

National Geospatial Advisory Committee Meeting
April 3-4, 2018
Minutes

The National Geospatial Advisory Committee (NGAC) held a public meeting from 8:30 a.m. to 5:00 p.m. on April 3 and from 8:30 a.m. to 4:00 p.m. on April 4, 2018. The meeting was held at the Department of Interior, in Washington, DC. In accordance with the requirements of the Federal Advisory Committee Act, the meeting was open to the public.

NGAC Members present:

David Alexander
Frank Avila
Sarah Battersby
Talbot Brooks
Gar Clarke
Garet Couch
Patricia Cummins
Stuart Davis
Matthew Gentile
Frank Harjo
Xavier Irias
Roberta Lenczowski
Roger Mitchell
Keith Masback
Rebecca Moore
Kevin Pomfret
Carl Reed
Amber Reynolds
Douglas Richardson
Julie Sweetkind-Singer
Cy Smith
Rebecca Somers
Jennie Stapp
Harvey Thorleifson
Jason Warzinik
May Yuan

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

NGAC Members not in attendance:

Laxmi Ramasubramanian

Other Attendees:

Carolyn Austin-Diggs (GSA), Deirdre Bishop (U.S. Census Bureau), John Byrd (MAPPS), Michael Donnelly (DHS), Lucia Foulkes (FGDC), Tony Frazier (Radiant Solutions), Tricia Gibbons (Lead Alliance), Kass Green (Kass Green & Associates), Tony LaVoi (NOAA), Steve Lewis (DOT), Lynda Liptrap (U.S. Census Bureau), Adam Martin (Esri), Kevin Murphy (NASA), John Organek (EIS Council), Kelly Palmer (USGIF), Chris Powell (NT Concepts), Chris Tucker (Yale House Ventures).

Tuesday, April 3, 2018 NGAC Public Meeting**Welcome, Objectives, and Introductions**

Julie Sweetkind-Singer, NGAC Chair called the public meeting to order at 8:30 a.m. EST and welcomed members and attendees. She noted Dr. Tim Petty, Assistant Secretary for Water and Science at DOI and FGDC Chair, will be providing introductory remarks. Member and attendee introductions were made. The chair provided an overview of the agenda for the first day.

Review and Adoption of December 2017 Minutes

The draft minutes of the December 11, 2017 NGAC webinar meeting were reviewed and the Chair called for approval.

DECISION: The NGAC adopted the minutes of the December 2017 NGAC meeting.

Leadership Dialogue

FGDC Chair Dr. Tim Petty welcomed NGAC members and attendees. He provided a background of his career and discussed his current role at DOI. He introduced Dr. Andrea Travnicek, Deputy Assistant Secretary for Water and Science and noted that she will be working with him on FGDC initiatives. Key messages:

- Need to emphasize on data, develop good governance. NGAC can provide feedback on policy issues affecting data (users, providers, sources).
- Geospatial data and technology are on the cutting edge of key issues for the country.
- Understanding geospatial capabilities will help us to learn where we are going, and allow creativity to enable agencies to meet their mission goals.
- Availability of data is critical (making data available and making it better). Landsat is a good example – making Landsat data available to the public has been very successful.
- Important to reach out beyond the geospatial community. There are groups and communities that are not familiar with geospatial tools – need to reach out to new groups and organizations. .

ExCom Roundtable

The NGAC held an FGDC Executive Committee Roundtable session to provide an opportunity for NGAC and ExCom members to discuss geospatial issues of common interest. Participants in the panel included Ivan DeLoatch (FGDC), Steve Lewis (DOT), Tony LaVoi (DOC-NOAA), Deirdre Bishop (DOC-U.S. Census Bureau), and Carolyn Austin-Diggs (GSA).

ExCom members talked about key issues and initiatives in their respective agencies including the National Address Database (NAD), the President's Management Agenda (PMA), plans for 2020 Census, imagery issues, DHS successes in emergency response, and GSA's schedules for earth observations. NGAC members actively engaged in this dialogue and discussed ideas to help on key issues and initiatives.

