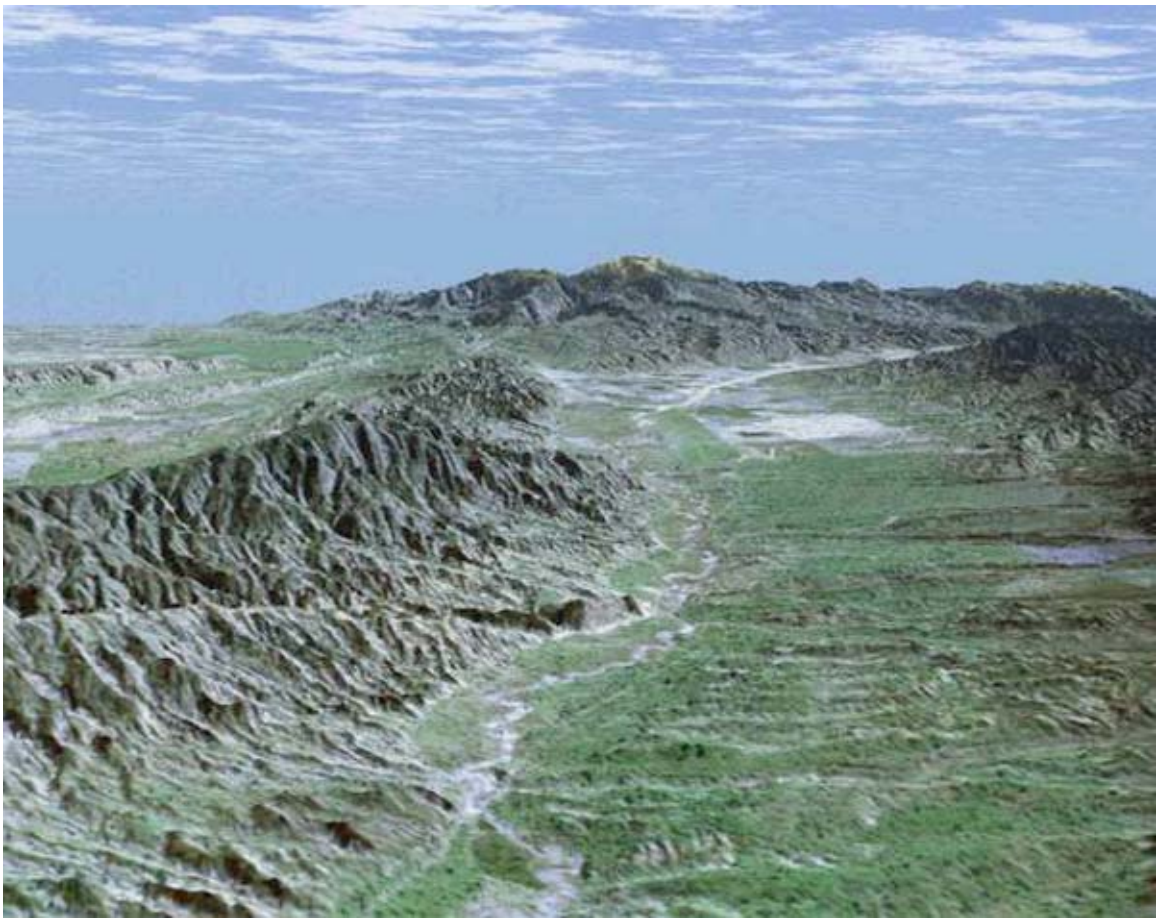
THEME: Earth Science Applications



This image of the Caliente Range and Cuyama Valley in California was created using radar data from the Shuttle Radar Topography Mission, overlayed by Landsat data of land cover. Such detailed topographic data have a wide variety of civilian and defense uses, including improving aviation safety in challenging terrain and weather. Scientific measurements must be transformed into information products useful to others for the economy and society to fully benefit. Our applications and education programs are designed to provide the translation from science to application through partnerships between NASA and professional information product providers and educators.

EARTH SCIENCE APPLICATIONS

MAJOR EVENTS IN FY 2004

- Benchmark improvement to at least two national applications: air quality and agricultural productivity.
- Competitively select projects for the Research, Education, and Applications Solutions Network (REASoN) program to serve national priorities.

