



January Tornado Number Breaks National Records: A record-breaking 141 tornadoes ripped through Arkansas, Louisiana and Tennessee in January, the National Weather Service reported. More tornadoes occurred on Jan. 21—a preliminary total of 87—than on any previous January day on record.

With additional twisters ripping through six other states earlier in January, the preliminary total count for the month is now 163, more than three times as many as the previous monthly record for January of 52 tornadoes set in 1975, according to Joe Schaefer, director of the NWS Storm Prediction Center in Norman, Okla.

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These tornadoes occurred in January because of an unusual weather pattern, a southerly flow of wind coming from the Gulf of Mexico, that brought in moisture at low levels in the atmosphere combined with a strong upper air pressure wave, which causes wind at about 30,000 feet.

President Expands Federal Invasive Species Effort: President Clinton has signed an executive order to coordinate a federal strategy to address the growing environmental and economic threat of invasive species, plants and animals that are not native to U.S. ecosystems.

The order creates an Invasive Species Council, which will develop a comprehensive plan to minimize the economic, ecological, and human health impacts of invasive species and determine further continued on page 8



Vice President Gore (left) and President Clinton attended last year's National Ocean Conference in Monterey, Calif. The conference was cited as one reason for the 14 percent in NOAA's budget request for fiscal year 2000.

Extreme Weather, Ocean Conference Put Agency on Display

FY 2000 Budget Request Is 13% Hike Over '99 Funds

NOAA has requested a budget of \$2.5 billion for fiscal year 2000, a 13 percent increase of about \$290 million over the current appropriation.

The increase is slated to extend NOAA's many accomplishments in 1998, from issuing weather and climate forecasts during a strong El Niño season, to managing our Nation's ocean and marine resources, which culminated in last year's National Ocean Conference in Monterey, Calif. It will also support a number of Departmental, interagency and Presidential initiatives.

"The extreme weather events caused by last year's El Niño and this year's La Niña put NOAA on prominent display to the public, and we more than met the challenge," said D.

James Baker, NOAA administrator and under secretary for oceans and atmosphere. "NOAA scientists provided a six-month forecast for El Niño, an advance warning that allowed emergency managers, businesses, communities and individuals to prepare for the strong storms it brought. These forecasts saved countless lives and many billions in property. This budget allows NOAA to build on these achievements and meet the challenges of the coming years."

NOAA's mission of environmental stewardship was also carried out in its strong efforts to protect the Nation's natural resources. In 1998, NOAA developed innovative partnerships with the states of Washington,

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NOAA Ship *Ronald H. Brown* Departs on Year-Long Climate Research Cruise

The nation's most technologically advanced oceanographic research ship has embarked on a year-long journey around the world to study the forces driving global climate variability.

"Discovering the reasons for changes in our global climate is critical for protecting our environment. The Commerce Department's advanced research ship, the *Ronald H. Brown*, will enable the use of the latest technology to confront this issue and search for solutions," said Vice President Al Gore.

The *Ronald H. Brown*, in its home port of Charleston, S.C., was outfitted in December with a new and powerful Doppler radar that will be used to study precipitation patterns and storm dynamics. The ship departed NOAA's Atlantic Marine Center in Norfolk, Va., on Jan. 14, and headed toward its first port stop in Cape Town, South Africa.

The voyage will bring together scientists from numerous institutions and several countries to study the forces that affect climate and cause global climate variability, from the microscopic atmospheric particles that can cool the Earth's surface by reflecting sunlight back into space, to the interaction of storms with the ocean, which can modify sea surface temperatures and currents. Much of the data collected will be from areas of open ocean where little or no data has been available until now. The data will significantly improve the computer models that scientists use to make more accurate short- and long-term climate predictions.

"Our research, technology development, and environmental data ensure a continuing national capacity to

solve problems and respond to change," said Department of Commerce Secretary William M. Daley. "The *Brown's* cruise will bring together scientists from the United States and abroad to seek understanding of the causes of global climate change, and help policy-makers make well-informed decisions."

"With its Doppler radar and state-of-the-art capability to sample both the ocean and atmosphere simultaneously, *Ronald H. Brown* is the best-equipped ship in the world to handle the complexities of the projects that will be carried out during this world cruise," said Rear Admiral William Stubblefield, director of the Office of NOAA Corps Operations. "Research conducted aboard *Brown* in data-sparse areas will ultimately have a dramatic impact on our computer modeling capabilities to better understand the world's climate."

