

Federal Advisory Committee  
*for the*  
U.S. Geological Survey  
National Cooperative Geologic Mapping Program  
*and*  
National Geological and Geophysical Data Preservation  
Program  
2010 Annual Report to the Secretary of the Interior

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**Executive Summary**

As mandated by the National Geologic Mapping Act (NGMA) of 1992 (Public Law 102–285), and its reauthorizations of 1997, 1999, and 2009 (Public Laws 105–36, 106–148, and 111–11, respectively), the Federal Advisory Committee (FAC) for the National Cooperative Geologic Mapping Program (NCGMP) is required to submit a report to the Secretary of the Interior that evaluates progress made toward fulfilling the Federal, State, and educational components of the NGMA as well as an evaluation of the progress of the National Geological and Geophysical Data Preservation Program (NGGDPP) as established by the NGGDPP Act of 2005 (Public Law 109–58). The NCGMP and NGGDPP are programs of the U.S. Geological Survey (USGS). This document fulfills this requirement for 2010.

**The FAC deems the NCGMP to be progressing well.** The NCGMP is effective in creating new geologic maps that provide the Nation with the scientific information to address a broad range of issues, including (1) reducing risks from natural hazards, (2) aiding in land-management and land-use decisions, (3) assessing water, energy, and mineral resources, (4) aiding in environmental and health concerns, and (5) furthering our scientific knowledge about Earth processes. The program also helps train the next generation of geologic mappers through its successful education component.

The program is authorized for \$64 million, and the Fiscal Year (FY) 2010 appropriation is \$28 million. Despite its accomplishments, the program needs a substantial increase in funding to keep pace with the demand for new geologic maps and digital, geographic information system versions of previously published geologic maps and to more fully accomplish its mission:

“To provide accurate geologic maps and three-dimensional framework models that help to sustain and improve the quality of life and economic viability of the Nation through understanding ground-water availability and quality, supporting DOI land management decisions, mitigating hazards, assisting in ecological and climatic monitoring and modeling, and understanding onshore-offshore sediment processes.”

— NCGM Program Plan 2007-2011

**The FAC deems the NCGDPP to be progressing well.** Within resource constraints, the program has managed to (1) provide support to State geological surveys to inventory collections of geological and geophysical data, (2) continue development of a National Digital Catalog (NDC) of information that will allow users easily to discover and access geoscience data, (3) curate valuable paleontological samples, energy-related cores, and geophysical data, (4) assemble a white paper describing data preservation best practices, (5) coordinate data rescue efforts for the U.S. Geological Survey (USGS) geology programs, and (6) rescue over 170,000 feet of valuable oil shale core from the Anvil Points Mine near Rifle, Colorado, and relocated it to the USGS's Core Research Center in Denver, Colorado. The cost of re-drilling that oil shale core would be in excess of \$150 million.

The program is authorized for \$30 million per year for 5 years. Appropriations were \$750,000 in FY 2007 and \$1 million for each fiscal year from 2008 to 2010. Since its inception in 2007, the NCGDPP Financial and Technical Assistance Program has awarded \$1,904,011 to State geological surveys to inventory, archive, and preserve their geological and geophysical resources.

**Annual Meeting** — The 2010 annual meeting of the FAC for the NCGMP and the NCGDPP took place May 17-19, 2010, and was held in conjunction with the 14<sup>th</sup> Annual Digital Mapping Techniques (DMT) Workshop in Sacramento, CA. See Appendix for participants of the FAC meeting.

The FAC considered and provided recommendations on —

- Strategies for raising the visibility of both programs,
- Enhancing "cooperative" in the National Cooperative Geologic Mapping Program by developing strategies to improve cooperation among Federal, State, and academia for geologic mapping,
- Five-year plan development for both programs,
- Continuing on the successes of workforce and pipeline issues for NCGMP,
- Streamlining geologic mapping production and publication processes,
- Continuing pursuit of emerging geologic mapping technologies, and
- Continuing improvements to the NCGDPP online national data catalogue.

See page 7 for detailed recommendations.

The FAC is pleased that the USGS is responding to its previous recommendations for both programs and looks forward to working with the USGS to continue process improvements and visibility as outlined in this report.