Geospatial Platform Update

Ivan DeLoatch (FGDC) provided an overview of recent activities and current capabilities of the GeoPlatform. Mr. DeLoatch reported on the outcomes of recent GeoPlatform planning sessions conducted with the FGDC Executive Committee and the Coordination Group. Key messages from these sessions included the following:

- All supported continuation of GeoPlatform improvements
- Need more outreach and help on how to utilize GeoPlatform capabilities for agencies/users
- Improve search and discovery
- Utilize the marketplace and enhance it
- Users highly supportive of cloud services
- Continue communities and drive more users to them
- Revisit National Geospatial Data Asset (NGDA) management requirements and level of effort
- Assess GeoPlatform features and communities' usage. Expand in these areas
- Improve outreach and communication, education, and user's guides
- Make GeoPlatform the key resource for geospatial information

Following this this update, NGAC members engaged in a discussion based on the following question:

- *How should the GeoPlatform engage with State and local governments to make the GeoPlatform more applicable and valuable?*

Feedback from NGAC members:

- Training should be available on GeoPlatform on how to find data or other services (demo needed)
- The Federal government should have more consistent data collection strategies
- Focus on trusted providers (authoritative data)
- Put together workflows for State and local governments to more effectively utilize the Platform
- Look into Spatio-Temporal Asset Catalog (STAC) approach
- From academic perspective, data is used from regional and local sources. Academic research could use/share data, but repository is needed for research outcomes
- Can GeoPlatform be a library resource?

Mr. DeLoatch discussed plans to organize a webinar to demonstrate the GeoPlatform capabilities to NGAC members.

ACTION: FGDC will hold webinar(s) to demonstrate capabilities of the GeoPlatform and capture feedback from NGAC members. NGAC members are encouraged to register for accounts on the Geospatial Platform (www.geoplatform.gov) prior to webinar.

Landsat Advisory Group

Peter Doucette (USGS) provided an update on the Landsat Program at USGS. He reported that the Land Remote Sensing Program has been renamed as the National Land Imaging Program. Dr. Doucette discussed the Presidents' budget and appropriations and noted funds needed for Landsat 9. An updated of Landsat 7, Landsat 8, Landsat 9, and Landsat 10 was provided. Landsat 9 will be ready for launch in December 2020. USGS conducted a survey on user needs for Landsat 10. Findings included the following:

- At minimum, users needed continuity of Landsat data and derived products with free and open data access.

- Need weekly clear observations, 10m spatial resolution for (VNIR-SWIR) and 30-60M for thermal, and additional red edge bands and narrower bands in VNIR and SWIR regions
- Users want clear imagery every 3 days at 5-10 mi spatial resolution, and continuous 10nm-wide VNIR-SWIR band and more (5-8) thermal bands.
- Federal and non-federal needs were similar.

Frank Avila, Landsat Advisory Group (LAG) Chair, provided an update on LAG activities.

- **Task #1 – Architectures for Future mission:** The paper “Recommendations for Possible Future U.S. Global Land Data Collection Missions Beyond Landsat 9” was distributed to the NGAC for review and approval. The paper looks at where technology is today and its impacts beyond Landsat 9. LAG member Kass Green discussed findings and recommendations.
- **Task #2 – Temporal Data Cube Study:** The team presented the paper “The Feasibility and Utility of Implementing Temporal Data Cubes to support Projection or ‘Forecast’ Models and Land Change Trends” for NGAC’s review and approval. LAG member Bobbi Lenczowski provided an overview of the paper and discussed finding and recommendations.
- **Task 3 – Fee Recovery for Landsat Data:** The subcommittee is working to develop a paper on fee recovery options for Landsat Data. The subcommittee will designate a team lead to work on this task.

DECISION: The NGAC adopted two papers developed by the Landsat Advisory Group in response to the 2017 FGDC guidance to the NGAC:

- NGAC Landsat Future Missions Recommendations
- NGAC Landsat Data Cube Feasibility for Forecasting

ACTION: The Landsat Advisory Group will develop a paper in response to Task 3 in the 2017 Guidance, addressing possible fee recovery options for Landsat data. The LAG will provide a status report at the June 2018 NGAC meeting, and plans to complete the draft paper prior to the September 2018 NGAC meeting.

Federal Geospatial Highlights

Ivan DeLoatch (FGDC) provided an update on current FGDC activities. Highlights included the following:

NSDI Strategic Plan: FGDC will engage with leadership to refine the NSDI Strategic Plan Framework and develop the next version of the NSDI strategic plan. The plan will be aligned with the President’s Management Agenda.

