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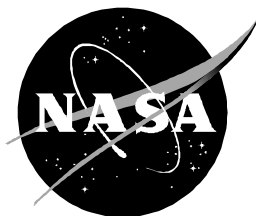
**AUDIT  
REPORT**

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**DISSEMINATION OF EARTH SCIENCE  
PROGRAM DATA AND INFORMATION**

**JUNE 8, 1998**

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National Aeronautics and  
Space Administration

**OFFICE OF INSPECTOR GENERAL**

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## **ACRONYMS**

DAAC	Distributed Active Archive Center
EOS	Earth Observing System
EOSDIS	Earth Observing System Data and Information System
ESDIS	Earth Science Data and Information System
FY	Fiscal Year
JPL	Jet Propulsion Laboratory
OES	Office of Earth Science

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# DISSEMINATION OF EARTH SCIENCE PROGRAM DATA AND INFORMATION

## **EXECUTIVE SUMMARY**

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### ***INTRODUCTION***

The Earth Science Program is a scientific endeavor seeking to provide understanding of the Earth and how it is changing, both naturally and as the result of human interaction. The Earth Science Program comprises integrated spacecraft and measurement capabilities; information management systems to acquire, process, archive, and distribute global data sets; and research and analysis programs to convert data into new knowledge of the Earth.

### ***AUDIT OBJECTIVE***

The audit objectives were to determine whether (1) NASA's efforts to disseminate Earth Science Program information accomplish the program's goals and (2) NASA explored cost-efficient and effective methods to disseminate Earth Science Program information.

### ***RESULTS OF AUDIT***

Earth Science Program and Earth Science Data and Information System (ESDIS) project officials have made significant strides toward creating an advanced system network capable of disseminating the program's data and information products. Further, the Distributed Active Archive Centers (DAACs) have taken initiatives to enhance services by creating web sites and products that will make Earth Science Program data and information more accessible (Exhibit 1 highlights DAAC management best practices that successfully improved operations through reinvention and innovation). The audit showed that Earth Science Program data and information products are designed to support the scientific research community. Although stated Agency goals are to disseminate and enable the productive use of Earth science data and information by a broad spectrum of users, the Earth Science Program is not meeting its goals. The program is not meeting its goals because four of the five intended user groups are not making significant use of the program's data and information products. We were unable to evaluate the cost-effectiveness of dissemination efforts because neither NASA nor the DAACs account for dissemination costs.

### ***RECOMMENDATIONS***

We made recommendations to establish and fund a formal outreach plan to focus dissemination efforts on nonscientific customers and to integrate customers more fully into ESDIS data dissemination activities. Management concurred with the report recommendations, and we consider planned actions responsive.

## **BACKGROUND**

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The Earth Science Program (formerly known as Mission To Planet Earth), NASA's contribution to the U.S. Global Change Research Program, is a scientific endeavor seeking to provide understanding of the Earth and how it is changing, both naturally and as the result of human interaction. The Earth Science Program comprises an integrated slate of spacecraft and in situ measurement capabilities; data and information management systems to acquire, process, archive, and distribute global data sets; and research and analysis programs to convert data into new knowledge of the Earth. The Earth Observing System (EOS), the centerpiece of the Earth Science Program, is a program of multiple spacecraft and interdisciplinary, investigative science teams to provide a 15-year data set of key parameters needed to understand global climate change. For Fiscal Year (FY) 1997, the Earth Science Program budget was approximately \$1.4 billion.

Earth Science Program officials established the ESDIS Project Office to oversee the Earth science data and information products. The ESDIS Project Office, at the Goddard Space Flight Center, performs program oversight for the EOS Data and Information System (EOSDIS) and the DAACs. The DAACs are the operational data management and user services arm of the EOSDIS. DAACs have responsibility for Earth Science Program/EOS data ingest; data product generation; archive, catalog, distribution, and user support--in other words, getting the data and information to the public. A total of eight DAACs, in various regions of the United States, will carry out this activity. NASA selected the DAACs based on their host institution's existing expertise in various scientific areas relating to the study of changes in a global environment.

