsburgh is notoriously complicated. Ramps connect in one direction but not in the other, or take you right to go left. Bridges cross a river and then do not let you off on the other side. Local streets often don't go where they look like they are heading. Treating this complexity like a geometry puzzle, it turns out that it is possible to remap the roadway network as "untangled", while keeping true to geography without distortion or loss of detail (except for the usual scale-dependent generalizing). The network is broken down into layers consisting of "atoms" of simple travel patterns, which when superimposed result in a seamless "natural-looking" road map, except it's one that can make a place as tough as Pittsburgh comprehensible. Drawing on print, web and app projects, this talk will demonstrate what such untangling visualizations can do for driving, walking, biking and bus-transit maps. (Free Pittsburgh maps will be distributed.) Transportation Maps, Thursday 3:30–5:00 pm

Fishburn, Kristin and Andrew Stauffer, USGS
Change Detection Research for the US Topo
The National Geospatial Technical Operations Center of the U. S. Geological Survey is currently researching an automated or semi-automated vector change detection process to support streamlined maintenance of data, products, and services in The National Map (TNM) (www.nationalmap.gov). The use of change detection tools to identify change in five of the eight TNM data themes (Hydrography, Transportation, Boundaries, Structures and Geographic Names) has great potential for streamlining maintenance resource expenditures for the US Topo, the USGS 1:24,000-scale digital topographic map series. This presentation will focus on the US Topo product, providing a general overview of these maps and their production schedule. Our change detection research will be discussed briefly, to include methodological workflows and data storage strategies to help identify database changes. We will conclude by discussing how the results of vector change detection could directly impact US Topo map production and maintenance. Changes in the Environment over Time, Thursday 10:30–12:00 noon

Florance, Patrick, Tufts University
The Open Geoportal Cloud Federation
The Open Geoportal (OGP) is a collaboratively developed, open source, federated web application to rapidly discover, preview, and retrieve, geospatial data from multiple

repositories in a variety of formats and web service protocols. The new Open Geoportal 2.0 will be demonstrated as will the new OGP Suite of Federated Services: OGP Community, OGP Harvester, and OGP Metadata Toolkit. www.opengeoportal.org. Open Source Mapping, Friday 3:30–5:00 pm

Foster, Mike, MIT
Using Python to Reverse Engineer Exported Graphics
Cartographers, Designers, and planners spend countless hours in graphic design software illustrating maps, charts, and graphics to create rich stories. The software, including Adobe Illustrator, Adobe Photoshop, Inkscape, and GIMP, allows for rich illustration and complex graphic work that are beyond the scope and goal of traditional analytical GIS, but design tasks often require access to the same datasets. Most GIS software supports exporting of features to graphics format, but without the help of expensive licenses or tedious referencing, the process can be decidedly one-directional and there is no direct route to bring the datasets back into GIS. This session details the coding and creation of a Python-based tool that reverse engineers the export process, establishing a workflow that serves to read an Adobe Illustrator file, extract geographic features, and create referenced shapefiles that can be propagated forward in GIS.New Tools, Friday 10:30 am–12:00 noon

Fyfield, Paul, Mattye Walsworth, and Jim Rounds, Bureau of Land Management Oregon State Office
Updating the Rogue River Float Guide: Standards, Processes and Products
Flowing 215 miles from its headwaters near Crater Lake to the Pacific Ocean, the Rogue River in southwestern Oregon was one of the original eight rivers included in the Wild and Scenic Rivers Act of 1968. Extremely popular for its challenging whitewater rapids, the Rogue is used by up to 120 rafters and kayakers each day during the peak summer season. The Bureau of Land Management and the US Forest Service are in the process of updating their 2004 float guide aimed towards these recreational users. This presentation will discuss approaches to mapping standards and processes being taken to improve the quality and usability of this guide, as well as alternative, digital products designed for use on mobile devices. The goal is to provide map products that accommodate the needs and enhance the experience of those floating the Rogue River. Mapping Mobilities, Friday 8:30–10:00 am

Greene, Casey, Adventure Cycling
Mapping the Idaho Hot Springs Mountain Bike Route
The Idaho Hot Springs Mountain Bike Route is Adventure Cycling Association's newest bicycle touring route, and it's first which includes optional technical singletrack sections. The route guides riders over and through the breathtaking landscape of central Idaho. From blue ribbon trout streams to sub-alpine terrain and cozy mountain towns, riders pass through some of the most spectacular

country the West has to offer, with the opportunity to indulge in over 50 hot springs. Join Casey Greene—the designer, researcher, and cartographer of this route—as he talks about the many challenges faced with the 700+ miles of routing, and about the subtle, but innovative, design features that the final maps present. Transportation Maps, Thursday 3:30–5:00 pm

Haft, Adele, Hunter College of the City University of New York

A Pocket Anthology of 20th Century Map Poems in the United States

This paper offers a selection of notable American map-poems and considers their place in a century unique for the number, range, and quality of such poems. It looks at the "map" poems preceding Elizabeth Bishop's groundbreaking "The Map" (1934), then turns to John Holmes's "Map of My Country" (1943), which argued that a poem maps a person's identity better than its graphic cousins. Other poets found inspiration and an analogue of their experience in a particular map, cartographer, or painter of maps. Since the 1960s, visual poets have shaped poems into maps of American locales, thus complementing more "conventional" uses of maps to trigger poetic memoirs of place. Influenced by Donne and Louise Bogan's "Cartography" (1938), the sexual revolution has popularized the body as map metaphor. And since 1980, map-fixated collections have been on the rise, inspiring this century's poets to consider what maps say about history, culture, ourselves. Literature, Criticism, and Forgotten Places, Thursday 1:30–3:00 pm