THEME: Earth Science Applications

OVERVIEW

The Earth Science Applications Program bridges the gap between scientific discoveries and practical applications to benefit society by providing Earth science data and information in forms readily useable by providers of essential services to the Nation. Observations from NASA Earth observing satellites have proven to be valuable in improving the National Oceanographic and Atmospheric Agency's (NOAA) predictions of hurricane landfall, monitoring wildfires to help the U.S. Forest Service allocate resources, and increasing aviation safety through the use of Shuttle Radar Topography Mission (SRTM) data for terrain databases. As we move forward to 2004, the NASA Earth Science Applications Program continues to benchmark contributions to relevant decision support tools that are vital for our nation's safety and security.

Missions	Goals supported by this theme	Objectives supporting those goals Reference 2003 Strategic Plan
Understand and Protect our Home Planet	1. Understand the Earth system and apply Earth system science to improve prediction of climate, weather, and natural hazards.	1.2 Expand and accelerate the realization of economic and societal benefits from Earth science, information, and technology.
	3. Create a more secure world and improve the quality of life by investing in technologies and collaborating with other agencies, industry, and academia.	3.1 Enhance the Nation's security by developing and demonstrating critical access-to-space technologies that benefit NASA, DoD, and other government agencies. (Supporting Role)
Inspire the Next Generation of Explorers	6. Inspire and motivate students to pursue careers in science, technology, engineering, and mathematics.	6.2 Motivate K-16+ students from diverse communities to pursue science and math courses and ultimately college degrees in science, technology, engineering and mathematics. (Supporting Role)
	7. Engage the public in shaping and sharing the experience of exploration and discovery.	7.2 Improve science literacy by engaging the public in NASA missions and discoveries, and their benefits, through such avenues as public programs, community outreach, mass media, and the internet. (Supporting Role)

RELEVANCE

The Applications Program enhances the availability, interoperability, and utility of Enterprise and private sector data sets, communications, computing, and modeling capabilities to serve national applications. Applications Program outputs include prototypes, assessments, procedures, and verification reports resulting from demonstration projects. The Enterprise works through partnerships with public, academic, and private organizations to develop innovative approaches for using Earth science information and enhances products and services delivered through state, local and tribal organizations to serve citizens. In essence, ESE pursues "government-to-government-to-citizen" relationships to extend the Earth science results to society. Key components of our Nation's economy and homeland security can be improved with the best available knowledge of global conditions. The NASA Earth Science Enterprise is focused on a mission to deliver improved predictions of weather, climate, and natural hazards based on global measurements. The Applications Program is focused on working with federal agencies and national organizations to optimize the use of human capital, technology and the data and knowledge generated by the constellation of over 15 Earth observing satellites. These spacecraft, which routinely make measurements using over 80 remote sensing systems are used by a community of Earth science laboratories, universities, and research institutions throughout the country.

Education and Public Benefits
In a global economy that depends on access to the best available Earth science information for energy forecasting, aviation safety, agricultural competitiveness, disaster management, and other areas, it is imperative that our Nation have an education system that develops the skills and human capital required to create, maintain, and optimize complex scientific and engineering systems to serve society. The Earth Science Education Program works through partnerships to provide knowledge, data, technology, and people to contribute to the education infrastructure needed to develop "our next generation of explorers." NASA's technology, observations and knowledge of the Earth System can be harnessed to improve predictive capability in fields such as energy usage forecasting, agricultural competitiveness, disaster relief, carbon management, water resource management, invasive species management, and air quality management.

THEME: Earth Science Applications

IMPLEMENTATION

The ESA Theme is composed of national applications cross-cutting technology, and education components. These components harness information gained through Earth System Science research to enhance decision support tools that improve the lives of American citizens.

Earth Science Applications is a multiple-project program with responsibility in the NASA HQ Office of Earth Science. The Agency Program Management Council (PMC) has governing responsibility. Enterprise official is Dr. Ghassem Asrar, Associate Administrator for the Earth Science Enterprise. Theme Director and Point of Contact is Ronald J. Birk, Director for Applications at HQ.