The EOSDIS network connects the eight DAACs. After entering the network, a user can request products from any DAAC. While automated access is the most common method for obtaining data, less sophisticated users may obtain data and information simply by telephone or written requests for data products.

Each DAAC manages specific data product libraries related to its scientific area of expertise. DAAC product libraries consist of data and information from Earth Science Program and EOS remote sensing satellite missions. Data may include satellite instrument measurements

taken over a given period or area, or images taken directly from remote sensing satellites. Generally, "data" serve scientific users, that is, researchers and scientists. "Information," as opposed to data, involves higher level applications that use and interpret data measurements. Information makes remote sensing data useful to nonscientific users, that is, the commercial sector, the educational community, and the general public. (Exhibit 2 lists the DAACs, along with their areas of expertise and FY 97 budgets.)

# **OBJECTIVES, SCOPE, AND METHODOLOGY**

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## ***OBJECTIVES***

The audit objectives were to determine whether:

- NASA's efforts to disseminate Earth Science Program data and information accomplish the program's goals.
- NASA has explored cost-efficient and effective methods to disseminate Earth Science Program data and information.

## ***SCOPE AND METHODOLOGY***

This audit is one of three performed to assess various scientific aspects of the Earth Science/EOS programs. We performed this audit because wide dissemination of Earth Science Program data and information is critical to meeting the goals of the program's Strategic Enterprise Plan. The audit reviewed combined efforts by the Earth Science Program Office, the ESDIS Project Office, and the DAACs to disseminate Earth science data and information products. The audit focused on dissemination efforts to reach users outside the scientific researcher community.

The audit included examinations and tests of applicable records and documentation, dated from August 1996 to September 1997. Specifically, we conducted interviews of Earth Science Program, ESDIS, and DAAC officials and reviewed policies, procedures, and documents relevant to the audit objectives. We also conducted two surveys: (1) a judgementally selected sample of Earth Science Program data and information requesters and (2) user working group members from DAACs at the Earth Resources Observation System Data Center and the National Snow and Ice Data Center.

## ***AUDIT FIELD WORK***

We performed audit field work from March 1997 through January 1998 at the following six locations:

- NASA Headquarters, Washington, D.C.
- Goddard Space Flight Center, Greenbelt, Maryland
- Langley Research Center, Hampton, Virginia
- Earth Resources Observation System Data Center, Sioux Falls, South Dakota
- National Snow and Ice Data Center, Boulder, Colorado
- Jet Propulsion Laboratory (JPL), Pasadena, California

We conducted the audit in accordance with generally accepted government auditing standards.

## OBSERVATION AND RECOMMENDATIONS

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### ***NASA NEEDS TO IMPROVE EFFORTS TO WIDELY DISTRIBUTE EARTH SCIENCE PROGRAM DATA AND INFORMATION***

NASA's dissemination efforts have not resulted in a highly diverse customer base for Earth Science Program data and information. Only the scientific research community has been making significant use of the program's data and information. Other users, such as the commercial, technological, public sector, educational, and the general public have not made significant use of Earth Science Program data and information. This condition occurred because:

- the ESDIS Project Office has not emphasized customer outreach activities,
- DAAC user working groups are not diversified, and
- ESDIS project officials did not follow up on the user model conference report.

As a result, NASA's Earth Science Program data and information are not reaching four of its five intended user groups. Consequently, four of the intended user groups will not achieve their desired results.

### ***STRATEGIC ENTERPRISE PLAN DEFINES PROGRAM GOALS***

The Earth Science Program's mission is "to develop understanding of the total Earth system and the effects of natural and human-induced changes on the global environment." The Mission To Planet Earth Strategic Enterprise Plan, 1996 through 2002 defines three goals to further the program mission. Two of these goals are:

- Disseminate information about the Earth system.
- Enable the productive use of the program's science and technology in the public and private sectors.

The strategic enterprise plan illustrates NASA's vision of a broad spectrum of users as shown in Exhibit 3. The plan more specifically defines this broad spectrum by classifying users in one of five categories: scientific researchers, commercial users, public sector users, educational community and general public, and technology users. In addition, the plan describes desired results each of the user groups can accomplish using Earth Science Program data and information. Exhibit 4 shows the desired results.