Hansen, Andrea, Harvard University Graduate School of Design

Contours, Cross Sections, and Cartographic Relief in the Age of Big Data

Data permeates our lives. Smartphones, the internet-of-things, and logistics have ensured that data about nearly anything is voluminous and easily accessible. However, the sheer volume of data produced on a daily basis can be overwhelming. How can we see the signal through the noise? How can we harness the power of big data while also remaining true to the founding principles of beautifully simple cartography? Visualizing Systems is a project devoted to cataloguing maps and visualizations of urban, regional, and global systems ranging from watersheds to distribution chains to social networks. The project highlights cartographic time by drawing connections between historical precedents and contemporary cartography. This session focuses on Chapter One of Visualizing Systems, Geological Systems. By revisiting the invention of spot-elevations, contours, hachure, etc., I'll propose best practices for 3D, web, and interactive topography using case studies from MIT's Tangible Media Lab, Harvard's metaLAB, Mapbox, etc. History of Cartography, Friday 3:30–5:00 pm

Higgins, Michael, Summit Terragraphics

The Technology Evolution of Raised-Relief Maps

This paper traces the evolution of the raised-relief maps and terrain physical

modeling from its earliest forms to today's use of modern technology, including CNC routing and 3D printing. The first half of the paper reviews the beginning of 3D maps using primitive materials and then progresses through more elaborate and durable materials and forms such as hand painted and sculpted clay models. The newest production forms are then also reviewed: CNC milling/routing with digital printed surfaces, 3D color printing, and precision thermoform molding of plastic sheets. Terrain, Friday 8:30–10:00 am

Hite, Morgan, Hesperus Arts

A New Series of Maps of the Oregon Country

In 1846 the United States and Great Britain concluded a treaty to divide the last chunk of North America that was not already owned by a European power or the US: the Oregon Country. But what was the Oregon Country? In this talk I'll present a series of nine new maps charting the history of what came to be known as the Oregon Country: how its extent came to be defined, popular conceptions and misconceptions of its boundaries (including the origin of the infamous 54°40' line), and the distribution of fur trade operations there. Designed for students and the general public, the maps begin with the first European exploration in 1792 and end with the settlement of the final border dispute between the US and Britain in 1872. I'll also discuss the techniques whereby these maps were produced using free software (QGIS and Inkscape) and free data. Mapping History, Thursday 8:30–10:00 am

Howarth, Jeff, Middlebury College

The Zaira Problem: Mapping Past Events on an Island of California

Calvino suggested that a city consists "of relationships between the measurements of its space and the events of its past." Lying off the coast of Southern California, Santa Cruz Island contains far fewer of these relationships than a city, which makes the island a useful laboratory to experiment with methods to map these kinds of relationships and how they change over time. In this talk, I present some preliminary efforts to map recurring events to the spaces on the island that were adapted to support them in the past. I also discuss attempts to reveal changes in these adapted spaces over time. I suggest that the concept of a "plan" provides a helpful frame for mapping relationships between events and space, and contrast this with approaches that map discrete events of the past. Rendering the Past, Friday 8:30–10:00 am

Kato, Ken, Jacob Bartruff, Brook Eastman, University of Oregon InfoGraphics Lab

High Quality Custom Interior Cartography for Mobile

Mapping indoor spaces isn't new but serving high quality, location-aware, interior maps to smartphones is an exciting new problem space. We're seeing a huge push from industry giants (Google, Apple, etc) to pursue indoor location services. The quality of the map beneath the blue dot will be as

important for the user experience as it is for outdoor maps. The InfoGraphics Lab has developed several mobile and web applications that serve up current, accurate, user-friendly interior maps—pulling from a 26,000 room GIS. We will show how we develop and manage our high-quality indoor cartography, using ArcMap and ArcGIS Server, as well as our own custom tile server. We will also demonstrate prototype apps that collect crowd-sourced, room-level, interior data to keep our indoor GIS current and accurate—as well as discuss the custom API's we've developed to enable others to build applications around our services.Mobile Mapping, Friday 1:30–3:00 pm

Kelso, Matt and Samantha Malone, FracTracker Alliance

Mapping Unconventional Oil and Gas Activity on FracTracker.org

Unconventional oil and gas (O&G) extraction—often referred to as "fracking"—has increased significantly in the United States in recent years. The associated environmental and public health concerns have created a desire to track where drilling and its impacts are occurring. Mapping such activity enables citizens to better understand the complex nature of the industry. FracTracker.org is a free system that tracks and visualizes data related to O&G operations via a customized Esri mapping tool. Unconventional O&G activity—such as the location of permits, operators, well sites, violations, where available—has already been mapped by the FracTracker Alliance in over 25 states. This session will highlight the insightful maps, tools, and findings of FracTracker's work. After attending the session, participants will be able to utilize the various features incorporated into FracTracker's maps, such as measuring how close activity is occurring to waterways. Cartographies of Energy & Environment, Thursday 1:30–3:00 pm

Kessler, Fritz, Frostburg State University, and Daniel Strebe, Mapthematics

A Survey of World Map Projections Appearing in World Atlases: Rise of the Pseudocylindrics

We report on a survey that examined the type and frequency of map projections devoted to thematic world maps in world atlases. Our survey examined 256 world atlases from 28 countries resulting in data on 4,349 individual map projections. Primary findings suggest that hemispheric projections were chiefly used for world maps into the late 1800s at which time a slow adoption of cylindrics began replacing hemispheric projections. New pseudocylindric projections were introduced throughout the early 1900s. The 1950s and 2000s showed a spike in the variety of projections used. Overall, equivalent and compromise projections were more frequently used than projections with other properties. While the Mercator appeared often, by no means did it dominate world atlases. Other projections such as the Winkel Tripel, Robinson, and Gall's stereographic were commonly incorporated into world atlases. European world atlases tended to include a greater variety of map

projections in world atlases than other countries.' History of Cartography, Friday 3:30–5:00 pm