All projects will be led by NOAA's Office of Oceanic and Atmospheric Research. In the first project during the cruise, researchers will measure atmospheric particles and gases over the Atlantic and Indian Oceans. "The data we collect will be used to produce more accurate estimates of the cooling due to atmospheric particles," said Chief Scientist Tim Bates at NOAA's Pacific Marine Environmental Laboratory in Seattle, Wash. "Accurate assessments of the climatic effects of aerosols are essential to make responsible decisions regarding natural and human-induced changes in the chemistry of the atmosphere, and the effect of these changes on global climate."

The ship's second project, called INDOEX for Indian Ocean Experiment, is truly an international effort. The co-chief scientist of the

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The launching of the NOAA ship *Ronald H. Brown* on May 30, 1996. The *Brown* has begun a year-long research cruise; it's currently on its way to its first port stop, Cape Town, South Africa. You can chart the *Brown's* progress on the Web at <http://saga.pmel.noaa.gov/~derek/CruiseTrack.html>.

California Marine Sanctuary Provides Real-Time Internet Weather to Mariners

NOAA's Channel Islands National Marine Sanctuary (CINMS), based in Santa Barbara, Calif., has launched a pilot project to bring real-time weather data to commercial and recreational mariners, at the point of departure, 24 hours a day via the Internet.

The the Internet Weather Kiosk (IWK) was developed by CINMS in partnership with NOAA's National Weather Service field office in Oxnard, Calif. in response to the removal of a weather buoy off the coast of Santa Barbara and the gap in marine weather and safety the removal caused.



DAVID O. BROWN / PASSAGE PRODUCTIONS

Channel Islands National Marine Sanctuary Manager Lcdr Ed Cassano (left) and NOAA Deputy Under Secretary Scott Gudes (right) check out the Weather Kiosk in Santa Barbara, California.

Corps Names '98 Jr. Officer

NOAA Corps Lt.j.g. Robert A. Kamphaus has been selected Junior Officer of the Year by NOAA's Association of Commissioned Officers.

Kamphaus was commended for playing a key role in establishing the Center for Tsunami Inundation and Mapping Efforts in Newport, Ore., where he currently serves as scientific support and operations officer.

Kamphaus was instrumental in developing the center's establishment plan; selecting and acquiring the geophysical data needed for the tsunami center's modeling work; and developing the necessary federal, state, and local partnerships needed to make the project successful. He co-authored the report, "Hazard Mapping at Yaquina Bay, Oregon." 🌐

Created by NOAA Corps Officer and CINMS Manager Lt. Cmdr. Ed Cassano, the state-of-the-art kiosk provides an important link between online weather and local mariners and can be easily replicated. It has the potential to save fuel and wear and tear on vessels, as well as reduce loss of vessels and lives due to unforeseen dangerous marine conditions. The IWK also provides an outreach presence to mariners of the sanctuary.

CINMS and NWS held a public workshop last year with local mariners and received unilateral support for the project. The IWK was installed on the fuel dock in the Santa Barbara Harbor in October 1998 with space and power supplied by the Union 76 marine station. It has been in continuous operation since then and has become a hit with the marine community.

In the IWK are:

- Sunlight Readable Flat Screen Display with a luminance of 1000

nits, ten times the luminance of a conventional display;

- A wireless network connection, able to reach a distance of 2,000 to 3,000 feet in line of sight. The connection can also supply multiple locations from one server;
- A ThroughGlass Touch Screen, so the kiosk can be used with a keyboard or trackball, and can be installed in street windows of existing buildings.

The sanctuary and NWS continue to host interpretive sessions for interested mariners to learn more about how to use the IWK and to read satellite and radar images produced by NWS and other agencies. For more information on the kiosk, see the Channel Islands National Marine Sanctuary Web site, <http://www.cinms.nos.noaa.gov>.

—Colleen Angeles 🌐

Focus On...

NOAA's FY 2000 Budget Request

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Oregon, and California to protect and recover at-risk Pacific salmon and steelhead species. More than 800 national leaders, members of Congress, researchers, and other interested stakeholders attended the National Ocean Conference, and were joined by an additional 1,000 parties over nationwide satellite downlinks.