Strategy	Purpose
Benchmarking is the primary method to enable the practical use of earth science data. Benchmarking involves systematically establishing the improvements and standards necessary to assimilate observations from NASA missions and predictions from models into operational agency decision support systems.	
Agricultural Competitiveness	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards to the agricultural community to increase production efficiency, improve environmental stewardship, and increase farm income through partnerships with the U.S. Department of Agriculture.
Aviation Safety	Benchmark the process of integrating enhanced weather, climate, and natural hazard predictions and observations into the National Airspace System using active and passive sensor technologies.
Energy Forecasting	Work in partnership with DOE and other nat'l organizations, including industry and the public sector to benchmark the use of enhanced weather, climate and natural hazard information to help forecast electrical power use, optimize placement of renewable power facilities, and conduct energy forecasting.
Carbon Management	Provide monitoring and modeling capability to serve the USDA, EPA, and DOE in developing a carbon management regime that is planned to include carbon sequestration in soils and biomass to mitigate increases in greenhouse gases in the atmosphere.
Homeland Security	Serve the Nation through partnerships with the Department of Homeland Security and other national organizations to benchmark processes of monitoring air and water quality, tracking the spread of dangerous plumes and particulates, and planning for evacuation scenarios, for integration into a Situation Center for decision support.
Public Health	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards through partnerships with CDC, NIH, DOD and other national public health experts with information to more accurately predict conditions associated with global environmental indicators of public health risks.
Water Mgmt and Conservation	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards to contribute to partnerships w/ USGS, EPA, Bureau of Reclamation, & other nat'l organizations developing tools to quantify, monitor and predict water quantity parameters for resource mgmt.
Air Quality Management	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards through partnerships w/ EPA and other nat'l organizations to improve analytical capabilities for emission estimates, as well as tracking and predicting global to regional dispersion of air quality.
Disaster Management	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards through partnerships with FEMA, USGS, NOAA, and other national organizations to provide improved natural hazard detection, response and mitigation through monitoring of earthquakes, hurricanes, floods, and tornados.
Coastal Zone Management	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards through partnerships with NOAA and other nat'l organizations to facilitate the modeling and prediction of harmful algal bloom development and landfall to support decision makers in coastal mgmt.
Invasive Species Mgmt	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards through partnerships with USGS, USDA, and other national organizations to develop tools and methodologies for detecting, monitoring and mitigating invasive species.
Community Growth	Benchmark the process of assimilating NASA enabled predictions of weather, climate and natural hazards through partnerships with EPA, state agencies and other nat'l organizations to assist regional and local gov'ts with data and analyses that support municipalities in State Implementat'n Plan reporting.
Earth Science Education	Integrate the knowledge, data, technology and human capital resulting from NASA Earth Science Enterprise research and development into the Nation's education system and enable partnerships with the Dep'ts of Education and Labor, the National Science Foundation and others who share this purpose.
Crosscutting Solutions	Support the national applications core areas through 1) systems engineering, 2) solutions networks, 3) geospatial interoperability engineering, and 4) human capital capacity development.

Tailoring:	No exceptions to NPG 7120.5B have been taken.

THEME: Earth Science Applications

STATUS

This Theme accomplished the following this past year:

- Developed the Applications Strategy: 2002-2012; National Academy of Sciences Review delivered 9/30/02.
- Validated the use of QuikScat (wind) and TRMM (precipitation) measurements for operational weather forecasting.
- Successfully validated the MODIS Rapid Fire Response Project with the U.S. Forest Service.
- Validated the use of SRTM, along with airborne Interferometric Synthetic Aperture Radar and lidar data for flood mapping and terrain databases for aviation.