## National Cooperative Geologic Mapping Program

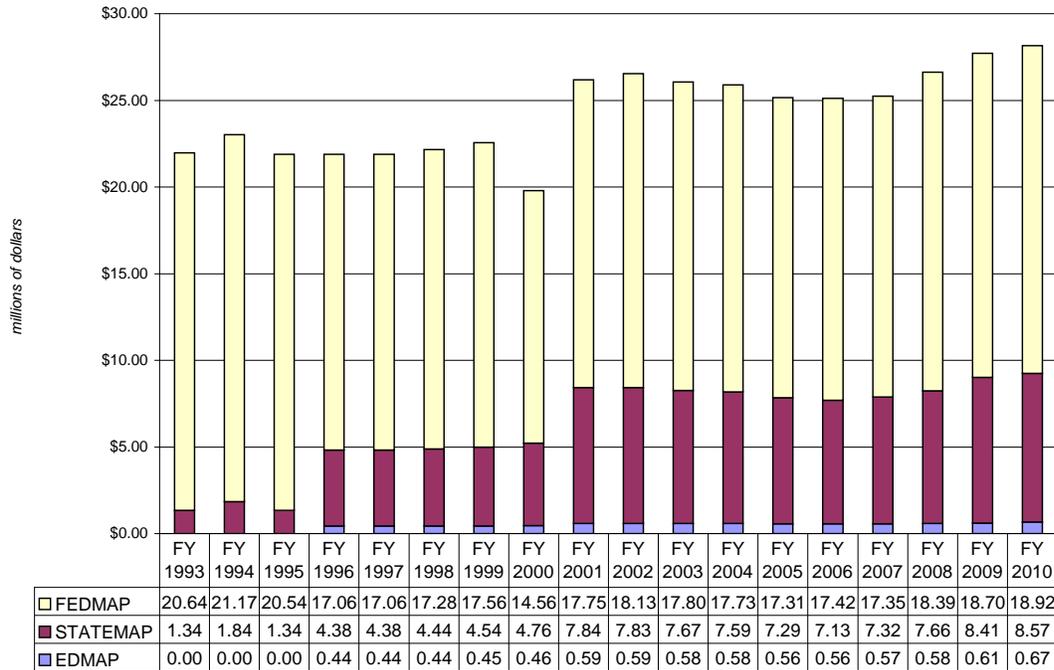
The NCGMP manages three components: (1) FEDMAP, to meet Federal priorities for geologic maps and basic geologic information about the country, (2) STATEMAP, to meet State needs in a cost-sharing partnership between the USGS and State geological surveys, and (3) EDMAP, to train the next generation of geologic mappers in a cost-sharing partnership between the USGS and colleges and universities in the United States. While the program has grown over the years, funding has been well below congressionally authorized levels and does not provide the resources to make significant improvements to domestic mapping efforts. The latest reauthorization of the NCGMP occurred on March 30, 2009, with passage of the Omnibus Public Lands Act (P.L. 111–11). Congressionally authorized funding for NCGMP has been:

Fiscal Year	1999	2000	2001	2002	2003	2004	2005- Present
(\$millions)	28	30	37	43	50	57	64

Appropriated funding has been substantially below the authorized levels as the following table shows.

## NCGMP actual funding 1993 – 2010

Data updated May 2010



**NCGMP Accomplishments** — In response to a FAC recommendation, the 2010 FAC meeting was held in conjunction with another meeting — the 14<sup>th</sup> Annual DMT Workshop. This is the second time that the FAC was held with DMT, and the FAC approves of the forum.

David Soller, Project Chief of the National Geologic Map Database, is the program’s front line with partners and with States for building the national database and has run the popular DMT workshop that brings together about 90 geologic mapping technical experts from across the country each year. The community is very active, for example using a listserv to canvass the community for problem solving and to discuss database development and use issues.

The NCGMP has seen a few growth spurts of approximately \$1 million each during the last 9 years. With the change in administration, geologic mapping and data preservation have program growth opportunities in alternative energy, climate, water; all of which touch on the programs for this FAC. In particular, the Water Census in the USGS Science Strategy is an opportunity. An opportunity for the EDMAP component lies in the Administration’s focus on youth.

To address the issue of rising publications costs and with the aim of finding efficiencies in geologic map publications workflow, the NCGMP and the USGS publications customer advisory group initiated a bureau-wide dialogue on the future of geologic maps publishing. The program is taking a two-pronged approach to improving workflow: externally through the annual DMT and internally via periodic workshops involving scientists, editors, graphics specialists, and geographic information system technicians. The FAC commends the program for taking the initiative in improving timeliness and reducing costs for geologic map production.

**FEDMAP** — Potential new project areas for the FEDMAP component of the program include a focus on providing framework geologic mapping for climate change studies along the Platte River particularly in Nebraska. Work will be coordinated with the USGS Climate Change Program and regional partners and stakeholders. Another possible opportunity for growth is along the U.S.-Mexico border. The States of the

region welcome the effort. Other areas of potential new starts include New England, Iowa, Nevada, Nebraska, Southern California, and Alaska. The program noted its philosophy of a mixed funding model for laboratories including a certain amount of core financial support that laboratory managers can depend on. For the balance of needed operational costs, the labs employ fee for service.

