

concurrent with, or following, the term of this support.

### B. Program Description

The past decade has witnessed an explosion in the availability and use of information technology. This is especially true in the three allied "geospatial" technologies—remote sensing, GIS, and GPS. Technological advances often have occurred so quickly that many of the most obvious potential users, such as those involved in the use and management of agriculture and natural resources, and urban and regional planning, have been left behind. New sources of data from NASA (e.g., Landsat 7, Terra, and Aqua) and high-resolution data from commercial sources are now available. These new sources of data, accompanied by new methods for data processing and analysis, provide the basis for new applications and increase the challenge of assuring that the broad, potential user community receives the benefits of available technology.

USDA/CSREES, NASA/ESE, the NASA Space Grant program, and NOAA Sea Grant share a commitment to bring science to society by returning the maximum benefit to the American taxpayer from new science and technology. Geospatial Extension Specialist positions help fulfill this commitment by building on existing resources to put geospatial technology to practical use around the country. The GES Program's goal will be met in each state through development and implementation of projects by the Geospatial Extension Specialists that improve the decision support tools of users at local to statewide levels, improve education in remote sensing and geospatial technology, and develop a workforce skilled in geospatial technology and integrated with the staffs of user organizations.

Geospatial Extension Specialists facilitate the use of NASA Earth science capabilities, which include Earth observations from space, modeling and systems engineering, and other geospatial technology (e.g., geographic information systems (GIS) and global positioning systems (GPS)). They provide geospatial information and decision support tools that address the operational needs of users at local, regional and statewide levels. Users include individuals, agencies, groups, and associations in the public, private and educational. Geospatial Extension Specialists also serve as statewide resources for education in remote sensing, GIS, GPS and related technologies.

GES programs have been established in eleven states over the last three years. These programs, in Alabama, Arizona, Connecticut, Mississippi, Nebraska, New Hampshire, North Dakota, Ohio, Oklahoma, Utah and Virginia, are partnerships between land-grant institutions and the NASA SGC within the states. Geospatial Extension Specialist positions are located within the regular Cooperative Extension Service (CES) structure in each participating state, and provide technical support to CES agents and clients (as do other extension specialists). They are eligible for tenure or other comparable professional appointment, and are expected to draw on existing expertise available through the land-grant system, SGC, and the network of NASA Principal Investigators.

States creating new Geospatial Extension Services positions should establish a geospatial technology delivery system at the county level. They can achieve this by building linkages among existing programs, including:

1. NASA Earth Science Enterprise comprised of Earth science results, data, technology and a well-established nationwide research infrastructure. (<http://www.earth.nasa.gov>).
2. NASA Space Grant comprised of an Earth and space science research, education, and outreach network that exists in each state. (<http://www.education.nasa.gov/spacegrant>).
3. USDA and Land-Grant Cooperative Extension—a technology transfer network connected with a diverse user base and found in virtually every county of the Nation. (<http://www.reeusda.gov/1700/statepartners/usa.htm>).
4. National Sea Grant College Program—a technology transfer network for stewardship of marine resources. (<http://www.nsgo.seagrant.org/>).

The following examples of activities the GES Program may support have been included to suggest approaches to meeting the Program's goals:

1. Decision Support—A primary objective of the GES Program is to initiate projects that will lead to operational use of remote sensing and geospatial technology in the decision support processes of an operational entity. To ensure that the operational focus is maintained, end users must be identified when projects are initiated. End users should be actively involved in defining project goals and routinely involved in developing applications. Participation of the commercial sector in data acquisition, value-added product generation and operations management is encouraged.

2. Education—A second objective of the program is to increase geospatial literacy. The following constituencies need to be addressed:

(a) General public—There is a strong need for a continued awareness campaign for the general public that emphasizes in a non-technical fashion the practical applications of geospatial information technologies and their potential to solve pressing challenges in the state. Examples of such applications are: Natural resource management; disaster management; and business, including real estate, transportation, and insurance.

(b) County extension agents—Within the CES, at the state level, the level of knowledge about geospatial information technologies is uneven and needs to be improved. Educating county extension agents is an important goal since the agents are the resource to which users turn for information. Many other specialists within CES will benefit from the GES Program in their activities.

(c) User groups—The GES Program will conduct education and training of potential user groups in the state, such as farmers, foresters, businesses, disaster management teams, etc.

(d) Youth education—The GES Program will play an important role in youth education through 4-H organizations and through education and outreach programs sponsored by the SGC in the state. The full use of the complementary CES and SGC networks will be key to success.

(e) State and local government personnel—State and local government personnel will benefit from educational and training programs initiated by the GES Program.

3. Workforce Development—The third objective of the GES Program is to develop a workforce skilled in remote sensing and geospatial technology for on-going activities in the states. The Geospatial Extension Specialist will assist the SGC in the state and others in developing a skilled workforce in geospatial information technologies. For example, Space Grant Fellows working with the GES Program will develop skills in applied geospatial research. Real world challenges addressed by the specialist in the state can be integrated into geospatial teaching curricula, thereby enhancing the learning process at the undergraduate level. The specific activities that might be pursued by Geospatial Extension Specialists vary to fit the needs of users in the states.

Additional information about sponsored projects is available online at <http://earthgrant.auburn.edu> and <http://aria.arizona.edu/extension/program.html>.