### ***DIVERSE CUSTOMER BASE DOES NOT EXIST***

A highly diverse customer base for Earth Science Program data and information do not currently exist. The majority of customers



requesting products from the DAACs are from the scientific research community. Although we attempted to quantify customers from the various user communities, the DAACs could not provide accurate statistics for the total percentage of nonscientific customers. Current DAAC practices do not include a data collection mechanism to determine the number of scientific and nonscientific customers.

Managers from each DAAC we visited described most of their customers as scientific users, specifically, Earth Science Program Instrument or Interdisciplinary Science Team members, NASA or federally funded researchers, or academic institution researchers. While most DAAC managers could identify some customers from the educational community, few could identify specific customers from the commercial, public, or technology sector communities.

In an attempt to quantify nonscientific users at two of the DAACs visited, we surveyed a judgmentally selected sample of actual data or information requesters. Since the DAACs do not record how requesters use the data, two user services managers gave us listings of requesters believed to be nonscientific users. Discussions with 22 of the requesters showed that only 8 used the data for nonscientific purposes. The remaining 14 used the data for scientific purposes.

The eight nonscientific requesters used or are attempting to use the data for the following purposes.

**NONSCIENTIFIC USES OF EARTH SCIENCE  
DATA AND INFORMATION**

<b>Requesters</b>	<b>Data and Information Uses</b>
4 Education Users	<ol style="list-style-type: none"> <li>1. Publication of college-level text books.</li> <li>2. K-12 Science Projects.</li> <li>3. K-12 Educational maps.</li> <li>4. Products under development.</li> </ol>
2 NASA Users	<ol style="list-style-type: none"> <li>1. Validation of EOS Science Data Plan.</li> <li>2. JPL Scientific and Outreach Programs.</li> </ol>
2 Commercial Users	<ol style="list-style-type: none"> <li>1. Commercial software under development.</li> <li>2. Publish maps with pipeline or electrical overlays.</li> </ol>

Our sample showed that two (one each from the educational and commercial communities) of the eight nonscientific users are still in the developmental stages for their products.

We identified three primary causes, discussed below, that have contributed to the lack of a highly diverse customer base.

***ESDIS PROJECT OFFICE  
HAS NOT EMPHASIZED  
CUSTOMER OUTREACH  
ACTIVITIES***

The ESDIS Project Office has not established formal outreach plans for dissemination efforts and does not require the DAACs to prepare such plans. In addition, the ESDIS Project Office does not separately fund outreach programs in the annual DAAC budget request. ESDIS project officials stated that they do not mandate how much the DAACs spend on outreach unless a DAAC requests approval for a specific outreach project.

ESDIS project officials consider the user services group to be the focal point for outreach activities. This group, consisting of the user services manager from each DAAC, identifies conferences and other outreach events. The group then assigns staff from the DAACs to attend events related to their scientific areas of expertise.

According to ESDIS project and DAAC officials, the major reason for insufficient outreach is lack of funding. Generally, program officials support outreach activities if they do not negatively affect the DAACs' responsibilities to process Earth science data in support of NASA's science research priorities. Consequently, most of the DAAC user services managers stated that while they would like to do more in the outreach area, funding constraints prohibit these efforts. To meet the goals of the strategic enterprise plan, Earth Science program officials should establish and fund a formal outreach plan.

***DAAC USER WORKING  
GROUPS ARE NOT  
DIVERSIFIED***

The DAAC user working group memberships are not diverse. User working groups are advisory panels for each DAAC, made up of EOS interdisciplinary investigators and members of the broader Earth science community that each DAAC serves. DAAC user working groups directly affect customer focus because they approve DAAC data and information activities. Specifically, the groups set priorities for the data to be collected, processed, archived, and distributed at each DAAC and provide other user services.

Individuals with EOS, Earth science, or other scientific research backgrounds made up 100 percent of the user working group memberships at four DAACs we visited (JPL, Langley Research Center, National Snow and Ice Data Center, and the Earth Resources Observation System Data Center). Because NASA funds the DAACs'

operations, DAAC managers must be responsive to the advice and recommendations of their respective NASA-appointed user working group.