**STATEMAP** — For FY 2010, proposals were funded for 44 States that totaled \$6.9 million. The total requested by States was over \$10 million, attesting to the competitive nature of the program. The total amount of Federal funds that have been distributed to State geological surveys since 1993 is more than \$88 million. Items of interest: State geological surveys were encouraged to evaluate a new geologic map database standard, NCGMP09, and to update the geologic names lexicon GEOLEX for consistency of communication among States.

**EDMAP** — Success stories:

- Following a FAC recommendation, the program continues to post on the web, maps that are not published by State geological surveys.
- Criteria for EDMAP proposal reviews: the 2009 EDMAP review panel suggested increasing the number of points awarded for professorial mentoring. The suggestion was to take 10 points from technical merit and increase the mentoring score to 25 percent.
- Following a FAC recommendation, the maximum award for a graduate student was raised from \$15,000 to \$17,500 and the maximum award for an undergraduate student was raised from \$7,500 to \$10,000.
- Through a communications campaign in 2009, the Program developed press releases, podcasts, a new information sheet, and other education materials in the hope of receiving more proposals. The effort was rewarded with an increase from 41 to 57 proposals in 2010. For 2010, 32 projects from 29 universities will be funded covering 58 students (27 graduate students and 31 undergraduates). Since 1996, EDMAP has funded about 850 students from 142 universities.

**Assessing Performance** — The Government Performance and Results Act performance measures for NCGMP provide a good assessment of the program's performance. Of note are three outcome measures:

- Percent of geologic investigations in National Park Service units that are cited for use by the National Park Service (NPS) within three years of delivery: averaged 90 percent from 2005-2009,
- Percent of the United States with geologic maps that are being integrated into ground-water availability status and trends to support resource management decisions: increased from 3 percent in 2004 to 13 percent in 2009, and
- Number of counties or comparable jurisdictions that have adopted hazard mitigation measures based in part on geologic mapping and research: averaged 14 jurisdictions per year from 2005-2009.

The program uses external sources to collect information related to these measures. Another measure of note is the efficiency measure: number of hours for fieldwork, compilation, and publication of a typical geologic map. The FAC anticipates the program's efforts to improve publications workflow will bear fruit, and the results will be evident in this measure.

To assess the success of the EDMAP component, since 2004 the program has tracked EDMAP students after they complete their geologic mapping project. Of the students surveyed, about 95 percent have gone on to work on a subsequent geoscience degree or have obtained a job in a geoscience field.

## National Geological and Geophysical Data Preservation Program

The NGGDPP was authorized in Section 351 of the Energy Policy Act of 2005 (Public Law 109-58, Sec. 351). Objectives of the program as outlined in the Act are to:

- (1) Archive geologic, geophysical, and engineering data, maps, well logs, and samples;
- (2) Provide a national catalog of such archival material; and
- (3) Provide technical and financial assistance related to the archival material.

The program offers the opportunity to inventory, archive, and preserve geologic and geophysical data collected by many organizations over the past 150 years. Section 351 of the Energy Policy Act directs the Secretary of the Interior, through the Director of the USGS, "to carry out a National Geological and Geophysical Data Preservation Program" comprising "State agencies that elect to be part of the system and agencies within the Department of the Interior that maintain geological and geophysical data and samples." Section 351 also states that "the Secretary may not designate a State agency as a component of the data archive system unless that agency is the agency that acts as the geological survey in the State."

### NGGDPP Accomplishments —

- Released a publicly accessible version of the National Digital Catalog (NDC). The Catalog is the fundamental digital infrastructure that makes useful information for items in geological and geophysical collections available to the public.
- Awarded \$637,766 in financial assistance in FY 2010 to 26 States to support data preservation activities.
- Provided input to Federal land managing agencies on implementation of the Paleontological Resources Protection Act.
- Continued participation on the Interagency Working Group on Scientific Collections.
- Continued development of a National Paleontology Database.

**Sharing Best Practices for Data Preservation** — In FY 2010, the program will begin to develop an interactive and collaborative knowledge management web site that will provide State geological surveys, the USGS, and other research institutions with geological and geophysical data collections information to make prudent, well-informed decisions based on best practices in data handling and provide a forum for the exchange of best practices among all parties. Targeted categories in collections management include curating physical samples, paper records, and digital records; updating digital records to current and widely available formats; and creating metadata, catalogs and inventories.