Knoppke-Wetzel, Vanessa, University of Wisconsin–Madison
A Stylistic Look at Woodblock, Copperplate & Lithograph Maps
In art, stylistic means of identification that allow for defined and teachable reproduction methods exist for art styles that have occurred throughout history (such as Cubisim, Impressionism, etc). No such specific encompassing stylistic definitions of past aesthetics in Cartography exist. My MS research hopes to begin a movement to define cartographic styles so that cartographers, whether learning or working, have stylistic references as sources for moments when they wish to reproduce a specific style they have seen. This research stylistically defines woodblock, copperplate, and lithograph print map styles based on the investigation of how technological changes in production aesthetically affected map prints. Map Style, Thursday 8:30–10:00 am

Kronenfeld, Barry, Eastern Illinois University
A Manual Approach to Cartogram Construction Using Triangular Lattice Transformation
Automated algorithms are limited in their ability to produce aesthetically pleasing cartograms, while currently available methods for manual cartogram construction (i.e. block cartograms) do not define a continuous spatial transformation. I propose an alternative framework for cartogram construction using triangular lattice transformation. In the proposed framework, a regular lattice is transformed by repositioning vertices until vertex density approximates population density, forming a dot-density map. The original and transformed lattices define a continuous transformation from geographic space to cartogram space. The transformation is reusable and can be applied to any geographic dataset, acting as a type of map projection. Sample tools for constructing and applying cartograms are demonstrated, and the approach is illustrated with a population cartogram of Illinois. By separating the task of defining a cartogram from the map design process, the proposed framework aims to facilitate more widespread application of cartograms to the analysis of population-dependent variables. New Tools, Friday 10:30 am–12:00 noon

Lahm, Frank III, Bureau of Land Management, Oregon State Office
Master Title Plats in ArcGIS
For more than 229 years, the federal government has been mapping, surveying, disposing, and acquiring lands. Tracing its history back to the original General Land Office in Oregon City, Ore., the Land Records Team for the Bureau of Land Management in Oregon State Office is charged with maintaining the Master Title Plat (MTP), Historical Index, and official copies of the original

land tenure documents for Oregon and Washington. These records have found new life in a project converting the MTP to an ArcGIS format. Along the way, we are tackling the difficult issues of mapping actions that can date back to the time of the Oregon Compromise of 1846. This presentation will discuss the development of the land record system and issues dealing with historical map standards using modern technology while improving quality and accuracy. It will also cover how the team has dealt with mapping historical actions throughout Oregon history. Mapping History, Thursday 8:30–10:00 am

League, Christopher, Long Island University–Brooklyn, and Pat Kennelly, Long Island University–CW Post
Spatial-Temporal Displays of Daily Climate Data
Maps of climate change abound, but often display a small amount of data for each discrete location. Other graphs or displays show voluminous climate data for a particular location, but are often not specifically developed for geographic display. We have designed a three-dimensional cartographic display method for daily temperature data at particular locations that drapes a surface over a helix of variable radius. The length of the radius varies with temperature, and each turn of the helix represents one year. Using techniques common to terrain representation, we apply hue and saturation to the surface based on temperature, and value based on relief shading. Multiple helical surfaces can be displayed in one geographic scene, and the viewing direction corresponds with views of the same seasons for all helical displays. We see this method as effective in displaying high-resolution temporal data within a geographic framework. Changes in the Environment over Time, Thursday 10:30–12:00 noon

Lopez, Monxo, Catholic University of Puerto Rico
South Bronx Waterfront Maps in Times of Environmental Struggles
Maps do lie, this is a case study of how they do. On February 2012, NYC Mayor Bloomberg announced a government package totaling $127 million in incentives for online grocer FreshDirect to relocate to a flood-zoned underutilized lot along the South Bronx waterfront. Although suffering more than 8 times the national asthma rate, area residents were never consulted about the proposed relocation of a diesel-truck intensive business, a plan that would also permanently cut-off the waterfront from the community. A bitter environmental fight followed. An important part of the struggle was fought on map-terrain. FreshDirect willingly distorted maps for their purposes, using a wide range of techniques to force their will on the community. Residents of the area, organized around a community-based organization—SouthBronxUnite—fought back with a new waterfront vision and their own maps. As the only cartographer in SouthBronxUnite I had a first-row seat in this interesting cartographic battle. Cartographies of Energy & Environment, Thursday 1:30–3:00 pm

Manthos, David, SkyTruth
Skytruthing the Impact of Human Activity on the Environment
SkyTruth brings together people, remote sensing, and big data to promote conservation and to inform decisionmakers about pressing environmental issues. Effectively communicating the impact of extractive industries such as mining, drilling, and logging often requires more than a static look at one place and time, but rather showing change over time. SkyTruth uses satellite and aerial imagery to track the impact of oil and gas drilling across the country, was among the first to report that BP was severely underreporting the size of the Gulf oil spill from the Deepwater Horizon disaster, and used Landsat imagery to map the footprint of mountaintop removal (MTR) coal mines in Appalachia since 1976. Learn how SkyTruth is building the skytruthing movement to engage the public with satellite images and temporal data to map environmental issues and illustrate how we are impacting the world around us. Cartographies of Energy & Environment, Thursday 1:30–3:00 pm