National Geospatial Data Assets (NGDA): The 2017 Lifecycle Maturity Assessment (LMA) Survey has been released and is available on GeoPlatform’s public dashboard. The NGDA Theme Leads are finishing Implementation Plans and Theme Summary Reports for each of the Themes. The GeoPlatform released new NGDA Theme communities with Release 11. FGDC anticipates discussions with Theme Leads, Dataset managers, and others to discuss goals and objectives related to the NSDI Strategic Plan.

President’s Management Agenda: The President’s Management Agenda (PMA) was released by OMB on March 20, 2017. The PMA describes long-term vision focusing on mission, service, and stewardship. The

PMA identifies FGDC portfolio management process as a model approach for enterprise data governance (pages 15-16). The PMA includes 3 key drivers:

1. IT Modernization: Creating the Platform for Change
2. Data, Accountability and Transparency: Creating a Data Strategy and Infrastructure for the
3. People - Workforce for the 21st Century: Realigning Human Capital to Serve America's Priorities

COGO Report Card: The updated version of COGO's NSDI Report Card will be released in 2018. FGDC staff and NGDA Theme Leads have had a series of meetings with the COGO team to provide information to help inform the Report Card evaluation.

FGDC GeoPathways Initiative: FGDC established the GeoPathways workforce development initiative to connect students with FGDC mentors to support development of the next generation of geospatial professionals. This initiative is in alignment with the NSDI Strategic Framework Strategy III- Action 3.3: "Build workforce development strategies." FGDC leveraged the Virtual Student Foreign Service Program and is collaborating with USGS and other federal agencies. Currently, there are 20 students participating. A brief overview of the different projects under development was provided.

OGC Concept Development Study: The Open Geospatial Consortium (OGC) initiated a Disaster Concept Development Study (CDS) in early 2018. A Request for Information (RFI) was released in February. Later in 2018, pilots will be conducted to demonstrate how geospatial services can be integrated across the Nation for disaster preparedness and response. The results of this study will be shared across the community.

FGDC 2017 Annual Report: The 2017 FGDC annual report includes a cover story on agencies' use of geospatial data and technology for response and recovery related to last year's hurricanes. The report is available in digital format (<https://www.fgdc.gov/resources/whitepapers-reports/annual%20reports/2017link>) as well as hard copy.

2018 NGAC Nominations Update: The FGDC plans to issue a call for nominations for appointment to the NGAC in June 2018. Approximately one-half of the current appointments to the NGAC will expire in December 2018. An interagency review panel will evaluate nominations, and final decisions on appointments will be made by the Secretary of the Interior. The new appointments will take effect in January 2019.

Subcommittee Work Session

The NGAC subcommittees split up and met in breakout groups to discuss their work plans and activities in addressing the FGDC guidance.

Lightning Session 1

An opportunity for brief announcements was given to NGAC members:

Pat Cummins – Making Data Actionable: Why Data as Services Matter

Ms. Cummins discussed an initiative at Esri to make data more actionable and discussed why data as services matter.

Xavier Irias - Reliability, Robustness and Resilience: Geospatial Considerations

Mr. Irias spoke about how geospatial analysis is critical to estimation of hazards and probability, management of risk, and development of solutions.

Harvey Thorleifson - National 3D Geology – A Rapidly Emerging Concept

Dr. Thorleifson provided an update on National 3D Geology activities at USGS. He discussed the Decadal Strategic Plan for the National Cooperative Geologic Mapping Program.

Wrap-up

The Chair summarized key outcomes of the day and adjourned the first day of the meeting.

Wednesday, April 4, 2018 NGAC Public Meeting

Start-up

Julie Sweetkind-Singer (Chair) and Keith Masback (Vice Chair) welcomed NGAC members to the second day of the meeting. A brief overview of the agenda was provided.

Spotlight Session: Data as a Service

The NGAC Data as a Service (DaaS) subcommittee hosted a spotlight session to highlight innovative approaches to DaaS in public and private sector organizations. The session included the following panelists: Kevin Murphy (NASA), Tony Frazier (Radiant Solutions), Tony LaVoi (NOAA), and Chris Tucker (Yale House Ventures). Each panelist introduced themselves and provided a brief background on their career and current role in their organizations. Keith Masback, the NGAC Vice-Chair, served as moderator for the session.

