

NATIONAL GEOSPATIAL ADVISORY COMMITTEE MEETING
June 24 - 25, 2014
Minutes

The National Geospatial Advisory Committee (NGAC) held a public meeting from 8:30 a.m. to 5:00 p.m. on June 24, 2014 and from 8:30 a.m. to 4:00 p.m. on June 25, 2014. The meeting was held at South Interior Building in Washington, DC. In accordance with the requirements of the Federal Advisory Committee Act, the meeting was open to the public.

NGAC Members present:

Robert Austin, Chair
Daniel Cotter, Vice Chair
Talbot Brooks
Keith Clarke
Patricia Cummens
David DiSera
Steve Emanuel
Bert Granberg
Frank Harjo
Jack Hild
Michael Jones
Jeff Lovin
Jack Maguire
Keith Masback
Roger Mitchell
Michele Motsko
Kevin Pomfret
Douglas Richardson
Anthony Spicci
Julie Sweetkind-Singer
Gary Thompson
Harvey Thorleifson
Molly Vogt
Jason Warzinik
David Wyatt

Anne Castle, Chair of the Federal Geographic Data Committee; Ivan DeLoatch, Executive Director of the Federal Geographic Data Committee and Designated Federal Officer (DFO) for the NGAC; and John Mahoney, alternate DFO for the NGAC, were also in attendance.

Other Attendees:

Andrew Barrows (FHWA), Wendy Blake-Coleman (EPA), Mike Domingue (New Hampshire National Guard), Matt Falter (Intergraph), Tricia Gibbons (LEAD Alliance), Andrea Johnson (Census Bureau), Jerry Johnston (DOI), Dennis Klein (Boundary Solutions), Butch Lazorchak (Library of Congress), Steve Lewis (US-DOT), Lynda Liptrap (Census Bureau), Stephen Lowe (USDA), Arista Maher (FGDC), Thomas Roff

(FHWA), Ken Shaffer (FGDC), Jon Sperling (HUD), John Steffenson (Esri), Chris Vasko (The SI Organization), Bryan Vickers (Pace, LLP)

TUESDAY, JUNE 24:

Call to Order and Welcome

Dr. Robert Austin, NGAC Chair, called the public meeting to order at 8:30 a.m. and welcomed the NGAC members and audience to the meeting. Dr. Austin provided an overview of the purpose, objectives, and logistics of the meeting.

Review and Adoption of April 2014 Meeting Minutes

Dr. Austin reviewed the draft minutes of the April 2014 NGAC meeting and called for approval.

DECISION: The NGAC adopted the minutes of the April 1-2, 2014 webinar meeting.

Perspectives from the Chair

Dr. Austin provided brief remarks on the recent activities of the NGAC and his objectives for the meeting.

Leadership Dialogue

Anne Castle, FGDC Chair, provided an update on the recent activities of the FGDC, along with perspectives on Department of Interior (DOI) and Administration priorities. Ms. Castle began by recognizing the contributions of NGAC member Dr. Carolyn Merry and FGDC staff member Doug Nebert, both of whom recently passed away unexpectedly.

FGDC is developing action plans for the implementation of the NSDI strategic plan. Encourage NGAC's assistance in partnering with external organizations to best implement the NSDI strategic plan. FGDC is also planning additional NSDU Leaders Forums to solicit advice and keep interested parties informed on progress.

The NGDA Management Plan was completed in March and is in its implementation phase. FGDC is integrating geospatial technology efforts among agencies to avoid duplication and leverage assets.

Ms. Castle noted that the NGAC subcommittees have been very active. Tim Newman will report on the Landsat program, in tandem with the Landsat Advisory Group's report on their activities. DOI and NASA are in the process of charting the future of the Landsat program for the next 20 years. An architecture study team jointly led by NASA and USGS has been working on a preliminary report on the future of Landsat; the final report should be issued in August 2014.

Geospatial Education and Workforce Subcommittee: DOL has asked for input on the revision of Standard Occupational Classifications, which are up for review. This is a good opportunity for NGAC to provide input on this topic regarding the inclusion of geospatial professionals.

Geolocation Privacy Subcommittee: FGDC Vice Chair Scott Bernard has identified a point of contact within OMB for geospatial privacy issues. Also, a PCAST report on the intersection of data and privacy was recently released, which is an interesting topic for NGAC to explore.