This Best Practices web site will be a guide for individuals, institutions, and repositories interested in preservation of geologic materials and geoscience data. It will provide resources and case studies in effective specimen and data management and identify key issues and standards for repositories to consider.

The web site will be designed to function as a collaborative community resource with additions and suggestions incorporated as techniques in preservation change and improve. Visits to repositories and participation in professional meetings will facilitate community involvement in collecting and developing state-of-the-art techniques for sample and data preservation.

**Grants Program Priorities and Accomplishments FY 2007 to FY 2010** — In FY 2007, the program priority was collections-level inventories for State geological surveys. In FY 2008 and FY 2009, the program priorities were to continue support for collections-level inventories and to support creation of metadata (descriptive information) for individual items in collections for the NDC. Two additional program priorities were added for FY 2010: (1) digital infrastructure and (2) special needs awards to rescue data. All grants provided by the program have gone to State geological surveys.

**In FY 2007**, 35 State geological surveys and 8 USGS Geology Discipline Science Centers received approximately \$5,000 each to inventory collections.

**In FY 2008**, 34 States requested more than \$1 million in funding; \$541,000 was awarded to 28 States. State geological survey requests ranged from \$5,524 to \$60,000, averaging \$31,405. Awards ranged from \$5,000 to \$47,651, averaging \$19,347.

**In FY 2009**, 30 States requested more than \$795,000; \$549,875.97 was awarded to 29 States. For the first time, Arkansas and California participated. State geological survey requests ranged from \$10,866 to \$60,000, averaging \$26,504. Awards ranged from \$2,000 to \$49,074, averaging \$18,742.

**In FY 2010**, 30 States requested nearly \$1.1 million in funding; \$637,766 is being awarded to 24 States. Requests ranged from \$9,286 to \$138,292, averaging \$36,402. Awards range from \$11,710 to \$48,312, averaging \$26,574.

**Five-year Plan** — NCGDPP will begin drafting a five-year plan to help set priorities. USGS will select a working group to draft the plan. This draft document will be reviewed by a subcommittee of the NCGMP FAC.

**Reauthorization of the National Geological and Geophysical Data Preservation Program Act of 2005** — The Act is up for reauthorization and the program is working with Congress on it.

## Recommendations from 2010 Annual FAC Meeting

### *For Both Programs*

**1. Develop marketing plans for NCGMP and NGGDPP** — The FAC recommends that both programs develop a “marketing plan” or promoting the idea, and work to provide a pithy concise message (i.e., Data 22, Maps for Life, The Geologic Mapping Project, and The Geo-Data Project) to stakeholders as a means to increase program visibility. The plan should highlight accomplishments, strengths, sustainability goals, and accountability. The FAC recommends that the marketing or outreach plan be submitted as part of the five-year strategic plan as a means to leverage present and future assets for the purpose of growing the NCGMP and NGGDPP programs to meet growing needs. FY 2010 funding amounted to \$28 million although Congress authorized \$64 million, which indicates a significant opportunity for improved marketing of the program’s assets. This plan shall develop short, catchy informal names (see above) for the programs that communicate better than “NCGMP” and “NGGDPP” as well as identifying with key stakeholders. This marketing plan will provide strategies for engaging geologic organizations such as Geological Society of America, American Institute of Professional Geologists, American Geological Institute, and the USGS Coalition. This plan will provide details on how to encourage STATEMAP and FEDMAP projects in developing public outreach as a part of their projects, including talking with local government staffs, public talks on their projects, and discussing geology in the local schools. Other creative approaches that could be considered for the plan include several Federal land management agencies. For example, the plan could state “The management of a combined 462 million acres of Federal lands enables the Bureau of Land Management (270 million acres) and U.S. Forest Service (192 million acres) to employ geologists and paleontologists for addressing their significant public minerals and energy resources, as well as geologic hazards and geologic resources.”

**2. Increase FAC engagement** — The Committee appreciates the Programs’ renewed commitment to engage the FAC throughout the year, including periodic telecons and WebEx, and sharing program information, for example progress reports should be prepared that focus on streamlining geologic mapping production, keeping up with technological advancements, and the national data catalogue.