Martinelli, Nicholas, Upper Left Maps
Using Kickstarter to Fund a Cartographic Project
What happens when a cartographer, a screen printer, and a typographer walk into a Kickstarter campaign to produce an art print and production map? I wasn't sure either, until we tried it. Our presentation will either be about success and encouraging or it will be a cautionary tale about the pitfalls of crowd funding. Our campaign is offering production offset printed maps at basic reward levels, and limited-run screen and letterpress-printed maps at the higher reward levels. We will share the process we went through with Kickstarter including calculating a funding target, designing "rewards," and getting the word out, and hopefully fulfillment. We will also present the process of designing and producing the cartographic art prints printed on a 1908 letterpress machine. Mapping with Your Hands, Friday 10:30 am–12:00 noon

Mason, Jennifer, David Retchless, and Alexander Klippel, Pennsylvania State University
Dimensions of Uncertainty Visualization Research
In recent years, uncertainty visualization techniques have taken a larger role in research as users have begun to adopt geospatial uncertainty visualization as an efficient mode of communication. This research surveys the literature on geospatial uncertainty visualization and classifies research in this subfield into different dimensions. These dimensions were borne through a systematic review of uncertainty visualization literature, iteratively identifying major topics and grouping them into similar categories, resulting in a classification of the field. Finally, a graphic was designed reflecting this classification to both organize and conceptualize the entire research field in a new way and to efficiently assist

readers in quickly grasping the topics within an uncertainty visualization research paper at a glance. This research will help people develop a more thorough understanding of uncertainty visualization research while finding gaps that researchers should attend to in the future. New Tools, Friday 10:30 am–12:00 noon

Massasati, Ahmad, University of Pittsburgh at Johnstown
Applying GIS to the Prayer Circles and Prayer Direction Circles
The virtual digital globe of Earth with its internet applications has proven to be an effective tool for geographic education. With GIS, displaying ideas and information on the globe rather than on a flat surface is becoming more feasible. Finding the direction to Makah (Mecca) is essential for Muslims around the world to perform the five daily prayers. The challenge in solving such a problem is a classic example of how the distortion of a map projection on a flat surface may give the wrong impression of directions. The prayer direction circles/prayer circles (PDC/PC) research did show the correct directions on projected flat surface; still some map users doubt the results. This paper assumes that displaying the PDC/PC on a virtual globe should eliminate any confusion on the direction to Makah. Mapping Mobilities, Friday 8:30–10:00 am

McCleary, George, University of Kansas
Considering the Map User...
Though generally unstated, the goal of the cartographer has been maps that are appropriate, comprehensible, and effective. For concept organization, data gathering, development processes and final production, the design perspective employed has been that of the cartographer. For maps developed to support those users needing precise environmental descriptions (e.g., nautical charts), common understanding of the map use task and design is not a problem. Thematic maps, however, present a problem: the map (generally a graphic numerical abstraction) has to be created so that it is understood by users who might not understand the map design used by the cartographer. It took almost a century for cartographers to recognize that some things did not "look right." The starting point for "user-centered design" appears to lie with psychophysics, a fundamental, versatile, and adaptable concept in experimental psychology, a foundation for understanding the "human information processing system." Understanding Map Users, Thursday 10:30–12:00 noon

McConchie, Alan, Stamen Design
Mapping the Intersection Between Social Media and Open Spaces
Earlier this year, Stamen launched parks.stamen.com, a project that collects geotagged social media content within parks and other open spaces in California. We harvest data from four major social media services (Twitter, Foursquare, Flickr, and Instagram), each of which provides a unique view into the different facets of each park, and the diverse communities who enjoy these parks. We also found that each social network service's public API imposes different constraints on our

queries, producing their own intricate geographic patterns. Thus, the quirks of how each API was written results in distinct geometries in digital space that mirror the park users' human geographies in embodied physical space. In this presentation I will describe the algorithms we use to collect the social media data, and show the cartographic techniques we have been experimenting with to show how parks are used by the public, and how they are represented digitally. Visual Analytics & Big Data, Thursday 1:30–3:00 pm

McDermott, Paul D., Montgomery College, and Phil Mobley, Federal Government (ret.)

The Land Patents of Western Maryland

Maryland had one of the most complex land settlement patterns of the original colonies. It was unique in that all patents were identified by name. For example, Sarahs Delight. Mapping each individual patent yields a different shape. Some were simple others very complex. By integrating patent information with a alpha numeric location, one is able to reconstruct and map settlement patterns from decade to decade. Another variation is the ability to create line graph showing the settlement land acquisition from 1730 to1830. To do this, all of this 2450 land patents were placed into a large database consisting of 10,000 entries. Mapping History, Thursday 8:30–10:00 am

McGlone, Daniel, Azavea

Mapping and Analysis Using GTFS Data

General Transit Feed Specification, or GTFS, is a standard format for public transportation schedules and associated geographic information. It allows transportation agencies to publish their data and developers to write applications that consume their data in an interoperable way. On a recent project for the Delaware Division of Parks and Recreation, Azavea was tasked with modeling level of service for the state's park system. Azavea converted the public transit agency's GTFS data into a shapefile while preserving the travel time estimation of each route. This presentation will provide an overview of and best practices for working with GTFS data. In addition; the workflow, techniques and drawbacks of the conversion process Azavea used will be discussed. Finally, a new tool to incorporate GTFS data into ArcGIS network analysis will be introduced. Transportation Maps, Thursday 3:30–5:00 pm

McManigal, Kevin, University of Montana

The Cartographic Logo as a "Gateway Drug" to Illustrator

So, you want to make a living as a cartographer. Do you have a logo? Logos don't matter? Well, I bet that you have hundreds of logos embedded in your head, and I can prove it. What will set you apart from all the other cartophiles out there? Besides, you need to learn Illustrator to be a cartographer (we can debate this), and lucky for us, almost all logos are born there. Join me for an interactive presentation

and discussion on logos, branding cartographic companies, and the unique Illustrator basics of logo fabrication that set would-be cartographers up for the life-long journey of mapmaking. You are here! Map Style, Thursday 8:30–10:00 am

