

# NESDIS Strategic Plan FY2005-2010

## Letter from the Assistant Administrator:

I am pleased to present the NOAA Satellites and Information Service (NESDIS) Strategic Plan. This Strategic Plan builds on a strong base of world-class environmental satellite and information services. Under the strong leadership of VADM Conrad C. Lautenbacher, NOAA is making tremendous strides in observations and data management and linking these to societal benefits. One of the critical roles that NESDIS plays within NOAA is to provide leadership to one of NOAA's core cross-cutting priorities, integrating Earth observations and data management. This Strategic Plan illustrates the numerous activities of NESDIS that directly support NOAA's contribution to a National Integrated Earth Observation System. The vision for this aspect of our work is to deliver a comprehensive, coordinated, and sustained observing and data management system that will benefit all of NOAA's goals as well as benefit the Nation by helping to achieve a healthier public, economy, and planet.

We are actively engaged in NOAA's ecosystem management, climate, weather and water, and commerce and transportation goals. NOAA Satellites and Information will leverage its unique role as Leaders, Innovators, and Integrators, to support NOAA in achieving an integrated Earth observations and data management system. We strive to embody:

### **Leadership through:**

- National and corporate thinking and problem solving
- Responsibility and accountability
- Ethic of customer service
- Diverse world-class workforce

### **Innovation by:**

- Transitioning research activities to benefit operations
- Improving data utilization and developing new products
- Developing advanced, cost effective observing technologies and data management solutions

### **Integration through:**

- Agency-wide requirements process and observing system architecture
- Data stewardship
- Partnerships in NOAA, with other agencies, academia, international, and commercial

On behalf of all of the NESDIS team, we are proud to serve NOAA and the Nation as the single civilian operational environmental satellite organization.

Gregory W. Withee  
Assistant Administrator  
for Satellites and Information Service

## **NOAA Vision**

*An informed society that uses a comprehensive understanding of the role of the oceans, coasts, and atmosphere in the global ecosystem to make the best social and economic decisions*

## **NOAA MISSION**

*To understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs*

## **Benefits to the Nation:**

NOAA's Satellites and Information Service (NESDIS) is dedicated to providing quality observations and timely access to global environmental data and information in support of the Nation's economy, security, environment, and quality of life. To fulfill its responsibilities, NESDIS acquires and manages the Nation's operational environmental satellites, provides data and information services, and conducts related research. NESDIS provides the resulting information to NOAA and other agencies, allowing them to provide products and services such as severe storm warnings, short- and long-term weather forecasts, climate analyses, and satellite-aided search and rescue services. NESDIS contributes to the national economy by providing environmental data that support resource management in areas such as energy, water, and global food supplies. Our environmental satellite observations are important for national security, providing users information for aircraft, ships, and facilities around the world.

### **OUR VISION**

*To be the world's premiere source of comprehensive environmental data and information*

### **OUR MISSION**

*To deliver accurate, timely, and reliable satellite observations and integrated products and to provide long term stewardship for global environmental data in support of the NOAA mission.*

### **OUR CORE VALUES**

*People, Integrity, Excellence, Teamwork, Ingenuity*

*Science, Service, and Stewardship.*

## Introduction To NOAA's Satellites and Information Service:

NOAA's Satellites and Information Service (NESDIS) is America's primary source of space-based oceanographic, meteorological and climate data. We operate the Nation's environmental satellites, which are used for ocean and weather observation and forecasting, climate monitoring, and other environmental applications. We also manage NOAA's satellite requirements process; acquire satellites, instruments, and associated observations; provide oversight to the NOAA National Data Centers (NNDC) for climate, geophysics, and oceans and coasts; provide data stewardship and environmental information services.

Through NOAA's polar-orbiting and geostationary satellite systems, we collect, process, and deliver near real-time satellite observations, nationally and globally. NESDIS also acquires satellite observations from other federal agencies, the private sector, and other countries. NESDIS takes the leadership position on satellite issues with other federal agencies, such as information and support to search and rescue services to ensure safe movement of goods and people, and represents the U.S. regarding international satellite activities and programs.