National Address Database: Look forward to seeing the results of the subcommittee's work in identifying uses cases for a National Address Database. This is an important issue.

The FGDC Steering Committee has approved the addition of a new subcommittee on HIFLD. This is the unclassified portion of the Homeland Security geospatial data. The unclassified portion will be available on the Geospatial Platform.

FGDC is in the midst of a second GAO review. The second review is intended to review progress from the first review, and to look at specific data themes, including imagery and addressing. GAO has also asked DOI for examples of the use of geospatial technology in the federal sector. If NGAC members have ideas/examples that would be compelling, that would be helpful.

The FGDC Steering Committee will be meeting on Thursday, June 26. One of the presentations to be made at this meeting will be on the topic of the Open Water Data Initiative. FGDC and the Advisory Committee on Water Information (ACWI) are proposing a partnership to bring together water data sets scattered across agencies for the purpose of advancing a database on spatial water data. They will begin with a pilot project. We will keep the NGAC apprised as this project is developed.

FGDC Update

Ivan DeLoatch, FGDC Executive Director, provided a report on recent FGDC activities. Highlights included the following:

HIFLD. The FGDC Steering Committee endorsed the Homeland Infrastructure Foundation Level Data (HIFLD) group as an FGDC Subcommittee. The HIFLD Subcommittee will serve as a focal point to coordinate homeland infrastructure geospatial information requirements among Federal, State, local, tribal, territorial, and private organizations.

GAO Review. The current GAO engagement was initiated in January 2014. Issues under review include the following:

- Determine the implementation status of prior recommendations.
- Describe the types of geospatial data that selected federal agencies and States are acquiring.
- Determine the extent to which selected federal agencies and States invest in potentially duplicative geospatial data. Focused primarily on address and imagery data.

GAO is also meeting with States as a part of this engagement (MD, OH, SC, MT, WA). GAO anticipates a draft report in the December timeframe for agency review with a final report in the February 2015.

Standards.

- Spatial Data Transfer Standard (SDTS), Parts 1-7 are being voted on for withdrawal
 - Posted notice in Federal Register for comments (1 received)
 - Geography Markup Language (GML) now satisfies the encoding requirements that SDTS provided.
- External Standards pending vote:
 - Aeronautical Information Exchange Model (AIXM) 5.1
 - GeoRSS: both GeoRSS-Simple and GeoRSS-GML
 - ISO/IEC* 15444-1:2004 Technical Corrigendum 1:2007 and ISO/IEC 15444-1:2004 Technical Corrigendum 2 JPEG 2000

Steering Committee. Recent membership changes:

- Tim Trainor, Census Bureau, Chief, Geography Division – New Dept. of Commerce SAOGI
- Joe Klimavicz, Dept. of Justice, Deputy Assistant Attorney General for Information Resources Management and Chief Information Officer – new DOJ SAOGI
- Jeff Bell, NGA, Acting Director of Enterprise Architecture and Standards - replaces Michelle Motsko as the DoD SAOGI

NGDA Management Plan. Recent activities include the following:

- Implementing actions identified in the Plan
- Assisting Data Theme Leads
- Creating Communities on the Geospatial Platform
- Starting the Baseline Assessment

ACTION: FGDC will provide the Geospatial Line of Business (LOB) Investments Definitions summary to NGAC members.

NSDI Strategic Plan Implementation Discussion

Dan Cotter provided an update on the implementation status of the NSDI Strategic Plan. He noted that initial action plans for the implementation of the strategic plan had been distributed to the NGAC and FGDC Steering Committee. Discussion topics were presented to the NGAC for their feedback, including strategies for involvement and engagement of the non-Federal geospatial community, and NSDI sustainability and continuity. NGAC members were divided into groups in order to brainstorm on these topics.

Mr. Cotter also noted that the Program Manager – Information Sharing Environment had developed a draft Geospatial Information Reference Architecture (GIRA) document for review and comment. He indicated that the draft would be sent to NGAC members for comment.

ACTION: DHS will provide the draft Geospatial Information Reference Architecture (GIRA) to FGDC and the NGAC for review and comment.

Geospatial Privacy Subcommittee Report

Doug Richardson reported on the activities of the NGAC Geospatial Privacy Subcommittee. The membership of the Subcommittee was briefly reviewed. The White House “Big Data and Privacy” report and the PCAST report are two major reports related to privacy issues that were recently released. The Subcommittee has done an initial assessment of these reports.