Kevin Murphy is the Program Executive for Earth Science Data Systems at NASA Headquarters where he manages programs responsible for production of data from NASA's fleet of Earth observing satellites. He spoke about open data and discussed NASA's policies and current issues including volume of data and the need to evolve archive infrastructure. NASA plans to address these issues by using a cloud environment. He noted that the need is to have data services with adequate performance to make products available in a timely manner that is useful. NASA works with agencies to develop tools to make products accessible and useable.

Tony LaVoi serves as the NOAA Geospatial Information Officer (GIO) in the office of the CIO as well as Chief of the Integrated Information Services Division within the NOAA Office for Coastal Management. Mr. LaVoi is a long-standing member of the FGDC community. Mr. LaVoi and his GIO team serve as the focal point of enterprise geospatial projects, strategies, policy development, standards, and coordination activities across the organization. Mr. LaVoi discussed NOAA's Big Data project, and noted that users want answers, not just data. NOAA's data are unique, valuable, and irreplaceable. NOAA's data and expertise provide a foundation to support private sector and academic activities.

Tony Frazier serves as President of Radiant Solutions, the Geospatial Services business of Maxar Technologies. Maxar was formed through the combination of MDA and DigitalGlobe in the fall of 2017. Mr. Frazier spoke about data as service model for consumers (collection), not just collection but intelligent collection of data (like Netflix-based delivery to data products). He noted that a key challenge is duplication of data. He pointed out the need to educate people beyond the geospatial community.

Chris Tucker manages Yale House Ventures, a portfolio of technology companies, social ventures, and public entrepreneurship initiatives. Mr. Tucker is Chairman of the American Geographical Society, the creator of www.MapStory.org, sits on the Boards of the Open Geospatial Consortium and the U.S.

Geospatial Intelligence Foundation, and was a charter member of the National Geospatial Advisory Council. He spoke about specific improvements that can be made to address data issues, and discussed funding issues and other challenges in the federal procurement system. He believes that a geo commerce infrastructure is needed for an effective procurement system. In addition he pointed out that an effective data service business model should be built based on normal business workflows and not based on problems or crises.

Following these introductions, NGAC members engaged in a dialog with the panelists. Key points included:

- Discoverability of data is key
- Data as service and “answer as a service” to questions, issues, that federal government can provide (i.e. google search results; get data/answer)
- Licensing and legality around data: both around what is available from government and commercial data licensing
- Authoritativeness of data and appropriated data
- Public and private partnerships in data as a service

ACTION: The subcommittee is developing a paper, including use cases, describing current and future needs for data as services. A draft version of the paper will be presented at the June 2018 NGAC meeting.

Cultural & Historical Resources Subcommittee

Garet Couch reported on the subcommittee’s activities. The team is working on a paper that will describe best practices for managing geospatial data related to sensitive cultural and historical resources. They are currently in the process of conducting initial research. Next steps include conducting interviews, compiling interview results, conduct additional research as needed, and preparing a draft report. The project timeline is as follows:

- April 2018 – approves final interview guide and initial list of interviewees, and develop letter to agency heads
- May – June 2018: Interviews to be scheduled and conducted
- July – August 2018: Develop summary and first draft report
- September 2018: Present first draft to NGAC
- December 2018: Present final report to NGAC for approval

ACTION: The subcommittee will conduct a series of interviews that will inform a report making recommendations on policies and procedures to protect geospatial data assets that have cultural and historical significance. The subcommittee is finalizing a timeline for its activities, and will provide an update at the June 2018 NGAC meeting.

Lightning Session 2

A second opportunity for brief announcements was given to NGAC members:

Kevin Pomfret – Geospatial Privacy 2018 Insights

Mr. Pomfret discussed recent developments in location privacy and talked about the incident with Strava fitness tracker heat map that revealed the location of military bases and patrol routes, and Facebook-Cambridge Analytica harvesting and use of personal data. Mr. Pomfret spoke about concerns over traditional geospatial technologies and potential impacts to the

geospatial community from potential new regulations or statutes dealing with data collection (need for consent), and restrictions on use of geolocation information. In addition, he noted that firms are dealing with potential increases in cost due to factors such as the EU General Data Protection Regulation.