Satellite measurements continue to become increasingly important since satellite observations are the most cost effective method of generating consistent observations over the entire globe. Data and information under the stewardship of the NNDC and other centers of data serve virtually every sector of the Nation's economy and make possible the environmental stewardship and ecosystem management that NOAA accomplishes for the benefit of the global society. The distribution of NOAA data users is: 77% business sector, 13% general public sector, 6% government sector, and 4% academic sector. Information technologies (IT) have dramatically shifted the use of NOAA data for energy and water management, food production, and transportation sectors, down to the entrepreneur and individual citizen. During a typical month over 180,000 national and international contacts for NOAA data are made via the Internet, up to 5,000 orders are completed, and up to a terabyte of data are digitally delivered to the customer, often during the ordering transaction.

NESDIS consists of several organizational components that collectively manage the Nation's operational environmental satellites, provide data and information services, and conduct related research. We employ over 800 skilled and knowledgeable individuals in many professions who work for the public good at several locations across the US – Silver Spring, Camp Springs, and Suitland, Maryland; Asheville, North Carolina; Boulder, Colorado; Bay St. Louis, Mississippi; Fairbanks, Alaska; and Wallops, Virginia.

You can click below on the office or center to find out more:

- [National Climatic Data Center](#) (NCDC)
- [National Geophysical Data Center](#) (NGDC)
- [National Oceanographic Data Center](#) (NODC)
  - [National Coastal Data Development Center](#) (NCDDC)
- [Office of Systems Development](#) (OSD)
- [Office of Satellite Operations](#) (OSO)
- [Office of Satellite Data Processing & Distribution](#) (OSDPD)
- [Office of Research & Applications](#) (ORA)
- National Polar-orbiting Operational Environmental Satellite System ([NPOESS](#))  
[Integrated Program Office](#) (IPO)

In addition, the NOAA Observing Systems Architecture (NOSA), the U.S. Integrated Ocean Observing System (IOOS), and other integrated observation systems are core components of the NESDIS enterprise.

## NESDIS Role in Executing NOAA's Programs

NOAA's Satellites and Information Service contributes to the outcomes and strategies of all the NOAA goals and programs by providing long-term archive and access services for environmental observations and information. The NOAA Strategic Plan for 2005-2010 describes NOAA Mission Goals and Outcomes and the strategies to attain them. The NESDIS Strategic Plan outlines our execution of NOAA's Programs to meet NOAA's Goals and our priorities. Each section describes a NOAA Mission Goal, introduced by a table that shows linkages among NOAA Outcomes and Strategies and Programs that we execute in whole or in part. Matrix programs (indicated in italics), managed by more than one NOAA line office, are incorporated in all relevant line office Strategic Plans. The NESDIS operating unit that contributes to the program is also identified (see Introduction for acronyms).

### **Protect, Restore, and Manage the Use of Coastal and Ocean Resources through an Ecosystem Approach to Management**

Changes in critical ecosystems, such as coral reefs, can be detected through the monitoring and development of ecosystem baseline conditions. Scientists can use these baselines to accurately detect and track significant changes over broad regions. Some of the oceanographic applications include sea-surface temperature for hurricane and weather forecasting and sea-surface heights for El Niño prediction.

Ecosystem monitoring platforms will be validated and monitored for quality. This includes higher resolution and more accurate sea surface temperatures and ocean color products. New products and services in support of agriculture and forestry, such as drought monitoring, fire and fire risk products, and vegetation condition and health will be developed and improved.

NOAA Outcomes	NOAA Strategies	NOAA Programs Executed Wholly or in Part by NESDIS
Healthy and productive coastal and marine ecosystems that benefit society  A well informed public that acts as a steward of coastal and marine ecosystems	Manage uses of ecosystems by applying scientifically sound observations, assessments, and research findings to ensure the sustainable use of resources and to balance competing uses of coastal and marine ecosystems.	<i>Ecosystem Observations (NODC, NCDDC)</i>  <i>Corals (ORA)</i>
	Improve resource management by advancing our understanding of ecosystems through better simulation and predictive models. Build and advance the capabilities of an ecological component of the NOAA global environmental observing system to monitor, assess, and predict national and regional ecosystem health, as well as to gather information consistent with established social and economic indicators.	
	Develop coordinated regional and national outreach and education efforts to improve public understanding and involvement in stewardship of coastal and marine ecosystems.	

**Ecosystem Observations:** NOAA'S Satellites and Information Service provides data stewardship and management services including: data archiving; data discovery and access, including Internet-based services for discovery and access using GIS techniques; metadata

creation and data catalog maintenance, compilation, and reprocessing of long-term historical data sets; and monitoring of operational observing system. The data management responsibilities are national in scope, and also support data requirements of regional ecosystems.

