



Space-Based Global Change Observation

NSPD-7, May 28, 1992

I. Introduction

The U.S. Global Change Research program (USGCRP), is a key component of the nation's overall approach to global stewardship and is one of the nation's highest priority science programs.

This program's goal is to provide a sound scientific basis for developing national and international policy relating to natural and humaninduced changes in the Earth system. The ultimate success of the USGCRP depends upon an integrated set of ground-and spacebased observation and research programs. The United States is planning and implementing a series of satellite missions that include NASA's Mission to Planet Earth, related environmental satellites, and activities of other agencies to provide these global observations for the next several decades. For the purposes of this document, these systems are collectively referred to as the Spacebased Global Change Observation System (SGCOS).

II. Objectives

a. General

The Spacebased Global Change Observation System will provide spacebased global observations which together with other observations and studies, coordinated through the U.S. Global Change Research Program, will provide the scientific information to help understand the Earth system.

b. Specific

In support of the USGCRP the SGCOS shall:

1. Improve our ability to detect and document changes in the global climate system to determine, as soon as possible, whether there is global warming or other potentially adverse global environmental changes; and, if changes are detected, determine the magnitude of these changes and identify their causes.
2. Provide data to help identify and understand the complex interactions that characterize the Earth system in order to anticipate changes and differentiate between humaninduced and natural processes.
3. Provide for a data system to manage the information collected by SGCOS as an integral part of the Global Change Data and Information System, consistent with the USGCRP data policy.
4. Provide for the development and demonstration of new spacebased remote sensing technologies for global change observation and identify candidate technologies for future operational use.

III. Implementing Actions

This directive provides guidance to agencies developing, deploying, operating or supporting SGCOS elements to acquire and manage relevant observations and data sets for the USGCRP.

a. International Cooperation

It is recognized that the goals and objectives of the U.S. Global Change Research Program can best be achieved through the mutually reinforcing research of all nations and many organizations and programs which require a large measure of bilateral and multilateral cooperation. Accordingly, participating agencies may explore, in accordance with this directive and established procedures, international cooperation in spacebased global change observation.

b. Interagency Coordination

Spacebased Global Change Observation System activities are conducted in the context of the USGCRP. The Federal Coordinating Council on Science, Engineering, and Technology (FCCSET), through its Committee on Earth and Environmental Sciences (CEES), is responsible for developing and coordinating the USGCRP, and for the activities and requirements of the USGCRP and, therefore, for the Spacebased Global Change Observation System. All SGCOS agencies shall participate with other USGCRP agencies and the CEES in the development and coordination of the *Spacebased Global Change Observation System Program Plan*. The provision, management, and exchange of data will be a key element of the USGCRP.

The CEES will coordinate the interagency development of the Global Change Data and Information System (GCDIS) which integrates appropriate observations, regardless of platform basing mode or orientation of data (land, oceanographic, atmospheric, or space). All agencies involved with SGCOS will participate with other USGCRP agencies in planning for the GCDIS, with a goal of maximizing the system's interoperability. Data sets intended for the GCDIS shall be responsive to the requirements of, and be accessible to, global change scientists and U.S. Government authorized research and operational users.

c. National Aeronautics and Space Administration (NASA)

The National Aeronautics and Space Administration is the lead agency for planning Spacebased Global Change Observation System activities, and is responsible for developing and operating the NASA component of the SGCOS. This component shall be developed to provide maximum program flexibility within budget constraints. As part of the USGCRP, NASA shall:

1. Lead the development and preparation of a coordinated interagency *Spacebased Global Change Observation System Program Plan*, to be delivered to the National Space Council (NSpC), National Security Council (NSC), the Office of Science and Technology Policy (OSTP), and the Office of Management and Budget (OMB) by the CEES through FCCSET. This plan will guide agencies' SGCOS activities.
2. Continue with the Mission to Planet Earth by conducting the ongoing development, operation, and scientific use of instruments and satellites designed to observe and monitor processes that govern key aspects of global environmental change.
3. As part of the Mission to Planet Earth, develop the Earth Observing System (EOS), comprised of intermediate and small sized satellites as recommended by the EOS Engineering Review Panel.
4. Plan and develop, in an incremental and evolutionary manner, the EOS Data and Information System (EOSDIS), which is the NASA part of the data and information system for SGCOS. This data and information system shall be compatible with other parts of the USGCRP Global Change Data and Information System, and able to incorporate, as appropriate, currently available Earth observations, such as those from Landsat, and provide an active archive for SGCOS system data sets. Prototype versions of this system, using existing Earth observations, shall be constructed to demonstrate system utility and functions.
5. Develop new instruments and space systems for global change monitoring, utilizing technologies from NASA and other SGCOS agencies. A plan for related NASA research and development activity shall be integral to the interagency coordinated *Spacebased Global Change Observation System Program Plan*.