The President's Budget Request also allows NOAA to perform an essential role in a number of Departmental, interagency and Presidential initiatives, including the Lands Legacy Initiative, the Year of the Ocean Initiative, the Climate in the 21st Century Initiative, the Clean Water Initiative, the Natural Disaster Reduction Initiative, the South Florida Ecosystem Restoration Initiative, and building the capacity of the Nation's Historically Black Colleges and Universities.

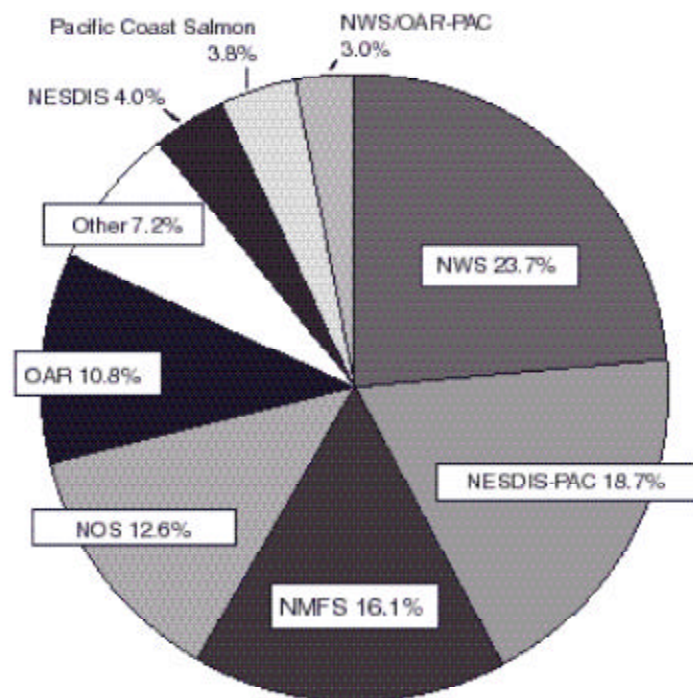
Compared with the FY 2000 base, significant resource changes in the FY 2000 budget include:

- \$131.1 million to continue the President's commitment to restore the health and wealth of America's fisheries and protect species in danger of extinction;
- \$78.1 million to support the Year of the Ocean Initiative, an outgrowth of the National Ocean Conference. This will help to promote new scientific insight into the oceans, sustain fisheries and other marine resources, provide

new opportunities for economic growth, and protect fragile coastal communities and ecosystems, such as coral reefs, from damage and environmental degradation. This includes \$51.6 million to design and acquire the first of four new fisheries research vessels;

- \$32 million of the \$105 million Lands Legacy Initiative will promote "smart growth" strategies along America's coast. \$15 million

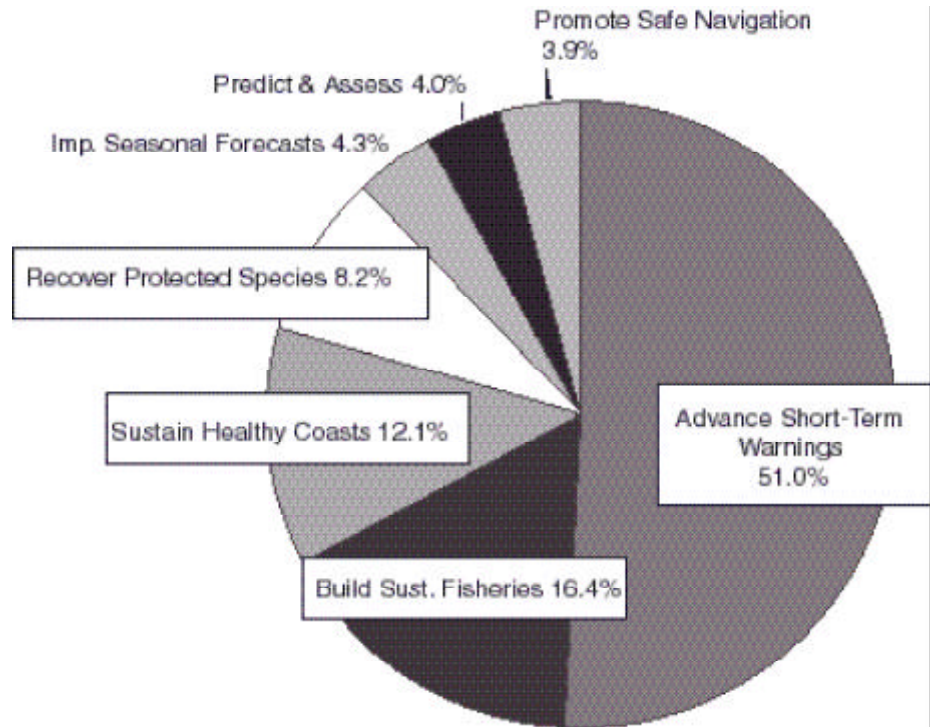
is also included in Lands Legacy to strengthen protection at the 12 existing National Marine Sanctuaries, and to enhance America's marine resource protection through planning for future sanctuaries. An additional \$14.7 million is devoted to the anticipated doubling of the protected areas covered by the National