Talbot Brooks – Re-Thinking Resiliency: Lessons Learned in the Developing World

Mr. Brooks spoke about how resilience and understanding of risk in other cultures are different from an U.S. perspective. He shared lessons learned from his experiences in other countries.

Public Comment Period

An opportunity was given to members of the public to provide comments to the NGAC:

John Byrd – NSPS/MAPPS

Mr. Byrd provided an update on the 3DEP program at Capitol Hill:

- 3DEP Coalition letter to members of Congress and appropriators seeking full funding for 3DEP
- There is push for infrastructure; elevation data is vital to infrastructure
- Five agencies are working together to coordinate budgets
- Request NGAC consider a motion to encourage Federal agency participation in 3DEP efforts

Infrastructure Subcommittee

Cy Smith reported on the subcommittee's activities. The subcommittee's initial paper on infrastructure was completed in December 2017. The paper illustrates the value of geospatial data and technology in infrastructure programs. The paper has been shared with the FGDC and other organizations. The team is also developing use cases. Potential use cases include:

- Permit streamlining
- Management of Sagegrouse, including how geospatial tools can help with permits, locations, and other aspects
- Maintenance and improvement of transportation infrastructure (geo to enable improvement of transportation infrastructure)
- Underground location of infrastructure

The subcommittee plans to complete a set of draft use cases by June 2018. The subcommittee also plans to develop an infographic demonstrating uses of geospatial technology to support infrastructure initiatives. In addition, the subcommittee is developing a white paper on best practices related to utilization of geospatial technology to support infrastructure projects.

ACTION: The subcommittee is developing a set of brief use cases demonstrating the uses of geospatial technology to support infrastructure initiatives. Draft uses cases will be completed in May, and final versions will be presented at the June 2018 NGAC meeting.

ACTION: The subcommittee is planning to develop an infographic demonstrating the uses of geospatial technology to support infrastructure initiatives. The infographic is still in the conceptual phase. The subcommittee will provide an update at the June 2018 NGAC meeting.

ACTION: The subcommittee is developing a white paper on best practices related to utilization of geospatial technology to support infrastructure projects. The subcommittee will provide an update at the June 2018 NGAC meeting

Discussion: Emerging Topics

Julie Sweetkind-Singer and Keith Masback led a discussion of emerging geospatial topics, including the following:

- **National Address Database (NAD):** Julie Sweetkind-Singer discussed a draft resolution encouraging FGDC member agencies to support the development of the NAD. Following discussion of the draft resolution, the NGAC adopted the resolution, pending minor editorial changes. Cy Smith also noted that the Coalition of Geospatial Organizations (COGO) would write a letter in support of the NAD.
- **President's Management Agenda:** The NGAC chair encouraged members to read the PMA to identify where NGAC can provide support.
- **Data as a Service:** NGAC members noted key takeaways from the spotlight session:
 - Authoritative data issue
 - Take advantage of both crowdsourced data and federal data – by combining both we can get the best of both worlds.
 - Lifecycle – data as service, think about data creation
 - Standards and data as service
 - Authoritative data is not well understood. Licensing does not mean that the data is authoritative.
 - Potential bias into data – understand the user base
 - Transparency of sources is important, who is collecting, why they are collecting
 - What are the solutions to speeding up government procurement, can the NGAC help?
- **Communication outside of geo community:** How do we reach out beyond the geospatial community?
 - Communications channels that reach beyond the geospatial community
 - Communicate who else is doing geo and make it part of the community
 - Commercial events
 - Social media opportunities
- **Permitting and licensing streamlining**
- **Workforce:** Geospatial education & curriculum needs to be updated to keep up with advancements in industry
- **Blockchain and Geolocation**
 - Consider having a panel discussion and developing a paper to raise awareness of this emerging issue.

DECISION: The NGAC adopted the following resolution:

"The National Geospatial Advisory Committee (NGAC) is encouraged by the progress the Federal Geographic Data Committee (FGDC) community is making in developing the National Address Database (NAD). The NGAC commends the U.S. Census Bureau and the U.S. Department of Transportation for their leadership of this important initiative. The NGAC has expressed its support for the development of the NAD for many years, through an initial paper, "The Need for a National Address Database" (2012), through a previous NGAC resolution (2013), and through

development of a set of use cases (2014). The NGAC believes that the NAD is consistent with the Data, Accountability, and Transparency component of the President’s Management Agenda; that it reflects a productive partnership of Tribal, Federal, State, and local governments; and that it will be a model use of the FGDC’s Geospatial Platform. The NGAC strongly encourages FGDC agencies to devote appropriate support and resources to create a National Address Database Program that will ensure the long-term institutionalization of the NAD as a National Geospatial Data Asset.”