d. Department of Energy (DOE)

The Department of Energy shall participate with NASA and the other appropriate SGCOS agencies in developing

satellite systems to maintain data continuity for the understanding of the Earth's radiation budget, consistent with the *Space-based Global Change Observation System Program Plan*, with an initial capability by 1995.

The DOE shall participate with other SGCOS agencies in conducting research and development for advanced technologies that can offer promise of increased performance and/or lower cost for advanced longterm global change monitoring systems. A plan for related DOE research and development activity shall be integral to the interagency coordinated *Spacebased Global Change Observation System Program Plan*.

e. Department of Defense (DoD)

The participation of the Department of Defense in the Space based Global Change Observation System shall consist of related activities derived from current and planned DoD programs. DoD, in cooperation with the Director of Central Intelligence, as appropriate, will identify those technologies and programs that support the SGCOS and shall seek to make appropriate technology and data from those programs available. DoD may also seek to identify and take advantage of SGCOS programs and capabilities, as appropriate.

f. Department of Commerce (DOC)

The Department of Commerce, through the National Oceanic and Atmospheric Administration (NOAA), shall participate in the collection, processing, archiving, retrieval, and use of oceanic-and atmospheric-oriented data and shall, consistent with the *Spacebased Global Change Observation System Program Plan*, provide for the permanent archiving, management, access, and distribution of oceanic and atmospheric Earth science data sets for global change research, including data sets obtained by the SGCOS. DOC/NOAA shall work with other appropriate agencies to transition, as appropriate, systems, technology, and/or sensors developed for use in the SGCOS to operational use. The *Space-based Global Change Observation System Program Plan* shall include a discussion of the criteria related to the desirability and economic feasibility of transitioning specific SGCOS assets to operational use.

g. Department of the Interior

The Department of the Interior shall assist in the collection, processing, archiving, retrieval, and use of land-oriented data and shall, consistent with the *Spacebased Global Change Observation System Program Plan*, provide for the permanent archiving, management, access, and distribution of land-oriented Earth science data sets for global change research, including data sets obtained by SGCOS.

h. Department of State

The Department of State has a role in Spacebased Global Change Observation with respect to international agreements, significant activities or arrangements with foreign countries, international organizations, or commissions where the United States and one or more foreign countries are members. Prior to discussions between participating agencies and foreign entities that could reasonably be expected to lead to such agreements, activities, or arrangements, the Department of State shall be consulted and, as appropriate, shall coordinate interagency review of the proposed U.S. position to ensure consistency with U.S. foreign policy, national security, and economic interests, and satisfaction of applicable legal requirements. This shall not affect the ability of participating agencies to explore, in accordance with established procedures, scientific, technical, and programmatic aspects of proposed international cooperation that do not involve commitments or foreign policy concerns.

IV. Reporting Requirements

a. NASA shall lead the preparation of a coordinated and integrated interagency *Spacebased Global Change Observation System Program Plan* that shall be forwarded by the CEES through FCCSET to the NSpC, NSC, OSTP, and OMB not later than July 1, 1992. This plan shall address the SGCOS architecture, existing and planned SGCOS satellite systems, technology development activities, sensor suites, launch systems, supporting agency contributions and the data and information systems.

b. Each March, FCCSET/CEES shall prepare and forward a *Spacebased Global Change Observation System Program Report* on the progress and accomplishments of the SGCOS to the NSpC, NSC, OSTP, and OMB. The *Spacebased Global Change Observation System Program Plan* will meet this requirement for 1992.

/s/ George Bush

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