Mead, Rashauna, University of Wisconsin–Madison

Help and Learning Materials for Online Mapping: Understanding their Place The general public, now more than ever, has the ability to produce and share their own maps. Due to the complex nature of online mapping, these interfaces often provide help tools and learning materials to aid users as they navigate the process of creating their own maps. This presentation will discuss the breadth of learning materials and help tools currently being leveraged in the field, and will examine the relative advantages and drawbacks of each of these tools. Cartographic Education, Friday 1:30–3:00 pm

Merson, Joanna, Arizona State University

VisMatch: A Web Tool for Selecting Effective Space-Time Visualization Techniques Successful visualizations can reveal patterns and relationships that would be concealed in traditional maps. However, researchers often choose a visualization technique just because they are familiar with it, regardless of what other visualization techniques might better communicate their data. A researcher that decides search out the best technique from the vast body of visualization literature will be faced with the slow and difficult task of wading through the nuances of very specific implementations. Therefore, I have developed VisMatch, a streamlined, web-based tool designed to help researchers choose which visualization techniques are best suited to the spatial-temporal data they want to communicate. In this presentation, I will present 1) the design behind the tool, which suggests optimal visualization techniques by considering data composition and audience needs; and 2) the results from a user-survey evaluating researcher interaction with VisMatch. Visual Analytics & Big Data, Thursday 1:30–3:00 pm

Miller, Justin, Mapbox

Mobile Vector Cartography: Designing for Infinite Scale Factors The Mapbox GL rendering engine is a technology for turning geographic data into living, breathing maps on mobile and web platforms, maps that are drawn as infinitely scaling vectors with on-the-fly styling capabilities. But design of such maps introduces challenges into the design process such as dynamic label placement when zooming the map in and out, specifying feature line width as a function of map scale instead of as static numbers, and other design aspects that become more about planning for presentation situations than about putting visual elements to static medium. This talk will demonstrate these challenges firsthand in a live, on-device demo and talk about the engineering challenges behind giving cartographers

these sorts of tools. Mobile Mapping, Friday 1:30–3:00 pm

Muehlenhaus, Ian, James Madison University

Adapting Theories of Form, Style, and Meaning for Map Design

All visual communication has form. At its most basic, form is the system of relations among the elements of a communication or artistic expression. A communication's form drives its style and potential meaning by limiting and guiding a viewer's perception. Cartographers are aware that maps have form (e.g., map balance, visual hierarchy), but when designing and critiquing maps they often focus on the elements comprising the form (e.g., data richness, GUIs), an individual element's impact on interpretation (e.g., square versus circular symbol), and how objective the map appears (i.e., quantifiable accuracy). Here the author attempts to adapt more theoretical concepts of form—as expressed in literature, film, and graphics research—to map design. It is argued that these concepts may help us better address ongoing questions about map aesthetics, as well as guide narrative, argumentative, and expository map design. Map Style, Thursday 8:30–10:00 am

Nelson, Jonathan, Sterling Quinn, Brian Swedberg, Wanghuan Chu, Maggie Houchen, Todd Bodnar, and Alan M. MacEachren, Pennsylvania State University

SPoTvis: A Geovisual Analytics Tool for Discovering Multi-Scale Spatial Patterns in Tweets Surrounding the 2013 US Government Shutdown

In October 2013, the US Congressional debate over allocation of funds to the Patient Protection and Affordable Care Act (commonly known as the ACA or 'Obamacare') culminated in a 16-day government shutdown. Meanwhile the online health insurance marketplace related to the ACA was making a public debut hampered by performance and functionality problems. Messages on Twitter during this time period included sharply divided opinions about these events, with many people angry about the shutdown and others supporting the delay of the ACA implementation. We introduce SPoTvis, a web-based geovisual analytics tool for exploring Twitter messages (or 'tweets') collected about the shutdown. Using an interactive map connected to a term polarity plot, users can compare the dominant subthemes of tweets in any two states or congressional districts. Demographic attributes and political information on the display, coupled with functionality to show (dis)similar features, enrich users' understandings of the units being compared. Visual Analytics & Big Data, Thursday 1:30–3:00 pm

Nestel, Chelsea and Carl Sack, University of Wisconsin–Madison

Adaptive Cartography for Situated Learning

Adaptive Cartography is the process of designing digital maps that change to fit the use context, including the user's location, profile, activity, available information, and digital device. As part of a graduate seminar, we designed and built a map-based situated learning

module using the principles of adaptive cartography. The module is designed to situate students' understanding of economic globalization in the "real world" through a device-guided tour of historic sites in Madison. The module is responsive across device sizes, allowing the tour to take place virtually through a desktop computer or in person using a mobile device. Trials were conducted of both the situated experience using Apple iPad tablets and the virtual tour using desktop computers to determine the overall usability of each version and which version resulted in better learning outcomes. Based on the results, we hope to demonstrate useful principles for adaptive map design in educational settings. Cartographic Education, Friday 1:30–3:00 pm

Perdue, Nicholas and Amy Lobben, University of Oregon

Disconnected Cities: Mapping Personal Mobilities

Increasingly, people rely on mobile navigation applications to aid in pedestrian movement through urban spaces. These application return a suggested route calculated with a combination of distance and network based metrics, assuming a singular mobility of the user. This assumption, however, is problematic when the user is a person with physical or perceptual disabilities. We argue the intimate interactions between the body, social structures, and material spaces produce individualized and uneven mobilities within an urban transportation network. This work aims to characterize the various interactions of health condition and environmental features that facilitate and hinder mobility for people with disabilities and develop a mobile application to identify optimal routes through urban environments. The project integrates survey data on demographic variables, personal health conditions, and perceptions of environmental features with municipal geospatial data to create a personalized mobile navigation application to assist in safe and efficient movement of people with disabilities. Mapping Mobilities, Friday 8:30–10:00 am