NOAA's FY 2000 Budget by Line Office

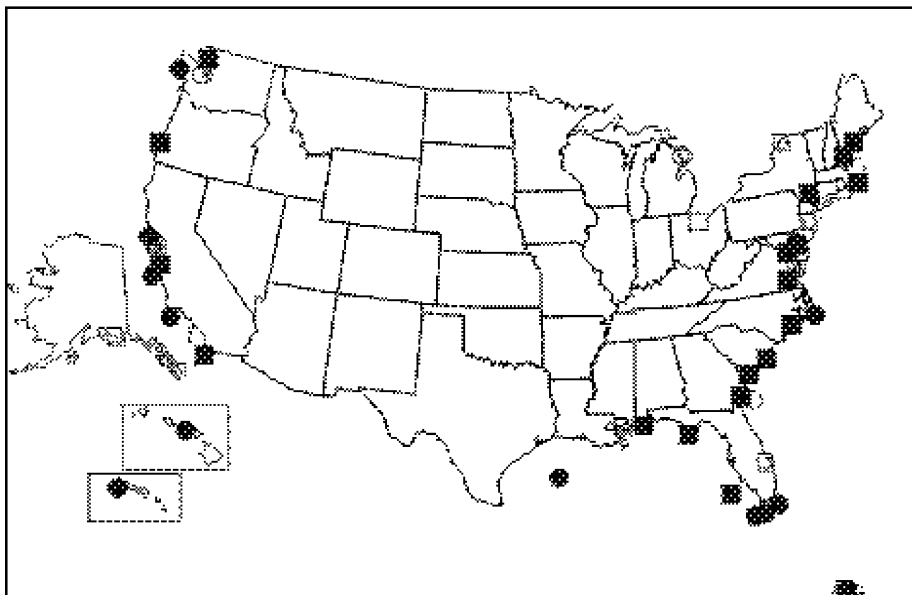
Estuarine Research Reserve System;

- \$42.1 million in support of the Administration's Natural Disaster Reduction Initiative, to conduct critical activities to reduce and mitigate the direct and indirect costs of natural disasters;
- \$28.1 million to enhance significantly NOAA's oceanic and atmospheric research capabilities;
- \$100 million to establish a new Pacific Coastal Salmon Conservation Fund to help share the costs of state, tribal and local conservation activities for at-risk Pacific salmon runs in California, Oregon, Washington, and Alaska;
- \$22 million for the Administration's Clean Water Initiative, focusing on polluted run-off and growing outbreaks of



NOAA's FY 2000 Budget by Strategic Plan Element

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Map (left) shows NOAA's National Marine Sanctuaries (solid boxes), National Estuarine Research Reserves (solid circles), and proposed sanctuaries and reserves (clear). Both the sanctuaries and research reserve programs are in line for funding increases as part of the Administration's Lands Legacy Initiative.

Clean Water Action Plan Celebrates One Year Anniversary

February 19, 1999, marks the first year anniversary of the Administration's announcement of the Clean Water Action Plan. The Plan's implementation is protecting public health and restoring our nation's precious waterways by setting strong goals and providing states, communities, farmers, and landowners the tools and resources to meet them.