In addition, through its coastal data development activities, NESDIS will continue to identify and make available coastal data sets and products from both NOAA and non-NOAA sources such as the emerging regional observing systems operating under the IOOS concept. Our programs currently serve several million public requests for archived data and information products each year.

**Corals:** As part of the Coral Reef Program, we will provide observations necessary for research and understanding necessary to protect and preserve corals. New products and services related to monitoring of coral reefs and coastal waters will be developed and implemented.

## **Understand Climate Variability and Change to Enhance Society’s Ability to Plan and Respond**

NESDIS is the Nation’s official source of data on climate change. We maintain the world’s largest archive of climate-related data and information spanning the ice ages to the Space Age. NOAA’s ability to detect and predict climate events such as El Niño and La Niña has dramatic impacts on all U.S. consumers. The Nation’s archive of environmental data will dramatically increase as new observing capabilities are deployed.

Millions of people in government, academia, and the private sector use NOAA data each year. The data are vital to all areas of the Nation’s economy: agribusiness, construction, engineering, energy, fisheries, health, insurance, landscape architecture, law, manufacturing, new media, recreation, retailing, tourism, transportation, utilities, and water. Effective use of the data requires scientifically validated climate records that are available to serve a wide range of customers. To this end NESDIS has embarked on a new approach to data management, Scientific Data Stewardship (SDS), to ensure scientific integrity and long-term utility of climate records. SDS will allow us to improve our return on investment by allowing NOAA to collect, access, and manipulate data in a shared environment across diverse functions.

<b>NOAA Outcomes</b>	<b>NOAA Strategies</b>	<b>NOAA Programs Executed Wholly or in Part by NESDIS</b>
A predictive understanding of the global climate system on time scales of weeks to decades with quantified uncertainties sufficient for making informed	Improve the quality of climate observations, analyses, interpretation, and archiving by maintaining a consistent climate record and by improving our ability to determine why changes are taking place.	<i>Climate Observations and Analysis (NCDC)</i>  <i>Regional Decision Support (NCDC)</i>
	Work with customers in order to deliver climate services and information products involving in health, safety, environmental, economic, and community planning that increase the effective application of this information.	
	Coordinate among NOAA Line Offices the transition from investigator-driven research projects to operational facilities, capabilities, and products.	

<p>and reasoned decisions</p> <p>Climate-sensitive sectors and the climate-literate public effectively incorporating NOAA's climate products into their plans and decisions</p>	<p>Support educational efforts to create a more climate-literate public by developing climate educational materials, involving teachers in the research process, and generating tools to allow climate information to be used in decisions.</p>	
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**Climate Observations and Analysis:** High quality data from an integrated observing network provides the end-to-end links between research, operations, and climate users. This integration enables NOAA to rapidly transfer scientific advances into improvements in NOAA climate products and services. A reliable climate record is a fundamental basis for developing a long-term climate policy and dealing with immediate issues such as the ongoing Western drought. (For more information on the Western Governor's Initiative, National Integrated Drought Information System (NIDIS), click on <http://www.westgov.org/wga/publicat/nidis.pdf>.) We provide information needed to effectively manage natural resources and ecosystems, understand the spread of climate sensitive diseases, and help to mitigate natural hazards throughout the Nation. Climate observing systems are fundamental components of interagency and international systems such as GCOS, GOOS, and GEOSS.

We plan to ingest, process, archive, and access data on a truly continuous basis of 24 hours per day/7 days per week/365 days a year. This will provide information for current forecasts as well as the long-term data record. Information technologies (IT) will be in place to accommodate over 4.7 petabytes (PB – one petabyte equals 1024 terabytes) of new data annually (an increase from 0.9 PB in FY 04) and archive (primary and back-up) 44 PB (an increase from 3.6 PB in FY 04). These PB, to include all new and historical in-situ, satellite, and radar data will be directly available on line for retrieval by customers. We will require additional communications bandwidth, and storage capability to process, archive, and provide access to the data through the Comprehensive Large-Array Stewardship System (CLASS). Additional high performance computing will be required for processing and reprocessing data. More scientists will be needed to provide the appropriate stewardship for these important data.