Pietrusko, Robert Gerard, Harvard University

Introducing Students to the Cartographic Essay

The course "Mapping: Geographic Representation and Speculation," taught at Harvard University's Graduate School of Design, introduces the fundamentals of mapping to design students with a specific focus on its communicative role within the design process. Over the duration of a semester, students are asked to produce a "Cartographic Essay," a two-minute, animated film. Each project tells a story that unfolds in time using geo-spatial data and cartographic conventions as its medium. By framing the project as an essay, students treat their work as highly-authored and potentially polemical. This talk explores several pedagogical goals of project: the use of narrative as a form of geo-spatial analysis; understanding the mutual constraints that data and spatial inquires apply to each other, and the use of time in animation to construct explanations versus merely scaling

historical time. Specific examples from the students' work will be used to further elaborate these goals. Narrative Maps, Thursday 8:30–10:00 am

Retchless, David, Pennsylvania State University
How do "Six Americas" of Sarasota Students See Sea Level Rise Uncertainty?
When mapping highly uncertain hazards such as sea level rise (SLR), cartographers often consider both whether and how to show uncertainty. While several studies have suggested that including uncertainty can improve decision outcomes, few have considered how uncertainty interacts with audience characteristics to affect the decision process. To address this gap, I use surveys of college students to assess how the depiction of uncertainty on an online SLR mapping tool for the Sarasota, Florida, area interacts with map users' individual differences to affect their perceptions of the hazard, interaction with the map, and subsequent decision making. Individual differences considered include an audience segmentation analysis performed using the "Global Warming's Six Americas" framework. It is hoped that the preliminary results presented here will help cartographers create hazard maps that are better tailored to their audience, more engaging, and more likely to encourage thoughtful decision making. Understanding Map Users, Thursday 10:30–12:00 noon

Rühl, Alice, Scott Pezanowski, and Frank Hardisty, Pennsylvania State University
Spatio-Temporal Data Visualization with Interactive Maps in Visual Analytics Applications
The increasing importance of Visual Analytics, particularly in response to the advent of "big data," calls for greater attention to maps in analytic tools and applications. While maps provide a familiar, understandable interface to underlying data, not enough has been done in the field of Visual Analytics to advance the design and usage of maps. This study explores the development of map components within multi-view applications using multivariate and zoom-level dependent representations of news event data. Integrated in the system with a timeline, a word cloud and other view components, we consider the traditional "rules" of cartography as well as aspects of human-computer interaction and interactive design research. This allows users to efficiently explore complex spatio-temporal data. Our approach was validated by re-developing the mapping component inside STempo, a project developed at the GeoVISTA Center, Pennsylvania State University. Visual Analytics & Big Data, Thursday 1:30–3:00 pm

Sack, Carl, University of Wisconsin–Madison
Whither the Wikimap?
Crowdsourced and "volunteered" geographic information are concepts that have become of great interest to cartographers and GIScience professionals. Maps that rely on user-contributed data, called wikimaps, are becoming more mainstream and represent a

major player in the future of web cartography. The most cited example, OpenStreetMap, now has a community of over 1.6 million users. But many questions remain about how such maps should be designed: How should such data be symbolized? How can it be judged for quality? How should ethics be applied in light of privacy concerns? How small-d "democratic" is the crowd really, and how are crowdsourced maps really being used? These are just a few. This talk will present my experience to date creating and using wikimaps, with a focus on preliminary conclusions and questions for further investigation. Open Source Mapping, Friday 3:30–5:00 pm

Scopel, Caitlin and Daniel Siegel, Esri
Managing Water Resources with Time Enabled Image Services
Climate change is affecting the way we manage our water resources, especially in the western United States, where many states have been suffering from drought. To help policy makers at all levels of government make vital decisions about water resources allocations, we have created analysis-ready image services that show how hydrologic conditions change over time. Precipitation, evapotranspiration, soil moisture, and runoff are all necessary pieces of the water budget, and when time-enabled, allow for historical and future views into water resources management. How does drought affect soil moisture over time? How does precipitation affect runoff over time? These are important questions that policy makers will need to answer in order to provide a stable future for the citizens of planet earth. Changes in the Environment over Time, Thursday 10:30–12:00 noon

Smith, Derek, Carleton University
The Importance of Context: Using a Participatory Mapping Approach to Document Indigenous Landscapes in Western Panama
Indigenous communities have been using geospatial technologies to map their territories and manage their resources for many years. However, while tremendous advances have been achieved in some regions, what about indigenous communities in developing countries where there are no computers, or even electricity? This paper presents the case of a team of university researchers, indigenous university students, and local investigators who have been mapping community lands in western Panama. We used a combination of sketch mapping, GPS mapping, satellite imagery, and interviews to document local knowledge of the cultural landscape and map forest cover. Our experiences demonstrate that training in the use of mapping tools aimed at empowering indigenous communities must take into account broader social contexts. Participatory mapping projects must at times adapt to the challenges imposed by the digital divide even when they are attempting to combat them. Mapping Population & Landscape, Friday 3:30–5:00 pm