Dr. Keith Clarke gave a summary of the “Big Data and Privacy” reports. The White House report on “Big Data: Seizing Opportunities, Preserving Values” examines how big data “will transform the way we live and work and alter the relationships between government, citizens, businesses, and consumers.” The report makes specific policy recommendations on: advancing a consumer bill of rights, passing national data breach legislation, extending the law to non-US persons, protecting educational big data, and expanding technology to prevent discrimination (e.g., in pricing). The President’s Council of Advisors on Science and Technology (PCAST) report was designed to complement the White House report with technical literature and examples. The key finding is that current emphasis on protecting data at point of collection is no longer valid. It recommends a use-based privacy approach, and shifts from consent to

analytics, as well as from consumer to company. Additionally, it says that the government has a role to create standards, educate, encourage markets, and provide punishments.

ACTION: The Geospatial Privacy Subcommittee will summarize the NGAC's observations on the recent Administration reports on "Big Data and Privacy"

ACTION: The Geospatial Privacy Subcommittee will meet with OMB/FGDC staff to provide NGAC feedback on the Big Data and Privacy reports.

ACTION: The Geospatial Privacy Subcommittee will update the outline of the subcommittee's draft paper on geospatial privacy prior to the September NGAC meeting.

Landsat Advisory Group Status Report

Roger Mitchell and Tim Newman briefed the NGAC members on the Landsat Advisory Group's (LAG) activities, along with a summary of the Landsat program's recent accomplishments. Mr. Newman reported on the operational status of Landsat 7 and 8. Mr. Mitchell gave an update on the subcommittee's activities. The LAG is in the process of reviewing and updating the 2012 paper, "The Value Proposition for Ten Landsat Applications."

ACTION: The Landsat Advisory Group will develop draft examples of Landsat applications prior to the September NGAC meeting

Geospatial Education and Workforce Subcommittee – Session 1

Dave DiSera and Pam Frugoli (Department of Labor) briefed the NGAC members on the Standard Occupational Classifications (SOC) and Competency Model activities of the Geospatial Education and Workforce Subcommittee of the NGAC. Mr. DiSera updated the NGAC on the recent activities of the Subcommittee, including the development of a white paper in 2013. The Subcommittee reviewed the Federal STEM Strategic Plan and the NRC Report on the Future of the Geospatial Workforce, among other documents.

Ms. Frugoli spoke about the updates to the Geospatial Technology Competency Model, which the USDOL is currently working on. The USDOL supports workforce training and curriculum development. USDOL works with industry partners to get their review to update models, and then they validate the models with subject matter experts across the country. She also discussed the process for revisions to the Standard Occupational Classifications (SOC), which is in its beginning stages. She noted that there was an opportunity for public comment, which would be open until July 21. She discussed how input could be provided recommending updates to geospatial occupations in the SOC codes.

ACTION: The FGDC and the NGAC will provide input to the Department of Labor (DOL) by July 21 on the next round of revisions to the DOL Standard Occupational Classifications.

Lightning Session 1

An opportunity for brief announcements was provided to NGAC members.

Tribal Geospatial Issues - Frank Harjo and David Wyatt: Mr. Harjo and Mr. Wyatt provided an update on geospatial programs within the more than 560 Federally-recognized tribes in the U.S. Tribes play an important role in terms of national geospatial data assets because of the many tribal areas across the U.S. Tribes have a wide range of population, from a few hundred to thousands of members. In 2010, the

National Congress of American Indians published a National Tribal Capacity Survey. This gave a picture of infrastructure information about Tribes as related to exchange of environmental information. The results showed that many tribes reported that hardware and software capabilities were lacking, and there was a lack of funding and technical expertise. This included limited funding for geospatial activities. Tribes are often willing to share data, but they want reciprocal relationships. Mr. Harjo and Mr. Wyatt noted that Tribes are supportive of a National Address Database, as well as the goals in the NSDI Strategic Plan and the NGDA Management Plan.

Gary Thompson: NOAA's National Geodetic Survey has introduced a new geometric datum, which will allow for individual plate motions, and coordinates will have velocity components. Mr. Thompson recommended that the geospatial community take a close look at how this will affect ongoing activities, as it will likely have a significant impact. A key point is that should be emphasized to the NGS is that state plane coordinates need to be incorporated into the new datum.