### *For the National Cooperative Geologic Mapping Program*

**3. Increase the number of opportunities for real cooperative research among scientists and projects funded by all three components of NCGMP** — The FAC noted that NCGMP has long promoted cooperative geologic mapping projects that employ the appropriate mix of skills and expertise of scientists within the USGS and State geological surveys. The FAC recommends better collaboration of skills and expertise among Federal and State agencies as a means to improve quality while reducing cost and the period of time required to complete integrated research projects. This improved coordination of agency assets should mitigate and/or eliminate any interagency redundancies and concerns for “keeping out of each other’s way” by working together as an integrated team on research projects to produce co-authored geologic maps and other publications. Additionally, these integrated projects would offer better opportunities for quality mentoring of EDMAP students. The FAC discussed several possible solutions for improved collaboration from USGS managers as follows:

- Recognize that every State has a State Mapping Advisory Committee (SMAC) and
- Invite small groups of State Geologists and their research scientists to plan regional projects that cross State borders and could better leverage expertise, skills, and funds.

Additionally the FAC recommends recognition of the fact that these SMACs comprise a broad-based group of individuals from private industry, academia, and county/State/Federal government; USGS scientists should take advantage of their expertise in the very earliest stages of planning new scientific research projects. If that were done, the SMACs might see opportunities for leveraging that would benefit the States and encourage the State scientists to work closely with USGS scientists.

**4. Engage the FAC more thoroughly in the developing the next five-year strategic plan for the NCGMP** — While noting that the existing five-year strategic plan for NCGMP was reviewed by an earlier FAC, the program was encouraged to involve FAC members earlier in the formulation stage and include them as more active participants throughout the process. Several ideas were discussed during the FAC meeting that all felt should be part of any future five-year strategic plan which are as follows:

- Assisting with developing an improved workforce with geoscience skills emphasizing field experience;
- Engaging NCGMP more effectively in research in Alaska,
- Continuing emphasis on geologic mapping to better understand ground water quantity and quality,
- Encouraging the geologic mapping community to adopt a common database schema to streamline production of geologic maps, and
- Targeting key stakeholders with the marketing plans to obtain their support for promoting the value of the programs' research and map production.

**5. Continue to emphasize activities that will increase the numbers and diversity of students entering geoscience education** — The FAC applauded the work of the NCGMP on workforce planning, mentoring, and increasing the diversity of students entering geoscience education. It was suggested that a subcommittee might be formed to further study and implement this vision that would include several members of the FAC, as well as other scientists, managers, and workforce experts.

*For the National Geological and Geophysical Data Preservation Program*

**6. Procure and promulgate success stories from users** — The program should identify higher level success stories from the Federal, State, and local agencies that use the data that we have preserved. The stories should highlight how data preservation solves real problems and saves money. One example would highlight the States' use of cores available through the USGS Core Research Center as a means to enable and/or greatly improve research on carbon sequestration (carbon capture and storage) studies. These success stories should be featured on the Program's web site where they could be updated with new stories on at least a quarterly basis.

**7. Require geological materials from those who drill on public lands** — FAC members asked why States and the Federal Government do not require leases to turn over cores and cuttings from drill holes on public lands. The committee recommends that State and Federal governments should have right of first refusal for future cores, boreholes, and associated data from public lands

**8. Support the development of a Marketing Plan** — The Program should work with a subgroup of the FAC to develop a marketing plan as part of the five-year strategic plan targeting key stakeholders who could include senior management at the USGS and DOI bureaus (BLM, NPS), the USFS, Federal lawmakers, and the general public.

## Appendix — Participants of the 2010 Annual FAC Meeting

### Federal Advisory Committee Members

- Linda Gundersen, Chair, USGS Acting Associate Director for Geology
- Peter Lyttle, Designated Federal Officer, USGS National Cooperative Geologic Mapping Program (NCGMP) Program Coordinator
- Robert Marvinney, Association of American State Geologists (AASG) representative, Maine State Geologist
- Peter Scholle, AASG representative, New Mexico State Geologist
- Elizabeth Schermer, academic representative, Professor, Western Washington University
- Mark Rogers, private-sector representative, Geologist, Engineering / Remediation Resources Group, Inc.
- William Siok, private-sector representative, Executive Director, American Institute of Professional Geologists
- J. Courtney Cloyd, ex officio member, U.S. Department of Agriculture, Forest Service, National Geology and Paleontology Program Manager
- Susan Gregersen, ex officio member, U.S. Department of Energy, Office of Oil and Natural Gas, Senior Policy Analyst
- Bruce Heise, ex officio member, Geologist, National Park Service
- Randall Ross, ex officio member, Environmental Protection Agency, National Risk Management Research Laboratory

### Presenters

- Tammy Dickinson, NCGMP Program Coordinator
- Sky Bristol, USGS Regional Science Data Coordinator
- Linda Jacobsen, NCGMP Associate Program Coordinator
- Jeremy McHugh, NCGMP Associate Program Coordinator
- Randall Orndorff, NCGMP Associate Program Coordinator

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