Steiner, Erik, Stanford University
Small Scale Historical Landscape Reconstruction Using Vue
Before Hetch Hetchy Dam, there was Searsville Reservoir. Built in 1892 to supply the burgeoning city of San Francisco, the lake was never used as a water supply. Instead, the lake became recreation destination and eventually a part of a biological preserve where it sits today as a controversial source of habitat for dozens of species of bats and birds, but is 90% filled with sediment and blocks spawning opportunities for local salmonids. This presentation reports on the cartographic effort (using Vue) to develop a small-scale historical ecology (vegetation reconstruction) of the area around Searsville Reservoir as it existed before it was settled by Europeans and before the construction of the dam. Reminiscent of the Manahatta Project (on a much smaller scale), our goal is to help visually untangle the delicate restoration decisions that will determine the long term future of this watershed. Terrain, Friday 8:30–10:00 am

Suchan, Trudy, US Census Bureau; Jennifer Hamelman Milyko, Adventure Cycling Association; Jenny Marie Johnson, University of Illinois at Urbana-Champaign
Times Change: Out of the Classroom, into the MOOC
As happens with career advancement, we have become consumers rather than users of latest geospatial technologies. Still, as seasoned cartographers, it is assumed we know and are solid on some topics that we are not. We resolved to refresh our GIS skills and enrolled in Maps and the Geospatial Revolution, Penn State's MOOC (massive open online course) in April–June 2014. We report together on our experience using ArcGIS Online and on our interactions through discussion forums with the thousands of other participants, many engaging with cartography and geography for the first time. The class ends with a map design project and critique in the form of peer assessment. How will we be critiqued? How might our critiques make a difference to others? Cartographic Education, Friday 1:30–3:00 pm

Thatcher, Jim, University of Washington-Tacoma and Josh Gray, mapvocate.net
Working with Semi-public APIs: Adventures in the Gathering and Visualization of Kickstarter Data
Well-documented public APIs, such as Foursquare's, Twitter's, and Flickr's have become a core means of gathering spatially-referenced information. The resulting visualizations are useful to both researchers and more popular presses. New tools, like D3 and Leaflet, help cartographers visualize heterogeneous sets of data in previously impossible interactive ways. However, many data sources come with publicly accessible, but non-documented APIs. Accessing the wealth of information stored in such systems can be difficult or impossible, often resulting in necessarily partial and incomplete solutions. In this talk, we present our experiences working with Kickstarter's API and the KickScraper tool we built to gather spatial informa-

tion from it. After presenting the tool and our resulting visualizations, including a marker-clustering map of the locations of all projects, we discuss the dangers and limitations of semi-public and undocumented APIs for researchers. We conclude with the next steps for our open-source tool building project. Open Source Mapping, Friday 3:30–5:00 pm

Theise, Eric
The Zeon Files Mapped: Sign, Sign, Everywhere a Sign
What did Eddie's Inferno Cocktail Lounge, Doc Fuller the Loan Man, the Roadrunner Coffee Shop, Bowlette, Steak in the Rough, Thelma Lu's Candy Shoppe, and too many Route 66 drive in theaters to list have in common? Fanciful roadside signs designed and installed by Electrical Products of New Mexico, a.k.a. Zeon Signs, of Albuquerque. Through a series of fortuitous near-disasters, close to 2,000 of Zeon's job envelopes from the 1950s & 60s—often containing stunning working drawings for their designs—recently transferred into the holdings of the Center for Southwest Research at the University of New Mexico. This talk will discuss an ongoing project to map these signs in space and time; on paper, for an upcoming book by architect/planner/urban designer Mark C. Childs and sculptor/social practitioner Ellen Babcock, and online, for a CSWR finding guide having sandboxed crowdsourced elements. Rendering the Past, Friday 8:30–10:00 am

Thomas, Leah
Mapping Narratives: The Spatiotemporal in Digital Literary Cartographies
This presentation will provide a working definition of digital literary cartographies and discuss how these cartographies present spatiotemporal elements of literary narratives. I will explore examples of successful projects such as The Grub Street Project and the Early Modern Map of London that map literary narratives and examine what these projects reveal about these narratives. I will highlight my own digital literary cartography using Mary Prince's slave narrative The History of Mary Prince, a West Indian Slave, Related by Herself (1831). I define this work also as a literary text because of its use of sensibility popular in contemporaneous novels. Additionally, including this work demonstrates literary and historical intersections. This project will incorporate digital images of contemporaneous maps to contextualize the geographic imagination. Comparing this project to existent digital literary cartographies will illumine the spatiotemporal mapping of literary texts. Literature, Criticism, and Forgotten Places, Thursday 1:30–3:00 pm

Tierney, Lauren, James E. Meacham, Alethea Y. Steingisser, and Emily L. Nyholm, University of Oregon InfoGraphics Lab
Challenges in Representing Spatio-Temporal Wildlife Migration Data
New GPS-collar technology is providing wildlife ecologists the opportunity to collect an immense

amount of location and time-stamped data, giving new insight into animal migration and ecology that was not possible before. Mapping and visualizing the wildlife migration data in meaningful ways poses many design challenges. This presentation focuses on the temporal data and cartographic design challenges encountered in the creation of thematic maps and data graphics for the in-production Atlas of *Wildlife Migration: Wyoming's Ungulates,* as well as associated scientific and conservation reports. The recent discovery of the longest land mammal migration in the lower 48 states, the 150-mile "Red Desert to Hoback" mule deer seasonal migration, will be featured in this presentation. Mapping Mobilities, Friday 8:30–10:00 am

Treves, Richard, Southampton University

Five Ways to Enhance your Animated, Narrative Map

With the rise of powerful, free tools such as Google Earth Tour Builder and Esri Story Maps there is a rising interest in creating animated narrative maps or map tours. The author has been performing user tests on map tours and has successfully set them as student assignments in a cartography course since 2011. Based on his experiences this talk will present five best practices for designing effective map tours: effective camera paths between tour locations in terms of speed and route; how to use layers; use of screen and mouse annotations; the importance of an audio narrative and the power of switching between thematic map and reality (photos/streetview). Narrative Maps, Thursday 8:30–10:00 am