This first year has charted a new course, emphasizing collaborative strategies built around watersheds and the communities they sustain. Local, regional, state and Federal agencies, as well as tribal nations, have collaborated in the production of the Unified Watershed Assessments and the Draft Animal Feeding Operations Strategy. These are the building blocks for further development of the Plan. They are an important step in controlling point source discharges, reducing polluted runoff, enhancing sensitive natural resources such as wetlands and coastal waters, and protecting drinking water supplies.

NOAA is celebrating its successes in improving the monitoring of coastal waters, expanding research of emerging problems like pfiesteria, amending fishery management plans to address water quality issues, and ensuring the implementation of strong programs to reduce polluted runoff to coastal waters.

NOAA has been working with Federal and state partners to finalize the draft contingency plan for Harmful Algal Blooms, which will allow Federal agencies to provide prompt and coordinated assistance to states to help them respond to outbreaks of harmful algal blooms, such as Pfiesteria. Under the Plan, Federal agencies will assist states to perform rapid scientific assessments in order to minimize harm from outbreaks, as well as to capture critical measurements that are necessary to conduct research on the toxicity of the organisms and the causes of the outbreaks.



NOAA has been especially involved in efforts to combat polluted runoff through its partnerships with coastal states in implementing the Coastal Nonpoint Source Program under the Coastal Zone Management Act. NOAA and EPA have reviewed and conditionally approved all 29 state Coastal Nonpoint Pollution Control Programs. These programs will provide a roadmap for coastal states to follow in controlling polluted runoff into coastal waters.

NOAA is dedicated to continuing the implementation of the plan in 1999. NOAA will continue its harmful algal bloom research and monitoring activities, as well as continue to address the impacts of hazardous wastes on coastal water quality and NOAA trust resources. Additionally, NOAA will support new state coastal programs in developing coastal nonpoint pollution control programs and provide technical support to all coastal states to implement their coastal nonpoint programs.

For more information about the Clean Water Action Plan, visit the plan's Web site at <http://www.cleanwater.gov>.


—Kim Swaggard 

FY 2000 \$2.5B Budget Request Gives 13% Increase Over Current Funding

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pfiesteria and other harmful algal blooms, hypoxia, and other symptoms of degraded coastal ecosystems.

The budget request also provides funding for some anticipated inflationary changes, such as the FY 2000 pay raise.

NOAA's FY 2000 budget request is available on the Internet at <http://www.publicaffairs.noaa.gov/budget2000>. Dr. Baker's budget presentation to NOAA constituents is also on the Web at <http://www.constituentaffairs.noaa.gov>. 

NWS Researchers Zero In on Impacts of El Niño and La Niña

Thanks to the worldwide weather impacts ushered forth by El Niño and La Niña, the two infamous weather makers have become household words and are being blamed for any number of natural—and unnatural—phenomena.

To separate fact from fiction, scientists at the National Weather Service and Northern Illinois University have joined together in studying the oft-quoted climate duo. And, they have presented some of their findings in the *Journal of Climate*, a American Meteorological Society publication.

“The impacts of El Niño and La Niña can be scientifically validated and we now have a more accurate picture of what they can and cannot do,” said James Noel, a hydrometeorologist at the Weather Service’s Ohio River Forecast Center in Wilmington, Ohio.

Along with Prof. David Changnon at Northern Illinois in DeKalb, Noel was able to tie the number of winter storms in the United States to sea surface pressure, temperature, and other patterns in the South Pacific Ocean that cause El Niño and La Niña.

“We discovered that the Pacific Northwest, the Great Lakes, New England, and the Southeast are the areas most strongly impacted by the climate duo,” Changnon said. “While our results can’t be used to predict exactly how many storms will occur, they should help people in these regions be on guard for dramatic changes.”

This winter, the Northwest is faced with a wet and cold La Niña winter while the Great Lakes are looking at a cool and wet winter as well. New England, which experienced warm and wet conditions during last year’s El Niño, should expect more normal

winter-like conditions, while last year’s cool and stormy season in the Southeast should give way to a warmer and drier winter season.

Where El Niño drenched the Southwest and California with storm after storm last year, the current La Niña is expected to keep things drier. In the Northeast, last year’s mild El Niño conditions should give way to a more normal winter pattern.