We surveyed 24 user working group members from two DAACs. Sixteen of the members responded to the survey. Of those 16, 11 responded that the Earth science community was the primary customer for their DAAC. When asked about official priorities for data dissemination, six stated that Earth Science Program/EOS and Earth scientists were priority while six stated that the data and information were available to anyone. The remaining four either did not know official priorities or did not respond.

We also asked how the DAACs were reaching the broader community, particularly those users outside the scientific community. Responses ranged from participation at conferences and establishing web sites to data does not lend itself to nonscientific users. Some members responded that outreach is important as long as it is not a detriment to the Earth science community. Others suggested that outreach should be funded through joint efforts or special grants.

Although 90 percent of those surveyed supported outreach, primarily through conferences and web sites, approximately 70 percent viewed the Earth science community as the DAACs' priority. One way to ensure that a highly diverse customer base develops for Earth Science Program data and information is to diversify the composition of the DAAC user working groups. Diversification would ensure that dissemination efforts are equally emphasized among a broader spectrum of users than the Earth science community.

***ESDIS PROJECT  
OFFICIALS DID NOT  
FOLLOW UP ON USER  
MODEL CONFERENCE  
REPORT***

In 1995, the ESDIS Project Office held a user model conference to identify potential customer groups. The stated purpose of the conference was to provide an authoritative statement of the needs and characteristics of potential EOSDIS users. The conference participants defined 12 potential user group categories for Earth Science Program data and information as follows:

1. Retrospective Research
2. Field Campaigns and Individual Data Providers
3. Persistent Information Production for Research
4. Scientific Environmental Assessment
5. Commercial Users
6. Operational Users
7. Resource Planners and Managers

8. Policy Formulation and Decision Making
9. Legal Community
10. K-12 Education
11. Collegiate and Professional Education
12. Libraries, Press, and the Public.

The user model conference participants issued a report with specific conclusions and recommendations for each potential user category. The conference report also contained general conclusions and recommendations considered significant by all the participating groups.

Four of the seven general conclusions were:

1. The potential user community is large, diverse, and has many shared values and needs.
2. All potential user groups believe they could benefit from EOSDIS.
3. Under current resource allocations, EOSDIS cannot support everyone.
4. Awareness and information about EOSDIS are inadequate.

Four of the general recommendations were:

1. EOSDIS personnel must continually evaluate user needs and seek to improve feedback mechanisms.
2. EOSDIS personnel should work to meet the needs of the broader user community directly and through partnerships.
3. EOSDIS personnel should seek innovative ways to educate the potential user community about the utility of their data, information, tools, and services.
4. EOSDIS personnel should convene a follow-on conference in approximately 2 years to review the success achieved in meeting the needs of the broader user community.

Although the conference participants issued a formal report with recommendations, the ESDIS Project Office did not take any actions

to implement the report's recommendations and did not require follow-up actions by DAAC management. Surveys of 2 DAAC user working groups showed that only 3 of the 16 members who responded were aware of the report's existence. The user model conference report was an excellent tool that could be used to augment development of a broad and diverse customer base for Earth Science Program data and information. Implementation of the report's recommendations that apply to current operations could be another way to ensure that Earth Science Program data and information are disseminated to a diverse user community.

***PUBLIC AND PRIVATE  
USERS ARE UNINFORMED  
AND UNABLE TO ACHIEVE  
DESIRED RESULTS***

The combined efforts of Earth Science Program, ESDIS Project Office, and DAAC officials have not resulted in dissemination of data and information to a broad spectrum of customers or the productive use of data and information by a diverse user community, as required by the Mission To Planet Earth Strategic Enterprise Plan, 1996 through 2006. Specifically, NASA has not developed four of the five Earth Science Program data and information user categories. Without more emphasis on formal outreach plans, broader representation within the user working groups and follow-up on the user model conference report, Earth Science Program data and information will not be disseminated to the intended user community. In turn, the user community will not achieve desired results such as (1) new knowledge of the Earth, (2) tools for improved decisionmaking to increase return on investment, (3) tools for decision makers in areas of public management and policy responsibility, (4) products and services to enhance educational quality and public awareness, and (5) advanced technologies to bring new or cheaper products and services to market or public use.