**Regional Decision Support:** Decision-makers require the best available scientific data to formulate sound policies on resource management and conservation. NESDIS products vital to sound policies are used in fisheries, coastal wastewater management, and land management. NESDIS provides Internet access to data through Web portals and gateways, as well as through climate services partners that include NOAA's Regional Climate Centers and State Climatologists. We will maintain the number of decision support tools that respond to priority National Policy or environmental monitoring needs.

## **Serve Society's Needs for Weather and Water Information**

Observations and dissemination of data are critical to weather information services. NESDIS' role in collecting, processing, distributing, and archiving environmental data must continue to evolve to meet the national requirement for timely, accurate weather data and forecasts.

NOAA Outcomes	NOAA Strategies	NOAA Programs Executed Wholly or in Part by NESDIS
Reduced loss of life, injury, and damage to the economy	Improve the reliability, lead-time, and understanding of weather and water information and services that predict changes in environmental conditions.	<i>Coasts, Estuaries, and Oceans (ORA)</i>  <i>Space Weather (NGDC)</i>  <i>Environmental Modeling (ORA)</i>  <i>Weather Water Science, Technology, and Infusion Program (IPO, ORA)</i>
	Integrate an information enterprise that incorporates all stages from research to delivery, seeks better coordination of employee skills and training, and engages customers.	
Better, quicker, and more trusted weather and water information to support improved decisions	Develop and infuse research results and new technologies more efficiently to improve products and services, to streamline dissemination, and to communicate vital information more effectively.	
	Work with private industry, universities, and national and international agencies to create and leverage partnerships that foster more effective information services.	
Increased satisfaction with quality of weather and water information and services	Build a broad-based and coordinated education and outreach program by engaging individuals in continuous learning toward a greater understanding of the impacts of weather and water on their lives.	
	Employ scientific and emerging technological capabilities to advance decision support services and to educate stakeholders.	

**Coasts, Estuaries, and Oceans:** The Coasts, Estuaries, and Oceans (CEO) Program supports the Integrated Ocean Observing System (IOOS) and demonstrates the integration of weather and water data sets and products, including operational forecast tools that link observations and predictive models.

CEO will permit NOAA and the Nation to make coastal zone management and stewardship decisions based on a complete understanding of the ecosystem and of impacts from coastal events, in particular weather and water events/trends. Coastal state resource managers will have tools to make decisions that balance economics with environment due to integrated and improved NOAA products and services. Managers will be able to understand and have improved predictive capability for water conditions and other environmental conditions affecting the nation’s coasts, estuaries, and oceans. Coastal communities will be able to reduce the loss of life by capitalizing on their increased awareness of coastal hazards risk and vulnerability.

We participate in the CEO effort, principally through the integration of satellite ocean remote sensing data with observational systems from Weather and Water, as well as the Commerce and Transportation, mission goals. New products will be created to satisfy NOAA near-real-time needs and our research customers. We will make new “blended” products from relevant satellite ocean remote sensing data streams.

**Space Weather:** As society’s dependence on high technology rapidly increases, so do the vulnerabilities of numerous critical systems to space weather events. Global Positioning System (GPS) degradation, risk to the electricity grid, diversion of trans-polar flights, and cell phone interference are just a few examples of the harmful effects of space weather. The Space Weather Program delivers timely and accurate operational space weather forecasts, warnings, alerts, and data to civilian end users. The Nation will be provided with critical space weather services sufficient to protect life, property, and infrastructure. Decision makers will be able to take preventative measures, based on early warning of hazardous space weather, to help mitigate costly impacts to aviation and space interests, power grid operations, navigational



systems, and communications. Measurements from space platforms will ensure reliable and safe operations of vital government and private sector space-based assets.

In order to mitigate space weather effects, NOAA's data and services required must be improved. We already know what improvements need to be made and we expect increased input capacity, to yield immediate and direct payoff, after we implement them.

**Environmental Modeling:** As a vital component of NOAA Environmental Modeling program, the Joint Center for Satellite Data Assimilation (JCSDA) program will develop the state-of-the-science technology for assimilating advanced instrument data from NOAA operational and other research satellites. Observational data and data assimilation utilities we provide to both weather and water forecast models leads to a better understanding of the global weather and water cycles. These data include space-based and in-situ observations of weather and water parameters such as clouds, winds, humidity, precipitation, wave height, vegetation and soil moisture, along with associated metadata. The NNDC provide climatology, status reports and assessments, and data access and archive for longer-term studies. The use of NESDIS data by the National Weather Service will ultimately lead to more accurate weather and water forecasts and products.