Why isn't the US Metric? - Keith Clarke: In the US, the metric system has been used in science, education, and manufacturing since the 19th century. Thomas Jefferson, pioneer of the U.S. Public Land Survey Systems, was a major advocate of decimals and the metric system. From the point of view of mapping, the US has been mapping exclusively metrified following the adoption of NAD83. The Metric Board was disbanded in the early 1980s. However, entities such as the US military have continued to use metric, due to the need to work with other nations in NATO. The university and research community, as well as some manufacturing industries, use metric as well. Dr. Clarke suggested that the NGAC advocate for the broader adoption of the metric system.

Harvey Thorleifson - Charting a Path Forward for Geological Mapping: Geological mapping is an essential service and saves money and lives. Ongoing geological mapping will be supported by new drilling, geochronology, geochemistry, geophysics, etc. All geological mapping will be vertically georeferenced using the most current data.

Jack Maguire - Quality Data for Everyone: Mr. Maguire provided a description of geospatial activities in Lexington County, SC. In the past, quality data was not readily available. Their top priorities were set in order to meet state and local laws, as well as to provide for customer needs. The County has created 147 GIS layers out of 274 total layers.

Doug Richardson - K-12 Geography Education: AAG has developed a resolution designed to urge the administration to increase geography and GIS education in K-12 schools. Four Secretaries of State, four Secretaries of Defense, as well as many others in government and private industry have endorsed this proposal. Esri has donated \$1 billion in GIS software to US K-12 schools. AAG is supporting this effort.

Bert Granberg - PLSS: The Public Land Survey System (PLSS) is a system for subdividing land in the U.S., and is one of the foundational data layers upon which many other datasets depend. We don't have a precise representation of the PLSS nationally or in the state of Utah.

Day 1 Wrap-Up/Planning for Day 2

The Chair made announcements regarding logistics for the evening's activities and the next day's meeting.

Adjournment for Day 1

The Chair adjourned the meeting at 5:30 p.m.

WEDNESDAY, JUNE 25:

Welcome, Summary of Day 1, Overview of Agenda

Dr. Austin called the meeting to order and gave an overview of the day's agenda. Dan Cotter provided a summary of the previous day's events.

Lightning Session 2

Members provided additional announcements to the Committee:

Julie Sweetkind-Singer: Geospatial Education Preservation and Access: Researchers and scientists at Stanford tend to do DIY data sharing; there isn't any preservation of data or allow for easy sharing of data. Several years ago, Stanford began working in conjunction with UC-Santa Barbara to develop a digital repository for content at these universities. The content is accessible to anyone around the world from permanent links. The storage is redundant in geo-diverse locations and audited systematically to ensure bit preservation. There are no restrictions on file format types. Users must request access to the system, but following that, they have full ability to post documents to the system themselves. All students are required to post their theses and dissertations on the repository. All content is indexed in the library catalog. One example of use of the repository was presented. They also have a dedicated geospatial portal in beta version and it will eventually be integrated directly into the library catalog. In the future, they hope to bring in larger data sets that are greater than 5 GB, among other enhancements.

Address Subcommittee Status Report

Tony Spicci, Chair of the Address Subcommittee, reported on the status of the subcommittee's activities. The NAD was given guidance from the FGDC/NGAC on identifying compelling use cases demonstrating the value and utility of a NAD, as well as describing the potential relationship between a NAD and National Parcel Data and identify possible opportunities to coordinate and leverage the two efforts. The current use cases were reviewed. The NGAC members were divided into smaller groups in order to discuss the use cases identified by the Subcommittee, and each reported out on their individual use cases.

Arizona Use Case: An opportunity for efficiencies at the state level in order to accomplish state business needs. It also has benefit to the local governments.

Lexington County/Boone County Use Case: Saving staff time, saving costs, consistency of use across agencies, helping counties/localities organize by providing a model, reducing error, back-up of data and reduction of duplication of effort, voter registration.

Consumer Financial Protection Bureau Use Case: Legal objectives (prevention of discriminatory lending practices); new addresses whose incorporation into databases may be delayed; reducing burden on local agencies in order to comply with the law.