—Bob Chartuk 🌐



The supermarket tabloid *The Sun* blames it all on El Niño, but NWS knows what the system can and cannot do.

NOAA Ship on Year-Long Research Cruise

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INDOEX Steering Committee and cruise organizer of the European component is Professor Paul J. Crutzen, director of the Max-Planck Institut for Chemie in Germany, and a 1995 Nobel Laureate in Chemistry.

Subsequent projects on *Brown* will utilize the ship’s Doppler radar and the most impressive array of atmospheric and near-surface oceanographic sensors ever assembled on a ship. One project will investigate how storms and their associated strong winds, sun-blocking clouds, and precipitation interact with the ocean to modify the sea surface temperature and surface current structures. Climate models must be able to capture these coupled interactions to successfully generate short-term forecasts of interannual climate variations, such as El Niño and the intensity of Indian Ocean monsoons.

Ronald H. Brown’s mission will include port calls in South Africa, Mauritius, the Maldives, Singapore, and Kwajalein. The ship expects to end its mission at the end of November in San Diego, after servicing the network of moored buoys in the tropical Pacific Ocean that collect atmosphere and ocean data used to predict El Niño and other climate and weather phenomena.

Cmdr. Roger L. Parsons, NOAA Corps, assumed command of *Ronald H. Brown* on January 7. The ship carries a complement of five commissioned officers, 20 civilian crew members, and up to 34 scientists.

—Jeanne Kouhestani 🌐

(For information about the Office of NOAA Corps Operations and *Ronald H. Brown*, visit their Internet home page at <http://www.nc.noaa.gov>. For information about the INDOEX project, see: <http://borneo.uscd.edu>.)

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steps to prevent the introduction and spread of additional invasive species. The Council, to be chaired by Agriculture Secretary Dan Glickman, Interior Secretary Bruce Babbitt, and Commerce Secretary William Daley, will work in cooperation with a variety of groups, including states, tribes, scientists, universities, shipping interests, environmental groups and farm organizations, to combat invasive plants and animals.

New Two New Sanctuary Chiefs Named: New managers have been selected for two of NOAA's National Marine Sanctuaries.

Carol Bernthal has been selected superintendent of the 3,310-square miles Olympic Coast National Marine Sanctuary off the rugged Olympic Peninsula coastline,

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which protects a rich mix of diverse marine life and Native American cultures.

Bernthal was the senior habitat biologist and habitat program manager for the Point No Point Treaty Council, where she managed a natural resource habitat program for four Native American tribes in the Olympic Peninsula.

G.P. Schmahl has been selected manager of the Flower Garden Banks National Marine Sanctuary, located 100 miles off the coast of Texas and Louisiana, which protects a pair of underwater gardens that harbor the northernmost coral reefs in the United States.

Beginning in 1991, Schmahl served as manager of NOAA's Looe Key National Marine Sanctuary, and since 1997 has served as the Lower Keys regional manager for NOAA's Florida Keys National Marine Sanctuary. Schmahl has more than 20 years of experience in coral reef ecology and conservation. 🌐



NOAA Administrator D. James Baker (left) and Tillmann Mohr, director of EUMETSAT, sign the polar satellite accord at Commerce Department headquarters in Washington.

U.S., Europe Sign Weather Satellite Pact

The United States and Europe have signed an agreement that ensures the long-term continuity and improvement of polar-orbiting weather satellites.

The agreement was signed in Washington, D.C., by NOAA Administrator D. James Baker, and Tillmann Mohr, director of the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT).

Under the terms of the Initial Joint Polar System agreement, NOAA and EUMETSAT will cooperate to provide a joint system of polar-orbiting weather satellites after the launch of EUMETSAT's Metop-1 satellite in 2003. Each agency will fly a common set of instruments on its satellites to ensure data continuity and compatibility for a wide range of users. This will be in addition to instruments that will be carried on either the NOAA or EUMETSAT satellites.

For the past 30 years, NOAA has operated two polar-orbiting satellites—one crossing the equator in the

morning, the other crossing in the afternoon. Early in the next century, NOAA will provide coverage for the afternoon only. EUMETSAT will provide observations from the morning orbit. Coverage from both orbits is essential for use in numerical weather prediction models. The data are also used for global climate monitoring. 🌐

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