**Weather Water Science, Technology, and Infusion Program:** The generation of reliable products via operational algorithms requires high-quality basic sensor measurements. This requires accurate instrument calibration and validation of sensor output. Our activities for sensor calibration and validation are intended to ensure the sensor outputs ensure the production of quality data products for land, atmosphere, ocean, and for other applications, including weather and climate. We provide science leadership in the design of calibration systems for current and future sensors, the planning and analysis of the pre-launch calibration and the post-launch performance checkout, and the on-orbit calibration. We provide science guidance in the validation of sensor output by analyzing the data products via internal consistency checks, long-term trending of sensor parameters, and comparisons with data from other sources, in-situ and remotely sensed.

By 2010, the NPOESS Preparatory Project (NPP) Satellite, the first NPOESS generation satellite in operation, will deliver streaming raw instrument packets. Additionally, we will be receiving raw and processed data from non-NOAA polar missions. We will continue to work on the Geostationary Operational Environmental Satellite – Series R (GOES-R).

New products will be created to satisfy NOAA near real time and research customers. These products include re-formatted, re-projected data sets. In addition, we will make totally new “blended” products from the data streams.

## **Support The Nation's Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation**

NESDIS' information products and services are essential for safe and efficient transportation and commerce systems, crucial to the economic health and public safety of the Nation. We provide data to NOAA's National Centers for Environmental Prediction to issue forecasts, warnings and alerts on the state of the environment. Our data centers archive these data and conduct environmental assessments used by the aviation, shipping, railroad, trucking, and aerospace industries. Real-time and archived data provide a unique perspective into weather forecasting and provide for a weather warning capability to protect lives and property by monitoring, predicting and assessing the atmosphere. These data are invaluable for studying the impacts of natural and man-made transportation-related disasters on the environment.

NOAA Outcomes	NOAA Strategies	NOAA Programs Executed Wholly or in Part by NESDIS
Safe, secure, and seamless movement of goods and people in the U.S. transportation system	Expand and enhance advanced technology monitoring and observing systems, such as weather and oceanographic observations, ice forecasts and nowcasts, hydrographic surveys, and precise positioning coordinates, to provide accurate, up-to-date information.	Marine Transportation System (National Ice Center/OSDPD and NGDC)
	Develop and apply new technologies, methods, and models to increase the capabilities, efficiencies, and accuracy of transportation-related products and services.	<i>NOAA Emergency Response (OSDPD)</i>
Environmentally sound development and use of the U.S. transportation system	Develop and implement sophisticated assessment and prediction techniques, products, and services to support decisions on aviation, marine, and surface navigation efficiencies; coastal resource management; and transportation system management, operations, and planning.	Commercial Remote Sensing Licensing (AA-IIA)
	Build public understanding of the science and technology involved and the role of the environment in commerce and transportation through outreach, education, and industry collaboration.	

**Marine Transportation System:** New products and algorithms in support of transportation safety will be developed. These will include volcanic ash detection, flash flood products, air quality monitoring, smoke and fire detection and snow cover and snow depth.

We will provide improved ice now casts and forecasts to ensure safe and efficient transport of goods and people. We will work to support integration of tools and services.

**NOAA Emergency Response:** Along with the U.S. Coast Guard, U.S. Air Force, and the National Aeronautics and Space Administration, we will continue to support the U.S. and international Search and Rescue Satellite Aided Tracking system that has helped rescue more than 17,000 people worldwide since its inception.

We will enhance our capability to deliver reliable and accurate distress alerts in a timely manner and ensure that people in harms way are aware of this life-saving technology and its proper use by engaging our national and international partners.

**Commercial Remote Sensing Licensing:** NESDIS is responsible for coordinating licensing of the operations of U.S. commercial remote sensing satellite firms. Working closely with other U.S. Government agencies, we have implemented a comprehensive licensing and compliance program to support this vital U.S. aerospace and information base, enhance U.S. national and economic security and foreign policy, and leverage new commercial assets for government and

public use. The program facilitates the development of a vibrant, growing, and competitive U.S. commercial remote sensing industry, resulting in a variety of innovative and useful environmental data products to government and industry customers. It also will continue to ensure that U.S. commercial remote systems are operated in a manner consistent with U.S. national security, homeland security, and foreign policy interests.