***RECOMMENDATION 1***

The ESDIS Project Office should establish and fund a formal outreach plan to focus dissemination efforts on nonscientific customers.

***MANAGEMENT'S  
RESPONSE***

NASA management concurred with the recommendation. NASA's Office of Earth Science (OES) established a division that will address dissemination of data to nonscientific customers. The OES is planning an outreach program to include implementation by the ESDIS Project Office. The complete text of management's response is in Appendix A.

***EVALUATION OF  
MANAGEMENT'S  
RESPONSE***

The actions planned are considered responsive to the intent of the report recommendation.

**RECOMMENDATION 2**

The ESDIS Project Office should review user working group composition at each DAAC to ensure that members represent the diverse customer base described in the Mission To Planet Earth Strategic Enterprise Plan, 1996 to 2002.

**MANAGEMENT'S  
RESPONSE**

Management concurred with the recommendation. The OES will review user working group composition and make needed changes by mid-July. The newly formed Applications and Outreach Division will manage the review and modification of working group membership to ensure consistency with program requirements and diversity of membership. The OES also plans other changes such as:

- Adding milestones to each DAAC to measure utilization of Earth science data by customer type.
- Documenting the cost of access and distribution to users.
- Adding a minimum success criterion to delineate numbers of users in all categories expecting to access data.

**EVALUATION OF  
MANAGEMENT'S  
RESPONSE**

The actions planned are considered responsive to the intent of the report recommendation.

**RECOMMENDATION 3**

The ESDIS Project Office should review the user model conference report recommendations and implement recommendations that apply to current operations.

**MANAGEMENT'S  
RESPONSE**

NASA management concurred with the recommendation. The OES will revisit the user model conference report and implement recommendations that show potential for improving current operations.

**EVALUATION OF  
MANAGEMENT'S  
RESPONSE**

The actions planned are considered responsive to the intent of the report recommendation.

## EXHIBIT 1

### DAAC BEST PRACTICES

The following two areas illustrate how management successfully improved operations through reinvention and innovation.

Customer Approach	The Goddard DAAC applied two "customer centered" approaches that produced measurable results. First, management identified three metrics that create customer value: data usefulness, system throughput, and user efforts to access data. By analyzing operations against the metrics, management found specific changes they needed to make. Second, staff prepared profiles for each customer group. Profiles defined customers' needs. By comparing existing products to the profiles, management found ways to improve products. According to DAAC management, these two approaches decreased the cost per requested product from \$200 to \$67.
Outreach CD-ROM	<p>The Earth Resources Observation System Data Center received thousands of requests for the Spaceborne Imaging Radar-C* educational CD-ROM. JPL developers of the CD-ROM noted nine key points for other educational CD-ROM developers:</p> <ol style="list-style-type: none"><li>(1) Don't try to do too much. Project details are not the main interest of teachers or students.</li><li>(2) Keep user interfaces simple.</li><li>(3) Try to use a web interface. It provides a dynamic, interactive product.</li><li>(4) Involve teachers, with varied backgrounds, early in the project.</li><li>(5) Get school system science coordinators involved. Their endorsement will advertise your product.</li><li>(6) Obtain teacher feedback at all stages and incorporate feedback into product.</li><li>(7) Test products in real classrooms before release.</li><li>(8) Conduct teacher workshops after release.</li><li>(9) Partner with existing educational and commercial resources: universities, educational companies, Internet service providers, etc.</li></ol>

\*Imagery data collected from an imaging radar system launched aboard the space shuttle in 1994.