Link to project homepage for more information: http://gaia.hq.nasa.gov/eseapps/

PERFORMANCE MEASURES

Annual Performance Goals	
1.2.1	OUTCOME: Expand and accelerate the realization of economic and societal benefits from Earth science, information, and technology.
4ESA1	National applications: Benchmark measurable enhancements to at least 2 national decision support systems using NASA results.
4ESA2	Cross Cutting Solutions: Expand DEVELOP (Digital Earth Virtual Environment and Learning Outreach Project) workforce development program to at least 5 additional states.
4ESA3	Cross Cutting Solutions: Competitively select at least 5 solutions projects for the Research, Education, Applications solutions Network (REASoN) program to serve national applications.
4ESA4	Cross Cut Solutions: Verify / validate at least two commercial remote sensing sources/products for Earth science research.
3.1.3	OUTCOME: Create a more Secure World and improve the quality of life by investing in technologies and collaborating with other agencies, industry, and academia.
4ESA5	Benchmark improvements to at least two of the target national applications - Air quality and Agricultural competitiveness.
6.2.1	OUTCOME: More students from diverse communities motivated to pursue careers in STEM.
4ESA6	Education: Integrate NASA-reviewed Earth science education results through partnerships into "Revolution" blueprint for Earth Science Education.
4ESA7	Education: Select at least 50 new graduate fellowships to contribute to human capital for Earth science community.
7.2.2	OUTCOME: Engage the public in NASA's scientific exploration of Earth from space.
4ESA8	Provide in public venues at least 50 stories on the scientific discoveries, practical benefits, or new technologies sponsored by the Earth Science Enterprise.
	OUTCOME: A well managed program in acordance with Agency implementing strategies.
4ESA9	Research: Each Research project will allocate 80% of its funding competitively during FY 2004.

INDEPENDENT REVIEWS

Types of Review	Performer	Last Review	Next Review	Purpose
Indep Annual Review	Earth Sys. Science Advisory Council	2-Jun-02	4-Jun-04	Alignment of Earth Science Enterprise & Research Strategies.
National Acad. Sci. (NAS)	NAS/NRC/SSB	2-Sep-02	4-Sep-04	Alignment of National Earth Science Priorities and educational blueprint.

BUDGET

Budget Authority ($millions)	FY 02	FY03	Chng	FY04	Comments
Earth Science Applications Total	**94.7**	**61.7**	**+13.1**	**74.8**	
Research - National Applications	**39.3**	**20.8**	**+3.2**	**24.0**	FY02 level reflects one time
Applications Research (old structure)	39.3	20.8	-20.8	0.0	Congressional interest items.
Research: National Applications	0.0	0.0	+24.0	24.0	New budget structure in FY04.
Research - Education and Outreach	**17.5**	**18.1**	**+2.7**	**20.8**	
Education	16.5	17.1	+2.7	19.8	
Outreach	1.0	1.0	+0.0	1.0	
Technology and Advanced Concepts	**37.9**	**22.8**	**+7.2**	**30.0**	
Applications Development (old structure)	37.9	22.8	-22.8	0.0	
Adv Concepts: Cross Cutting Solutions	0.0	0.0	+30.0	30.0	New structure in FY04

Note: For all formats, the FY 02 column reflects the FY 2002 Congressional Operating Plan dated 9/30/02. The FY 03 column reflects the FY 2003 President's Budget Submit (PBS) as Amended. The Change column includes both programmatic and full cost adjustments. FY 2004 column is in full cost.

THEME: Earth Science Applications

RESEARCH: National Applications Program

PURPOSE

Objectives	Reference 2003 Strategic Plan	Performance Measures
1.2, 3.1		4ESA1, 4ESA5

The National Applications Program extends the use of Earth observations beyond the purpose of increasing knowledge of the Earth system into practical applications of the knowledge. The Program makes significant contributions to the President's Management Agenda, the E-Government initiative, and the Climate Change Research Initiative (CCRI) and will contribute to the education and workforce development objectives of the Administration, the Agency, and the Earth Science Enterprise. The program serves the NASA vision "to improve life here" and the NASA mission "to understand and protect our home planet."

OVERVIEW

Our Nation is challenged to manage resources to support economic security. In priority applications including energy forecasting, aviation safety, and agricultural competitiveness, it is important that we have sound data and analysis to provide decision makers with the best available information. The focus of the National Applications Program is to work with partner agencies, including USDA, FEMA, EPA, NOAA, USGS, CDC, NIH, OHS, DoD, DOE to improve predictions of weather, climate and natural hazards using NASA Earth science research and development in those agencys' operational decision support systems. NASA contributes systems engineering, human capital development, and science expertise, along with Earth science observations and predictions to these efforts. In addition, our applications program supports many other important activities across the government, including homeland security, forestry, land management, disaster relief, and other national priorities. We fund demonstrations with other agencies for fixed periods of time in order to address practical challenges facing many agencies, making a unique contribution. Once demonstrated, we hand those applications over for operational use to the implementing agencies. Project-level and systems-level solutions are solicited through Cooperative Agreement Notices such as the Research, Education and Applications Solutions Network (REASoN) and the GLOBE competitive sourcing solicitation.