Tribal Use Case: Emergency response, delivery of packages; tribes tend to be contacted multiple times by multiple agencies (large burden) which could be decreased

Emergency Response Use Case: Impact at local, state and national levels; common geography

Steve Lewis (USDOT) spoke about his agency's interest in supporting the development of a requirements study for a National Address Database. He indicated that his agency will work with Census to coordinate this effort.

ACTION: The Address subcommittee will update the draft National Address Database use cases, incorporating NGAC feedback, by early July.

ACTION: The Address subcommittee will prepare a consolidated paper, including the revised use cases and introduction, prior to the September NGAC meeting.

Geospatial Education and Workforce Subcommittee – Session 2

Keith Masback and Darryl Murdock (USGIF) spoke about certification and workforce development. Mr. Murdock spoke about USGIF, including that USGIF is the only organization accrediting geospatial programs. They have given out 424 collegiate GEOINT certificates. A list of the accredited programs was shown; three are currently in review.

The most well-known definition of GEOINT stems from the U.S. Code, Title 10, Section 467: "The term 'geospatial intelligence' means the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the earth, Geospatial intelligence consists of imagery intelligence, and geospatial information." To work with NGA, the USGIF has developed a set of CRADA tasks, beginning with standardization of the certification program to credentialing transportability and standardized training across the global GEOINT community. They are also exploring opportunities to look at a universal GEOINT certification.

Geospatial Platform Update

Dr. Jerry Johnston provided an update on the Geospatial Platform. The components of the Platform include: Web Presentation and Collaboration; Search/Catalog; Shared IT/Data Investments; and National Geospatial Data Assets. The Geospatial Platform homepage was displayed. It currently promotes the release of the Homeland Security GeoCONOPS Community. The team is working on advancing the World Wide Human Geography Data (WWHGD) Working Group community in order to share international data on the Platform. They are also about to release enhancements to "trending data" to make it more useful and current. The team is also testing a viewer application for discovery and mashups.

The DHS GeoCONOPS was discussed. It is a collaborative community focused on providing tools, data, and best practices for emergency response and homeland security purposes. The most useful, authoritative datasets have been compiled into a live web environment.

The Search/Catalog component of the catalog has been enhanced in a team effort between GeoPlatform.gov and Data.gov. Updates have been made to the catalog search function within collections, as well as enhanced capabilities for marking content owned by others for inclusion in a community.

The Shared Data and IT investments are also being enhanced. In support of the President's Climate Data Initiative, HSIP data was released as part of the Platform. Food security is another initiative for which data will be provided soon. The Geospatial Platform team is beginning to work on the Open Water Data Initiative as well.

Public Comment Period

An opportunity for members of the public to provide comments to the Committee was provided.

Butch Lazorchak, Library of Congress: NDIPP works with external partners to address concerns about preserving digital data. The National Digital Stewardship Alliance builds on NDIPP to advance capacity for preservation. A key document is the 2015 National Agenda for Data Stewardship, which describes issues of concern on the digital stewardship community.

Stephen Lowe, USDA: Mr. Lowe described the USDA Esri ArcGIS FISMA Authority to Operate (ATO) activity. USDA has worked with Esri to gain ATO approval, which will be available for other agencies to use. Other agencies will not have to complete a separate certification process for ArcGIS online. He indicated that USDA has met with DOI, EPA, DHS, and other agencies in regard to this effort. The next steps are to formulate agency partnerships, convene meetings with agencies, and move forward with the implementation process.

Chris Vasko, The SI Org: SI has reached out into the geospatial community - remote sensing/applications sector to develop a market assessment on user needs. A summary of the market survey was provided to the members. 454 organizations were surveyed to determine their needs and value for capabilities. Mr. Vasko offered to share additional information with any interested parties.

Dennis Klein, Boundary Solutions: Mr. Klein discussed climate change issues and technology approaches. He indicated that climate change approaches may involve changing settlement patterns to encourage less dependence on automobiles. State agencies are promoting driving less, along with national NGOs.

Mike Domingue, NH National Guard: Mr. Domingue provided comments on the previous day's discussions. The National Guard has the ability to match capabilities in addressing disaster events. He indicated that the National Guard can offer information to complement HSIP. He indicated that the National Guard is committed to helping develop requirements and sharing actionable knowledge with State and Federal agencies.

FirstNet Update

Dan Cotter reported on activities related to the FirstNet initiative, along with Dusty Rhoads of the Department of Homeland Security's Office of Emergency Communications. Mr. Rhoads reported on public safety GIS and the NECP Emergency Communications Ecosystem. The updated NECP recognizes the importance of the whole-community approach and the broader emergency communications ecosystem.