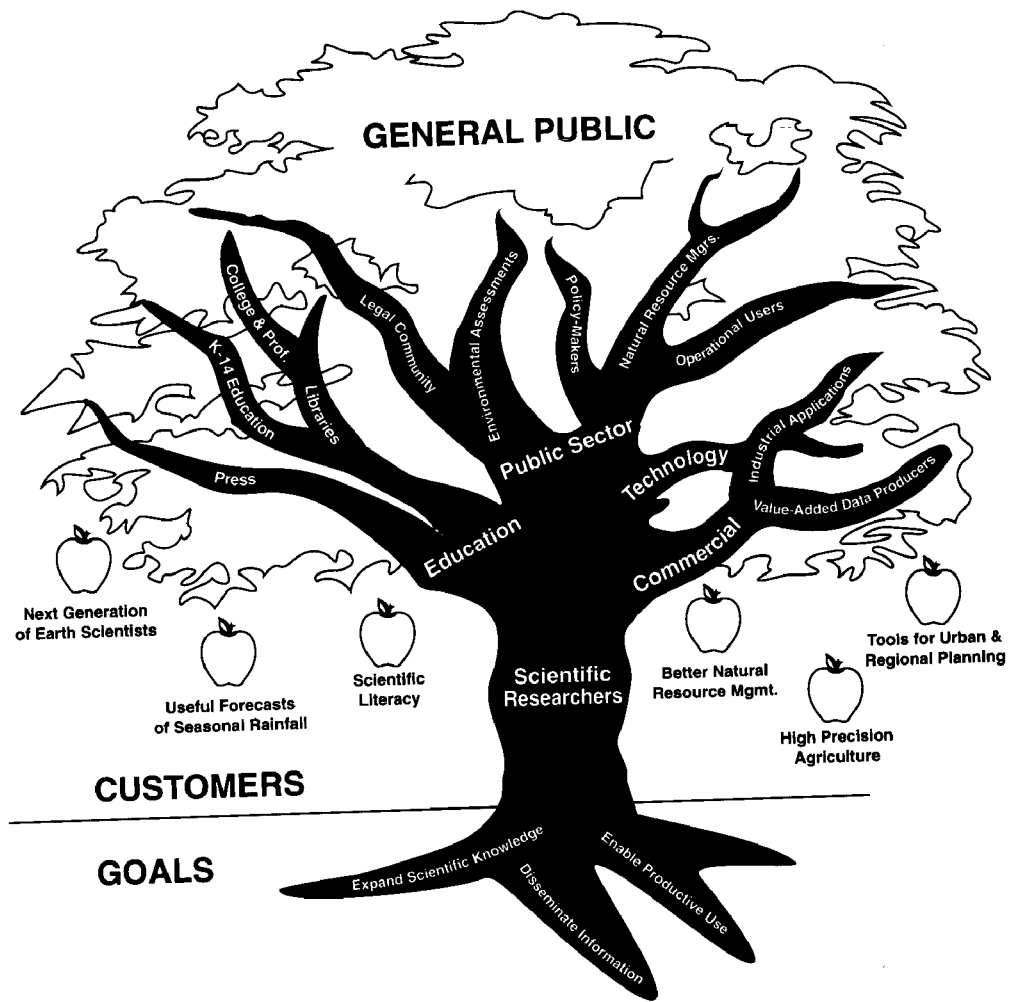
**EXHIBIT 2****DISTRIBUTED ACTIVE ARCHIVE CENTERS**

<b>DAAC</b>	<b>AREAS OF EXPERTISE</b>	<b>FY 1997 BUDGET (\$ in Millions)</b>
Alaska Synthetic Aperture Radar Facility	Ice, Snow and Sea Surface Imagery	\$3.2
Earth Resources Observation System Data Center	Land Processes	\$4.3
Oak Ridge National Laboratory	Biogeochemical Cycles and Field Campaign Data	\$1.9
National Snow and Ice Data Center	Polar Oceans and Ice	\$2.6
Jet Propulsion Laboratory	Physical Oceanography	\$3.9
Langley Research Center	Clouds, Radiation, Aerosols	\$2.7
Goddard Space Flight Center	Climate, Meteorology, Ocean Biology	\$3.8
Socio-Economic Data and Applications Center	Human Dimension of Global Change	\$3.0
<b>TOTAL</b>		<b>\$25.4</b>

Note: The total budget figure does not include civil service support, which is applicable at some DAACs.