## **Provide Critical Support for NOAA’s Mission**

The essence of this support function is to ensure that NOAA Missions Goals receive the data and information it needs to perform its mission. Satellite Services provides the needed link between NOAA’s satellites (the data collectors) and the data users. NOAA’s on-going satellite acquisition efforts ensure the continuation of these services.

<b>NOAA Outcomes</b>	<b>NOAA Strategies</b>	<b>NOAA Programs Executed Wholly or in Part by NESDIS</b>
<p>A safe operating environment with efficient and effective financial, administrative, and support services</p> <p>Ship, aircraft, and satellite programs that ensure continuous observation of critical environmental conditions</p> <p>A sustainable and strategic facilities master planning process with a 5 to 10 year planning horizon</p> <p>Secure, reliable, and robust information flows within NOAA and out to the public</p>	Provide timely and effective acquisition and delivery of satellite-derived information that supports requirements from the mission goals.	Satellite Services (OSO, OSDPD, OSD, ORA)
	Provide applied research to ensure the quality, reliability, and accuracy of current and future satellite products and services to support the NOAA mission goals.	Polar Satellite Acquisition (IPO, OSD)
	Provide timely and accurate policy, guidance, and information on safety issues affecting NOAA, its customers, and its contractors.	Geostationary Satellite Acquisition (OSD)
	Plan for, construct, and maintain facilities, including co-locating facilities among NOAA entities and external partners to allow for consolidation of services.	Line Office Headquarters (includes NOAA Central Library)
	Lead agency-wide efforts in education and outreach, public affairs, legislative affairs, international affairs, and legal affairs.	Facilities (OSD)
	Develop and maintain an Information Technology Enterprise that fully supports the life cycle of NOAA’s programs, is secure, reliable, cost-effective, encourages information sharing, and complies with all applicable policies.	
	Implement a strategic approach that attracts and maintains a competent and diverse workforce and creates an environment that develops, encourages, and sustains employees as they work to accomplish NOAA’s strategic goals	
	Adopt a functional management model to deliver administrative and financial services that will establish direct lines of accountability from headquarters business line managers to all NOAA financial and administrative staff located in the field.	
	Employ a planning, programming, budgeting, and execution system to enhance NOAA’s capabilities and to guarantee effective delivery of needed products and services.	
	Improve the efficiency, accountability, and transparency of administrative programs and services through process optimization and customer satisfaction assessment.	

**Satellite Services:** NESDIS provides NOAA with the capability to meet its mission goal needs for satellite data, products, and related services. Our end-to-end capability provides services to maintain 24 hours per day/7 days per week spacecraft operations, acquire observations, and process and deliver data to our users.

The knowledge gained from our applied research enterprise ensures continuing improvements in the quality of satellite observations and the accuracy of satellite data and derived products. It also provides the insight needed to render satellite information more useful in monitoring and predicting environmental changes for social and economic decisions. These services will continue as NOAA's on-going satellite acquisition activities deliver more capable, more complex sensors and observations.

Our customers use our satellite data products to improve their ability to perform their missions through application of satellite data to deliver improved data products. These products include: forecasts, warnings, aviation hazard identification, ocean navigation hazards, environmental monitoring, and other weather and ocean products used every day, in every state, in every city for emergency and critical decision-making. NESDIS will continue to provide products to NOAA's Family of Services program for distribution to value added firms.

We work to gather and coordinate end-user requirements that enable us to identify future polar-orbiting and geostationary satellite systems and sensors needed by NOAA to meet its requirements for environmental satellite observations.

Our current satellite programs manage and plan for all space and ground data system services.

To strive to be the world's premiere source of environmental data and information, NESDIS must proactively manage the implementation of new technology. Improved capabilities will lead to improved NOAA mission performance and provide benefits to the public. To do so, NESDIS will work with NASA on the transition from their research satellite capabilities to NOAA's operational satellite capabilities. This partnership will build on the strengths and mission of each agency and result in greater and faster use of earth observations in environmental products and services. As one example, a research satellite such as NASA's Jason and its follow-on mission will provide satellite altimetry observations particularly useful for NOAA's weather and climate missions if operated on a continuous basis by NOAA.

**Polar Satellite Acquisition:** The NPOESS Acquisition program will provide the next generation of polar-orbiting environmental satellites. In 2010, NESDIS will be operating the Jason-2 altimetry mission. In addition, NESDIS will be processing data and distributing products routinely from European Organisation for the Exploitation of Meteorological Satellites' (EUMETSAT's) METOP satellites, for continuity of data and products from NOAA's morning polar-orbiting satellite mission. Finally, as other research-to-operations opportunities arise and as funding allows, NESDIS will be well positioned to operate other NASA missions that meet NOAA's requirements.