Link to Project Homepage for more information: http://gaia.hq.nasa.gov/eseapps/

PROGRAM MANAGEMENT

The Earth Science Applications program is managed from HQ with performing center activity at Stennis Space Center, Goddard Space Flight Center and Langley Research center. Enterprise official is Dr. Ghassem Asrar, Associate Administrator for Earth Science at HQ. Theme Director and Program Point of Contact is Ronald J. Birk, Director for Applications at HQ. This program is in full compliance with NPG7120.5B.

TECHNICAL COMMITMENT

This is baselined for the FY 2004 budget. A systems-based implementation plan will baseline this commitment.

Technical Specifications	FY04 President's Budget	Change from Baseline
National Applications Program	Benchmark the process of assimilating observations from missions and predictions from models into decision support systems (DSS) as listed below. (Benchmarking involves systematically determining the improvements to decision support processes that are enabled by NASA results.)	
Agency	**Decision Support System**	
Environmental Protection Agency	CMAQ Air Quality DSS - Community Model for Air Quality	--
Fed Emergency Mgmnt Agency	HAZUS Disaster Management DSS	--
Cts for Disease Cont/ Nat Inst. of Health	EHTN Public Health DSS	--
Office of Homeland Security	Homeland Security Situation Center	--
Environmental Protection Agency	State Implementation Plan (SIP) Community Growth DSS	--
Department of Agriculture	Carbon Management DSS	--
Department of Agriculture	Agricultural Competitiveness DSS	--
Geological Survey - USGS	Biological Invasive Species DSS	--
Bureau of Reclamation - USGS/BoR	BoR RiverWare Water Management DSS	--

THEME: Earth Science Applications

RESEARCH: National Applications Program

TECHNICAL COMMITMENT (continued)

Technical Specifications (continued)	FY04 President's Budget	Change from Baseline
Agency	**Decision Support System**	
Federal Aviation Administration	National Airspace System DSS	--
Department of Energy	Natural Renewable Energy Laboratory DSS	--
Nat Oceanic and Atmospheric Admin	Harmful Algal Bloom Coastal Management DSS	--

Schedule		FY04 President's Budget	Change from Baseline
Projects in FY04 include:			
USDA/Agricultural Competitiveness	Jan-03	Decision Support System (DSS) Benchmark complete	
EPA/Air Quality	Nov-03	DSS Benchmark complete	--
FAA/National Airspace System	Jun-04	National Applications Benchmark complete	--
CDC/NIH/ Public Health	Jan-04	National Applications Benchmark complete	--

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The acquisition strategy is based on two primary components: 1) Competitive sourcing, 2) Space Act Agreements. Performing organizations include NASA field centers (Stennis Space Center, Goddard Space Flight Center, Langley Research center, Marshall Space Flight Center, Ames Research Center, Jet Propulsion Lab) partnering agencies, and competitively selected organizations.

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	11%	Full & Open Competition	80%	Industry	15%
Cost Reimbursable	0%	Sole Source	20%	Government	
Fixed Price*	2%		100%	NASA Intramural	30%
Grants	66%			University	50%
Other	21%	Sci Peer Review	95%	Non Profit	5%
* as % of FY02 direct procurement	100%	* as % of FY02 direct procurement			100%

Future Acquisitions - Major	Selection	Goals
REASoN Cooperative Agreement Notice (CAN)	Jan 05	100% Full & Open Competition.

AGREEMENTS

Internal: The program has a component that is dependent on, and benefits, the aviation safety program in the Office of Aerospace Technology.

External: MOUs with with USDA, NOAA, USGS, EPA, DoD, USFS, DOE, WGA, FEMA.

International: UNESCO, IAA, CCAD, CEOS, CENR. **Changes since FY 2003 Pres. Budget: None.**

INDEPENDENT REVIEWS

Types of Review	Performer	Last Review	Next Review	Purpose
Indep Annual Review	ESSAAC	2-Jun-02	3-Jun-03	Alignment with Enterprise Strategy.
Nat'l Academy of Sciences	SSB	2-Sep-02	3-Jun-05	Alignment with Enterprise Strategy.