# EARTH SCIENCE PROGRAM GOALS AND DATA AND INFORMATION CUSTOMERS



Source: Mission To Planet Earth Strategic Enterprise Plan, 1996 through 2002

## EXHIBIT 4

### DESIRED RESULTS FOR PUBLIC AND PRIVATE SECTOR USERS OF EARTH SCIENCE PROGRAM DATA AND INFORMATION

USER CATEGORY	DESIRED RESULTS
Scientific Users	<p>New knowledge of the Earth system.</p> <ul style="list-style-type: none"> <li>--Data on natural and anthropogenic phenomena.</li> <li>--Predictive models' coupling elements of the Earth system.</li> </ul>
Commercial Users	<p>Tools for improved decisionmaking to increase return on investment; increased synergy of Earth Science Program and commercial data.</p> <ul style="list-style-type: none"> <li>--Forecasts for agriculture.</li> <li>--Images revealing the health and maturity of forests or surface features for land use planning.</li> <li>--Images pointing to the location and health of fish stocks.</li> </ul>
Public Sector Users	<p>Tools for decision makers in areas of public management and policy responsibility.</p> <ul style="list-style-type: none"> <li>--Integration of remotely sensed data into State and local decision processes.</li> <li>--Land cover and land use change detection.</li> <li>--Assessments of environmental quality.</li> <li>--Evaluation of effectiveness of international agreements.</li> <li>--Atmospheric data, including volcanic eruption consequences for aviation safety and guidance for aerospace manufacturers.</li> <li>--Improved flood warning and vulnerability assessments.</li> <li>--Identification of rapidly deforming land surfaces in seismically active urban areas.</li> </ul>
Education/General Public	<p>Products and services to enhance educational quality and public awareness.</p> <ul style="list-style-type: none"> <li>--Pre-service and in-service teacher training.</li> <li>--Communications products and tools to enhance public understanding of Earth Science Program via both direct access and media coverage.</li> <li>--Curriculum enhancements with better data access and data visualization techniques.</li> </ul>
Technology Users	<p>Advanced technologies to bring new or cheaper products and services to market or public use.</p> <ul style="list-style-type: none"> <li>--Advanced instruments for weather monitoring .</li> <li>--Techniques for monitoring facilities and resources that reduce costs.</li> <li>--Information and data processing technologies.</li> </ul>

Source: Mission To Planet Earth Strategic Enterprise Plan, 1996 through 2002

National Aeronautics and  
Space Administration

**Headquarters**

Washington, DC 20546-0001



MAY 6 1998

Reply to Attn of

YF

**TO:** W/Assistant Inspector General for Auditing  
**FROM:** Y/Associate Administrator for Earth Science  
**SUBJECT:** Response to the Office of Inspector General (OIG) Draft Report, Audit of  
Dissemination of Earth Science Program Data and Information (Assignment  
Number A-HA-97-035)

NASA has completed its review of the subject draft report dated April 10, 1988. We agree that NASA has not developed a strong outreach program in four of five Earth Science Program data and information user categories. However, we have put in place an organizational structure and a strategy to mitigate these concerns.

**OIG Recommendation 1 - The Earth Science Data Information System (ESDIS) Project Office should establish and fund a formal outreach plan to focus dissemination efforts on non-scientific customers.**

**NASA Response:** Concur. The Office of Earth Science (OES) has formed a new division within the OES, Applications and Outreach Division, to specifically address this issue. This office is planning a program of outreach, which includes implementation by the ESDIS Project Office.

One of the ongoing programs in this division addresses the need of establishing a broader user base. It is the Earth Science Applications Research Program (ESARP). The goal of ESARP is to extend the uses of Earth science research, information and products beyond the needs of global change research to a broader user community, including other Federal agencies, state, and local governments, value-added companies, private sector users, and various non-governmental organizations. In the process, ESARP helps to define the needs of the broader user community and identify space assets and science results that can meet those needs.