Lightning Session 3

A third opportunity for brief announcements was given to NGAC members:

Doug Richardson – Trajectories in Geography 2002-2018 and Beyond

Dr. Richardson reported on current activities and upcoming events at the American Association of Geographers.

Meeting Wrap-up & Next Steps

The Chair reviewed and summarized actions and next steps. The next NGAC meeting will be on June 26-27 in Washington, DC. Dr. Tim Petty and Dr. Andrea Travnicek were in attendance at conclusion of the NGAC meeting. Each subcommittee chair summarized the outcomes of the meeting, activities and products.

- **Infrastructure subcommittee:** Will develop the following products:
 - A series of use cases to demonstrate uses of geospatial technology to support infrastructure initiatives (by June 2018)
 - An infographic to support the uses cases
 - White paper on best practices in relation to utilization of geospatial technology to support infrastructure projects
- **Landsat Advisory Group:** The NGAC adopted two papers addressing Task 1 and Task 2 of the 2017/2018 Guidance:
 - NGAC Landsat Future Missions Recommendations
 - NGAC Landsat Data Cube Feasibility for Forecasting
 - The subcommittee is working on Task 3 and will develop a paper on fee recovery options for Landsat Data.
- **Cultural Resources Subcommittee:** Working on a recommendations paper that will describe best practices for managing geospatial data related to sensitive cultural and historical resources. The subcommittee will conduct a series of interviews of Federal contacts to help inform the paper. First draft will be presented to the NGAC in September for review and feedback.
- **Data as Service Subcommittee:** The subcommittee is developing a paper, including use cases, describing current and future needs for data as services. A draft version of the paper will be presented at the June 2018. The subcommittee organized a spotlight session to share perspectives on uses and benefits of data as service in different sectors. This session also provided an opportunity to discuss public and private partnership. Key messages from this session:
 - Discoverability (i.e. “answer” as service)

- Issues with licensing and legality
 - Architecture to support different licensing models
 - Authoritativeness of data and appropriated data
 - What is the best pathway to success?
- **National Address Database (NAD) Resolution:** The NGAC adopted a resolution on the NAD. The NGAC strongly encourages the FGDC agencies to support NAD activities.
 - **Emerging topics:** The NGAC discussed the following emerging geospatial topics:
 - Support to the National Address Database (NAD)
 - Alignment with the President’s Management Agenda (PMA)
 - Data as Service
 - Geospatial Privacy
 - Communication and outreach beyond the geo community. Reach others like realtors, health care industry, insurance, rail, etc.
 - Authoritative data (how data is used, make sure data is reliable)

Dr. Petty thanked the NGAC for their work and noted that he looks forward to seeing the products the NGAC is developing.

ADJOURN

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.

Ms. Julie Sweetkind-Singer, 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 June 26, 2018

April 2018 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/april-2018/index.html>

Geospatial Platform

- Geospatial Platform Update

Landsat Advisory Group

- Landsat Advisory Group Status Report
- Landsat Program Update
- NGAC Paper – Landsat Future Missions Recommendations
- NGAC Paper - Landsat Data Cube Feasibility for Forecasting

Federal Geospatial Highlights

- FGDC Update

Data as Services Spotlight Session

- NOAA Big Data Project

Cultural and Historical Geospatial Resources Subcommittee

- Cultural and Historical Geospatial Resources Subcommittee Report

National Address Database

- NGAC resolution – National Address Database

Lightning Sessions

- Making Data Actionable: Why Data as Services Matter – Cummins
- Reliability, Robustness and Resilience: Geospatial Considerations – Irias
- National 3D Geology: A Rapidly Emerging Concept – Thorleifson
- Recent Developments in Location Privacy – Pomfret
- Re-Thinking Resiliency: Lessons Learned in the Developing World – Brooks
- Trajectories in Geography 2002-2018 and Beyond – Richardson