BUDGET

Budget Authority ($ in millions)	FY02	FY03	FY04	Comments
FY 2004 President's Budget	39.3	20.8	24.0	
Applications Research	33.7	15.4		
National Applications			17.5	
Program Planning and	5.6	5.4	6.5	
Changes since FY 03 Pres. Budget	+0.0	+0.0	+5.2	***Reason for Change:***
National Applications			+13.3	New budget structure.
Applications Research			-13.3	
Full cost			+5.2	Inclusion of full cost.

Indicates budget numbers in Full Cost.

Indicates changes since the FY 2003 Presidents Budget Submit.

FY 2002 and FY 2003 are not in full cost.

THEME: Earth Science Applications

RESEARCH: Earth Science Education

PURPOSE

Objectives	Reference 2003 Strategic Plan	Performance Measures
6.2,7.2		4ESA6, 4ESA7, 4ESA8

The Earth Science Education Program enables an accessible, dynamic, and engaging learning environment for all citizens that expands and deepens the Nation's awareness and understanding of Earth system science and inspires pursuit of careers in science and technology development.

OVERVIEW

The Earth Science Education Program extends NASA's results in the research and development of Earth science, remote sensing, and information technologies to enhance the teaching and learning of Earth and environmental sciences both inside and outside the classroom through partnerships with educational institutions and organizations. The Program makes the discoveries and knowledge generated by Earth science accessible to students and the public via Outreach efforts by focusing on the national education agenda and the needs of the learning communities. The Program focuses on K-16 curriculum and faculty support in science, mathematics, and geography; professional development in informal education venues; as well as continuing training of interdisciplinary scientists to support the study of the Earth as a system through its Fellowship and New Investigators efforts.

Link to Project Homepage for more information: http://earth.nasa.gov/education/catalog/index.html

PROGRAM MANAGEMENT

The Earth Science Education program is managed from HQ with performing entities at Goddard Space Flight Center, Jet Propulsion Lab, Stennis Space Center, and Langley Research Center, as well as external education organizations (through grants or cooperative agreements). Enterprise official is Dr. Ghassem Asrar, Associate Administrator for Earth Science at HQ. Theme Director is Ronald J. Birk, Director of Earth science Applications Division. Point of Contact is Ming-Ying Wei, Earth Science Education Program Manager.

TECHNICAL COMMITMENT

The baseline for this technical commitment is the FY 2004 budget. A systems-based implementation plan will baseline this commitment.

Technical Specifications	FY04 President's Budget	Change from Baseline
GLOBE Program	Continue Worldwide implementation and U.S. coordination, in partnership with the National Science Foundation.	--
Virtual Earth	Systems architecture designed to deliver compelling teaching tools for teachers and students of all ages.	--
K-16/Informal Education Program	Integrate and coordinate educational projects selected under the REASoN solicitation.	--
Earth System Science Fellowship Prgm	Support graduate students in pursuit of Master or Ph.D. degrees in Earth System Science applications.	--
Investigator Program	Continue research and educational support for current projects and Earth scientists and/or engineers, and solicit new applications.	--

Schedule	FY04 President's Budget	Change from Baseline
GLOBE -Worldwide Implementation and U.S. Country Coordinator	-Selection in Mar-03 and Awards placement in Dec-03.	--
Virtual Earth	-Community review of systems design architecture in Sep-3.	--
K-16/Informal Education Program	-Solicitation Nov-02, Selection May -03, Awards in Jun-03.	--
Earth Syst. Science Fellowship Prgm	-Solicitation Dec-02, Selection Jun-03, Awards in Sept-03.	--
Investigator Program	-Solicitation Mar-03, Selection Dec-03, Awards in Jan-04.	--

THEME: Earth Science Applications

RESEARCH: Earth Science Education

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The acquisition strategy is based on two primary components: 1) Competitive sourcing, 2) Space Act Agreements. Performing organizations include NASA field centers (Stennis, Goddard, Langley, Marshall, Ames, JPL), research laboratories, partnering agencies, and competitively selected organizations.