In 2010 the NOAA NPOESS Data Exploitation (NDE) Project will make possible the processing and distribution of NPOESS data, to serve all of NOAA's line offices, Missions Goals, and Program requirements. The focus in 2010 will be in delivering products and helping NOAA customers assimilate NPOESS observations into their operations as quickly as possible. The timely delivery of key products to our customers will be made possible by the experience gained during the 2007-2009 period in processing data from an NPOESS prototype satellite called the NPOESS Preparatory Program (NPP). The NPP satellite, scheduled for launch in late 2006, will provide many of the same products that will be made available to NOAA by the first NPOESS satellite in 2010.

The data processing and distribution systems will ensure continuity of products delivered by current Polar-orbiting Operational Environmental Satellite (POES) systems. These include atmospheric radiances from microwave and infrared sensors, sea surface radiances and temperatures, and ozone profiles and vegetation indices.

In addition, we will deliver many new, unique products from NPOESS, including ocean color, sea surface winds, cloud liquid water, precipitable water, and space environment products.

**Geostationary Satellite Acquisition:** The GOES Acquisition Program includes acquiring, implementing, and providing initial operating and support capabilities for current and future geostationary spacecraft.

In 2010, in preparation for the GOES-R launch in 2012, NESDIS will have awarded contracts for all the instruments on GOES-R. These instruments include the Advanced Baseline Imager (ABI); Hyperspectral Environmental Suite (HES); Space Environmental In Situ Suite; Solar Instrument Suite; Lightning Mapper Sensor. As a result of these new instruments, new products will be developed to transition the data to operational use.

NESDIS will install the final spacecraft and ground command, control, and communications segment for GOES-R, as well the product generation and distribution segments. In support of these activities, NESDIS will be managing numerous risk reduction activities in preparation for the GOES-R Launch in 2012.

GOES-R risk reduction activities include: the operation of test-beds or proving grounds at NOAA's National Weather Service (NWS) forecast offices and coastal watch offices; training, education and outreach activities, including workshops and user conferences; algorithm testing and validation; finalizing a concept of operations; and routinely running sample data sets through the prototype ground systems.

By 2010, through its technology infusion planning activity, NESDIS will have determined the best methods for the following technologies

- Microwave imaging and sounding systems from geostationary orbit
- Data compression techniques to handle GOES-R data streams;
- Next-generation autonomous satellite operations
- Advanced satellite communications and data handling architectures

In 2010, the NOAA Observing Systems Architect (NOSA) will be working toward implementing the target NOAA observing systems architecture.

**NOAA Library:** Through its National Oceanographic Data Center, NESDIS operates the NOAA Central Library, which coordinates library and related information services across NOAA to benefit agency staff, academia, industry, and the public. The NOAA Library and Information Network includes regional libraries at the Atlantic Oceanographic and Meteorological Laboratory in Miami, the Pacific Marine Environmental Laboratory in Seattle, branches at the Tropical Prediction Center Library, and the NOAA Science Center Library in Camp Springs, Maryland, plus 37 other NOAA libraries and information centers in NESDIS and across the agency. NOAA-wide paper and electronic journal subscriptions, online indexes and databases, interlibrary loans, and a NOAA-wide electronic catalog (NOAALINC) are examples of intra-agency cooperation supporting organizational excellence. The NOAA Library plans to increase access to electronic library resources as well as the number of items added to physical and electronic collections thus creating more efficient use of scientific research throughout NOAA.

**International Activities:** NESDIS coordinates a variety of activities in support of NOAA management's international and interagency policy interests. Primary program implementation takes place at the intergovernmental and U.S. interagency coordination levels, in support of

crosscutting agency themes. NESDIS operates several World Data Centers on behalf of the International Council of Scientific Unions, which benefits the nations through acquisition of foreign data. In 2010, the International and Interagency Affairs Office will be busily engaged in (1) building partnerships for and addressing governance policy issues relating to the Global Earth Observation System of Systems (GEOSS); in (2) ensuring user access (with a particular emphasis on Latin America) to future generation NPOESS and GOES-R sensors; and in (3) facilitating access to and sharing of new observations data (e.g., synthetic aperture radar) as NOAA transitions proven research instruments to operational development.