Tyner, Judith, California State University, Long Beach

From Ruling Pen to GIS: Women Cartographers in the 20th Century

From an unsung female cartographer/map publisher in the nineteen-teens through the many women mapmakers of World War II to the early pioneers in GIS, the role of women in cartography in the 20th century has only recently begun to be explored. While Marie Tharp is probably the most visible and honored woman, there were many others who not only furthered the role of women, but also the advancement of the field. This paper looks at the history of women in cartography, their achievements and watershed moments through the activities and accomplishments of selected women in publishing, research, government, academia, and GIS. History of Cartography, Friday 3:30–5:00 pm

van der Maarel, Hans, Red Geographics

How the Dutch Created The Netherlands

Seeing a modern Dutch coastline on a map that's supposed to portray something set in the past is something that annoys me immensely. In this talk I will highlight some of the big, man-made changes in Dutch geography. Mapping History, Thursday 8:30–10:00 am

Vasiliev, Ren, SUNY College at Geneseo
Why Are Timelines Maps?
Timelines, those charts/diagrams/conveyors of historical information, are sometimes called "maps of time." I have always wondered why this is so. Some of them do indeed include the kind of spatial information that maps (the kind that are defined as representations of spatial information) do. Others show historical information, but without obvious spatial coherence. I am interested in parsing the difference between these with the intent of deciding what it is that makes some of these timelines maps and others something else. Narrative Maps, Thursday 8:30–10:00 am

Wessel, Nate and Michael Widener, University of Cincinnati
Rethinking the Urban Bike Map
Bike maps, commonly produced by city departments of transportation to promote bicycling, tend to speak as though to an audience that engages only in casual recreational riding. In cities that don't have extensive segregated bicycle infrastructure, these maps have relied primarily on the subjective identification of "bike routes" or "good" vs. "bad" streets for bicycling. Such maps are inappropriate for the diverse audience they're typically aimed at. More objective information must be mapped before subjective route-maps can be helpful for specified types of cyclists. Cincinnati is taken as a case study and a largely objective bike map is developed for a broad range of actual and potential bicyclists in its hilly, urban area with little specialized bicycle infrastructure. Transportation Maps, Thursday 3:30–5:00 pm

White, Travis, and Aaron Taveras, University of Kansas
Curating the Terrain
The authors have been invited to develop an exhibit on cartographic terrain representation for the University of Kansas Art & Design Gallery in the fall of 2014. Our goals for this exhibit are twofold: first, we wish to engage our audience in the processes used to transform "real" physical environments into cartographic depictions of those environments; second, we wish to challenge conventional notions about how the physical environment "should" appear on maps by comparing a variety of quantitative and artistic techniques for displaying topographic features. This talk follows the development of this exhibit from conception to actualization, drawing upon our own work and our key inspirations. Terrain, Friday 8:30–10:00 am

Wielki, Jeff, Mount Pleasant Maps
Foodshed Mapping for Calgary
Calgary is surrounded by agriculture land and is in the heart of Alberta's cattle country in Canada. In reality, much of the food produced there is exported, but if that food production is assumed to flow into Calgary, how far out does a food boundary need to exist to meet consumption? Is that distance still considered local? Will that be true in the future? Dasymetric cartographic modeling techniques were used to disaggregate Statistics Canada's food production data for Alberta and BC. This, in combination with road network

and land cover data, modeled the distribution of production of various food groups. The resulting foodshed was determined and mapped given a variety of scenarios and definitions of local food. Depending on the definition of local and what the food production goal is, the results show that it is possible for food production in Alberta to meet the food demand in Calgary. Mapping Population & Landscape, Friday 3:30–5:00 pm

Wolf, John, USGS

The Chesapeake Bay: Time is of the Essence

The Chesapeake Bay Program (CBP) is a unique regional partnership that leads and directs Chesapeake Bay restoration and protection. Time plays an important and multifaceted role in many of the Chesapeake Bay initiatives. The ability to communicate phenomena that vary over many different geographies and time steps (daily to seasonal to annual to decadal and more) is key to educating both technical and nontechnical audiences. Fortunately, as one of the most studied ecosystems in the world, the Chesapeake has a wealth of environmental and socioeconomic data from which to work. To support a new Chesapeake Watershed Agreement we have been developing a variety of time-enabled story maps to help communicate change in ecological and socioeconomic factors. This presentation will highlight a few of those time-based communication products focusing on both technical and non-technical concepts, including cooperative geovisualization projects with both Stamen and Esri. Rendering the Past, Friday 8:30–10:00 am

Zaniewski, Kazimierz, University of Wisconsin-Oshkosh

Thematic Mapping with Free Software PhilCarto

In addition to ArcGIS and other major mapping software packages, there are several lesser known but fairly powerful programs designed for generating high quality thematic maps. One of them is PhilCarto, free software developed and maintained by a French geographer at the University of Bordeaux. This mapping software is capable of producing all major types of thematic maps, including choropleth, proportional symbol, bar graph, pie chart, dot density, flow, 3-D surface, and gravity maps. It also has a set of statistical tools for mapping the results of exploratory data analysis, including ternary diagrams and regression, factor, and cluster analyses. The PhilCarto cartographic output is of very high quality and can be exported to illustration software for final touches. A companion to PhilCarto is PhilDigit, a boundary creation (digitization) and manipulation software. It can import and export ArcGIS (shapefiles) and MapInfo (mif/mid) boundary files. New Tools, Friday 10:30 am–12:00 noon