Two NASA Research Announcements (Establishment of Regional Earth Science Application Centers and Remote Sensing Applications Research in Agriculture, Forestry, and Range Management) will be awarded this year. These are an integral part of the ESARP and respond to the challenge to develop new methods for bringing together the research, service, and end-user communities to develop and apply Earth science and information to practical problems.

Proposals were also selected in November 1997, to be continued for 5 years in response to the Cooperative Agreement Notice (CAN), Extending the Use and Applications of Missions to Planet Earth Data and Information to the Broader User Community. This CAN establishes 12 Type-3 Earth Science Information Partners

(ESIP's) designed to extend Earth science results to the broader user community, for example, agriculture and land use planning, etc.

While it is true that customer outreach has not been its highest priority, Distributed Active Archive Center (DAAC) User Services does perform or directly support outreach on a continuing basis. In the month of November, the Earth Resources Observation System (EROS) Data Center (EDC) DAAC, for example, participated as an exhibitor at the Twelfth International Conference on Applied Geologic Remote Sensing held in Denver, Colorado. The staff distributed brochures and fact sheets on data sets available at the DAAC. The 507 conference attendees represented 21 states and 25 countries. Julian Dumarski from the World Bank visited the DAAC. As a result the EDC contributed data sets for a demonstration at a World Bank Exposition. This same DAAC hosted 510 visitor in November, including 5 tour groups at the K-12 education level. This is the outreach performance of one DAAC in one month. The outreach potential of a DAAC is tremendous. We will continue to emphasize outreach at the DAAC's, especially in the future as new Earth Science data sets are received.


**OIG Recommendation 2** - The ESDIS Project Office should review User Working Group composition at each DAAC to ensure members represent the diverse customer base described in the Earth Science Program Strategic Enterprise Plan, 1996 to 2002.

**NASA Response:** Concur. OES will review User Working Group composition by mid-June and make appropriate changes by mid-July. We do not agree that this function is an ESDIS Project Office responsibility. The working groups were initially established by the Mission To Planet Earth Program Office, for each DAAC to ensure consistency with program requirements. The review and modification of working group membership will be managed by the newly-formed Applications and Outreach Division, to ensure consistency with program requirements and diversity of membership. We also plan to initiate other changes, such as add milestones to each DAAC, to measure percentage utilization of Earth science data by customer type; document the cost of access and distribution to users; and add a minimum success criteria to delineate numbers of users in all categories expecting to access data.

**OIG Recommendation 3** - The ESDIS Project Office should review the User Model Conference Report recommendations and implement recommendations that apply to current operations.

**NASA Response:** Concur. The User Model Conference Report has been put on the Internet and can be located at <http://rsrunt.geog.ucsb.edu/eosdis.html>. We will revisit its contents and will implement those recommendations that show potential for improving our current operations. We will accomplish this action by mid-July.

In conclusion, the OES agrees with the recommendations of the OIG draft report and will work through our Earth System Science Program Office to ensure that the desired results are reached quickly. We also appreciate the efforts of the NASA OIG to assist us in seeking cost effective, efficient ways to disseminate Earth Science Program information to the general public.

  
Ghassem R. Asrar

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George C. Marshall Space Flight Center  
John C. Stennis Space Center

**Non-NASA Federal Organizations and Individuals**

Assistant to the President for Science and Technology Policy  
Deputy Associate Director, Energy and Science Division, Office of Management and Budget  
Budget Examiner, Energy Science Division, Office of Management and Budget  
Associate Director, National Security and International Affairs Division,  
    General Accounting Office  
Professional Assistant, Senate Subcommittee on Science, Technology and Space  
Special Counsel, House Subcommittee on National Security, International Affairs, and Criminal  
Justice

## **APPENDIX B**

### **Chairman and Ranking Minority Member - Congressional Committees and Subcommittees**

Senate Committee on Appropriations

Senate Subcommittee on VA, HUD, and Independent Agencies

Senate Committee on Commerce, Science and Transportation

Senate Subcommittee on Science, Technology and Space

Senate Committee on Governmental Affairs

House Committee on Appropriations

House Subcommittee on VA, HUD, and Independent Agencies

House Committee on Government Reform and Oversight

House Committee on Science

House Subcommittee on Space and Aeronautics

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