**Facilities:** The new \$61 million NOAA Satellite Operations Facility will be completed in 2005, providing a modern environment to ensure a safe, efficient, and attractive work area for current employees. It will allow us to compete for the best and brightest candidates for our workforce in the future. The new building will house current and future environmental satellite operations of national and global significance.

In addition, we maintain two Command and Data Acquisition Centers (CDAs) in Fairbanks, Alaska, and Wallops, Virginia. We will continue to revitalize of the CDAs to protect the assets necessary for the safety and health of our workforce and our nation.

**IT Security:** NESDIS continues to protect and secure data collection, data archive, and other IT systems to provide reliable and high quality data and information for use today and in the future.

# The Future – Beyond 2010

Let's look beyond 2010 to ensure that NESDIS will continue its role as a leader in environmental observations and data management. Two critical systems will be approaching readiness as we near 2010. The GOES-R and NPOESS satellite and associated data management systems will provide numerous benefits to the United States and the world.

**GOES-R:** NOAA's next generation geostationary environmental satellite (GOES-R) is scheduled for launch in 2012. GOES-R will scan the Earth five times faster than satellites on orbit today. This system is expected to provide continuity and improved capability through the second and third decades of the 21<sup>st</sup> century. Major improvements include increased spectral, spatial, and temporal resolutions. Significantly more data will be available to support all of NOAA's mission goals.

**NPOESS:** The NPOESS program, a joint civil and military effort, represents the most significant change in U.S. operational remote sensing since the launch of the first weather satellite 40 years ago. The first satellite in the new system will be ready for launch in 2009. The development of NPOESS will evolve and expand our capabilities to observe, assess, and predict the total Earth system -- atmosphere, ocean, land, and the space environment. NPOESS represents continuity of global temperature, moisture and other observations critical to sustaining and improving the accuracy of our forecasts.

Specific benefits of these next generation satellite systems will include:

- More reliable, longer lead-time forecasts will improve the ability to predict severe weather outbreaks and tropical storms days in advance. This will save lives and likely billions of dollars of property damage each year.
- Increased amount of oceanic data will improve vessel routing for safety, fuel savings, and efficient operations through improved ocean winds, waves, currents, and marine warnings and forecasts.
- Additional data from the higher latitudes will support improvements in high wind warnings, waves, and precipitation for the commercial fishing industry. This industry relies on accurate and timely weather forecasts, and warnings to operate year-round in the coastal and offshore waters.
- The advanced imaging capabilities will increase our ability to detect, monitor, and track volcanic ash worldwide. This capability will provide the aviation industry with more accurate forecasts of volcanic ash eruptions.
- Improved global ocean data from the new system will lead to increasingly more accurate seasonal climate predictions related to El Niño and La Niña.
- We will maintain long-term records of atmospheric and oceanic temperatures essential for climate analysis and prediction. This will allow us to improve our skill in predicting global climate change.

The work that NESDIS is undertaking today at the organizational, national, and international levels to develop a comprehensive, sustained, and coordinated Earth observation and data management system will enable the world to realize the full capabilities of these advanced technologies. NOAA is actively participating in parallel national and international Earth observation system development efforts. The NOAA Administrator is one of four Co-Chairs of the *ad hoc*, Intergovernmental Group on Earth Observations, which is developing a 10-year Implementation Plan for a GEOSS. The NOAA Assistant Administrator for Satellites and Information Service is one of three Co-Chairs of the National Science and Technology Council-chartered Interagency Working Group on Earth Observations, which has developed a Draft

Strategic Plan for the U.S. Integrated Earth Observation System. NOAA has issued an agency-wide Strategic Plan for its Observation and Data Management System. Multiple user requirements that integrate atmospheric, oceanic, terrestrial, and fresh water observations to advance the agency's missions will be addressed.

Along with these advancements and possibilities come challenges, both organizational and technical, that will need to be addressed:

1. Maintaining the continuity of skills to support and operate these advanced technologies.
2. Ensure that the vast amount of data from these new systems is assimilated into models and made available to a wide variety of users.
3. Maintain funding streams to complete the acquisitions.



## **Appendix – Performance Measures**

NOAA is currently developing a set of Corporate Performance Measures that collectively measure the agency's progress towards achieving our strategic outcomes. When completed, those corporate measures that address programs that NESDIS is responsible for executing will be included in this plan.