3D Elevation Program (3DEP) Update

Vicki Lukas (USGS) gave an update on the recent developments related to the 3D Elevation Program (3DEP). The National Elevation Dataset and Lidar data were both reviewed as components of 3DEP. USGS and NOAA co-lead the Terrestrial Elevation dataset. USGS has managed the National Elevation Dataset and the National Digital Elevation Program for the past 15 years. USGS embarked on the National Enhanced Elevation Assessment (NEEA) several years ago to understand and document needs and mission requirements related to elevation data. 3DEP is designed to address the mission-critical requirements of 34 Federal agencies 50 states, and a sampling of local governments, tribes, private, and not-for-profit organizations documented in the NEEA. It will also increase the quality level of lidar data, among other advantages. A chart with the quality levels of 3DEP data was shown. The NEEA study

showed that more needs could be met with higher quality data. Ms. Lukas indicated that a new 3DEP initiative plan and annual report will be published soon, and will be shared with the NGAC.

Geospatial Issues – Open Discussion

The NGAC held a facilitated discussion of key geospatial topics. Key points included the following:

UAVs: Kevin Pomfret led a discussion about legal issues, FAA regulations, liability issues, privacy, and economic competitiveness issues related to Unmanned Aerial Vehicles (UAVs). Key questions include: How will UAVs contribute to the geospatial community's vision? If drones are readily available, what does that mean for national security? Is anyone in the geospatial community addressing this issue?

Climate Change: Pat Cummins led a discussion on the implications of climate change. Building community resilience comes into play at all levels of government and in NGOs. This is data-driven. How can the geospatial community contribute to the discussion on this topic? In March, the White House launched the Climate Data Initiative. There was a call for public-private partnerships, and planning for mitigating the effects of climate change. There are serious impacts of climate change here and around the world, and in many different areas such as public health, economic resilience, infrastructure, and food security.

Tribal-Local Collaboration: Frank Harjo led a discussion on strategies to improve collaboration with Tribes. Where are the best places to find Tribal information? Tribal boundary information in the Geospatial Platform might be one place to start. This would allow Tribes to self-correct boundaries in datasets on the Platform, and combine local and Tribal governments' data.

Meeting Summary/Wrap-Up

The results and actions from the meeting were briefly summarized. The next NGAC meeting will take place on September 23-24 at the National Conservation Training Center in Shepherdstown, WV.

Meeting Adjournment

The Chair adjourned the meeting at 4:00 p.m.

Certification

I hereby certify that, to the best of my knowledge, the foregoing minutes are accurate and complete.

Dr. Robert Austin, Chair, National Geospatial Advisory Committee

Mr. Ivan DeLoatch, Designated Federal Officer, National Geospatial Advisory Committee

These minutes will be formally considered by the Committee at its next meeting, and any corrections or notations will be incorporated in the minutes of that meeting.

Note – These minutes were approved by the NGAC on September 23, 2014

June 2014 NGAC Meeting Summary of Presentations and Handouts

The following is a list of the presentations and handouts from the meeting. These meeting materials are posted along with the minutes at: https://www.fgdc.gov/ngac/meetings/june-2014/index_html

FGDC Update

- FGDC Report

NSDI Strategic Plan Implementation

- NSDI Strategic Plan Update

Geospatial Privacy Subcommittee

- Big Data and Geospatial Privacy
- Geospatial Privacy Subcommittee Report

Landsat Advisory Group

- Landsat Program Update
- Landsat Advisory Group Report

Geospatial Education and Workforce Subcommittee

- Workforce Subcommittee Report
- DOL Geospatial Workforce Development Resources
- USGIF Geospatial Certification Activities

Address Subcommittee

- Address Subcommittee Report

Program Updates

- Public Safety Communications
- 3D Elevation Program

NGAC Member Lightning Sessions

- Tribal Geospatial Issues – Harjo/Wyatt
- New Geometric Datum – Thompson
- Why isn't the US Metric? – Clarke
- Charting a Path Forward for Geological Mapping – Thorleifson
- Quality Data for Everyone – Maguire
- Stewardship Model for the Public Land Survey System – Granberg
- Geospatial Data Preservation and Access – Sweetkind-Singer