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	3%	Full & Open Competition	80%	Industry	4%
Cost Reimbursable	0%	Sole Source	20%	Government	0%
Fixed Price*	43%		100%	NASA Intramural	23%
Grants	37%			University	73%
Other	17%	Sci Peer Review	95%	Non Profit	0%
* as % of FY02 direct procurement	100%	* as % of FY02 direct procurement		* as % of FY02 direct procurement	100%

Future Acquisitions - Major	Selection	Goals
REASoN Cooperative Agreement Notice (CAN)	Jan 05	100% Full & Open Competition
GLOBE	Mar 03	100% Full & Open Competition
Fellowships	Jun 03	100% Full & Open Competition

AGREEMENTS

Internal: The program has a component that is dependent on, and benefits, the Agency Education programs in the Office of Education and Office of Space Science.

External: Department of Education, Department of Labor, National Science Foundation, Partner Federal Agency Education Programs

International: International participation of over 100 countries in the GLOBE Education program.

Changes since FY 2003 Pres. Budget: None.

INDEPENDENT REVIEWS

Types of Review	Performer	Last Review	Next Review	Purpose
Indep Peer review	ESSAAC	Nov 2002	Nov 2003	Alignment with NASA and Enterprise Strategy.
Nat'l Academy of Sciences	SSB	Sep 2002	Jun 2005	Alignment with NASA and Enterprise Strategy.

BUDGET

Budget Authority ($ in millions)	FY02	FY03	FY04	Comments
FY 2004 President's Budget	17.5	18.1	20.8	
Earth Science Education	9.1	9.1	11.4	
Fellowships & New Investigator	7.4	8.0	8.4	
Outreach	1.0	1.0	1.0	
Changes since FY 03 Pres. Budget	+0.0	+0.0	+3.6	***Reason for Change:***
Full cost			+3.6	Inclusion of Full Cost.

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002 and FY 2003 are not in full cost.

THEME:	Earth Science Applications
TECHNOLOGY AND ADVANCED CONCEPTS:	Cross Cutting Solutions

PURPOSE

Objectives	Reference 2003 Strategic Plan	Performance Measures
1.2		4ESA2, 4ESA3, 4ESA4

The Cross Cutting Solutions effort delivers science and engineering capabilities to partner organizations, enabling them to use NASA's research results and technologies in their decision support systems. A component of this provides human capital development focused on the unique aspects of applying Earth science results in national and international decision support solutions.

OVERVIEW

The Cross Cutting Solutions program provides four core elements: 1) systems engineering; 2) solutions networks; 3) geospatial interoperability, and; 4) human capital development. The systems engineering capability provides the core competencies in NASA systems and science that are required to assimilate Earth science results into the decision support tools of partnering organizations. Decision support tools used to protect life and property require rigorous validation of new sources of data and information. The systems engineering element verifies, validates, and benchmarks the performance of solutions that are based on NASA Earth science observations and predictions. (The benchmark process involves a rigorous determination of change in performance resulting from change in process). The geospatial interoperability element supports the President's E-government initiative (Geospatial One Stop) in developing and promulgating standards, including interoperability standards, for geospatial data and systems. The human capital development element of the program enables the next generation of decision makers to effectively develop and use advanced tools that assimilate NASA results. The solutions network element enables competitively selected collaborations to deliver results to our nation including data sources, data products, data handling systems, and models and decision support system - moving from research to operations.

Link to Project Homepage for more information: http://www.esa.ssc.nasa.gov

PROGRAM MANAGEMENT

The Cross-Cutting Solutions Program is managed in the Earth Science Applications Division at HQ with performing activity at the Stennis Space Center and the Goddard Space Flight Center. The Agency Program Management Council (PMC) has governing responsibility. Enterprise official is Dr. Ghassem Asrar, Associate Administrator for Earth Science at HQ. Theme Director and Program Point of Contact is Ron Birk, Director for Earth Science Applications at HQ. This program is in full compliance with NPG7120.5B.

TECHNICAL COMMITMENT

The baseline for this technical commitment is the FY 2004 budget.

Technical Specifications	FY04 President's Budget	Change from Baseline
Systems Engineering	Evaluate, verify, validate and benchmark the assimilation of observations and predictions from science missions and models into decision support systems serving applications of national priority.	--
Solutions Networks	Provide networks of systems solutions in support of the Nat'l Applications and Education programs and their respective objectives.	--
Geospatial Interoperability	Develop and deploy standards for geospatial information and systems in support of the President's e-government initiative, NASA, the Earth Science Enterprise, and science-based solutions in partnership with federal agencies.	--
Human Capital Development	Accelerate human capital development to enable workforce capacity building approaches associated with Earth science and remote sensing solutions for decision support. Provide systems tools to undergraduate-level students to develop prototype solutions for state, local and tribal governments based on Earth Science results.	--

THEME:	Earth Science Applications
TECHNOLOGY AND ADVANCED CONCEPTS:	Cross Cutting Solutions

TECHNICAL COMMITMENT - CONTINUED

Schedule	FY04 President's Budget	Change from Baseline
Geospatial Interoperability		
Open Geographic Information System (OGIS) Standard	Dec-04	--
Geospatial One-Stop portal	Apr-05	--
Systems Engineering		
2 commercial products verified and validated	Jan-05	--
2 decision support systems benchmarked	Jun-05	--
Earth Science Applications Centers		
10 solution projects selected through REASoN	Jan-05	--
Mississippi Space Commerce Initiative		
Engagement	Mar-05	--
Engagement with 4 national priority projects	Sep-05	--
Workforce Development E-gov modules		
5 modules complete	Jan-05	--
10 modules complete	Sep-05	--
DEVELOP students & states		
2 states added	Mar-05	--
3 states added	Sep-05	--

ACQUISITION STRATEGY & PERFORMING ORGANIZATIONS

The acquisition strategy is based on two primary components: 1) Competitive sourcing; 2) Space Act Agreements. Performing organizations include NASA field centers (Stennis Space Center, Goddard Space Flight Center, Langley Research Center, Marshall Space Fligfht Center, Ames Research Center, Jet Propulsion Lab) partnering agencies, and competitively selected organizations.

Changes since FY 2003 Pres. Budget: None.

Current Acquisitions	Actual *	Selection Method	Actual *	Performer	Actual *
Cooperative Agreements	8%	Full & Open Competition	80%	Industry	20%
Cost Reimbursable	0%	Sole Source	20%	Government	0%
Fixed Price*	28%		100%	NASA Intramural	30%
Grants	20%			University	40%
Other	44%	Sci Peer Review	95%	Non Profit	10%
* as % of FY02 direct procurement	100%	* as % of FY02 direct procurement		* as % of FY02 direct procurement	100%

Future Acquisitions - Major	Selection	Goals
1. REASoN Cooperative Agreement Notice	Jan 05	100% Full & Open Competition.

THEME:	Earth Science Applications
TECHNOLOGY AND ADVANCED CONCEPTS:	Cross Cutting Solutions

AGREEMENTS

Internal: Agreements with Stennis Space Center, Langley Research Center, Goddard Space Flight Center, Marshall Space Flight Center, Jet Propulsion Lab, Ames Research Center and Dryden Flight Research Center.
External: Agreements with President's e-Government initiative on Geospatial One-Stop, member of Joint Agency Committee for Imagery Evaluation (JACIE) with USGS and NIMA, member of Open GIS Consortium, Federal Geographic Data Committee, partners in the DEVELOP program.
Changes since FY 2003 Pres. Budget: None.

INDEPENDENT REVIEWS

Types of Review	Performer	Last Review	Next Review	Purpose
Independent Peer Review	ESSAAC	Nov 2002	Nov 2003	Ensure consistency with ESE mission.
National Academy of Sciences	NAS	2-Jun-02	2-Jun-04	Review commitment to partnerships.

BUDGET

Budget Authority ($ in millions)	FY02	FY03	FY04	Comments
FY 2004 President's Budget	37.9	22.8	30.0	
Applications Development	37.9	22.8		
Cross cutting solutions	0.0	0.0	30.0	
Changes since FY 03 Pres. Budget	+0.0	+0.0	+4.3	***Reason for Change:***
Cross Cutting Solutions reduction			-6.0	Program reorganization.
Full cost			+10.3	Inclusion of full cost.

Indicates budget numbers in Full Cost.
Indicates changes since the FY 2003 Presidents Budget Submit.
FY 2002 and FY 2003 are not in full cost.