

### **Polar-orbiting Operational Environmental Satellite (POES)**

NOAA's Polar-orbiting satellites, with sun-synchronous 450 nautical mile altitude orbit, provide foreign and domestic data users with infrared and visible Earth images, as well as soundings of the Earth's atmosphere. These satellites circle the Earth every 102 minutes, passing near the North and South Poles on each orbit. The orbital period allows each POES satellite to view any point on the Earth at least twice per day.

There are currently two operational polar-orbiting environmental satellites, NOAA – 16, the morning satellite, and NOAA – 17, the afternoon satellite. They provide environmental observations for every location on the Earth four times per day. The POES instruments provide a variety of meteorological, oceanographic, terrestrial, climate, and other specialized data collection services, supporting large-scale immediate and long-range weather forecasting. In addition, POES spacecraft employ space environment monitors, Search and Rescue instruments and a data collection system.



### **Geostationary Operational Environmental Satellite (GOES)**

NOAA's GOES system provides continuous weather imagery and radiometric data over the Western Hemisphere. These satellites circle the Earth in geosynchronous orbit (19,326 nautical miles above the Earth), which means they orbit the Earth at a speed matching the Earth's rotation. This allows the satellites to view continuously one position on the surface of the Earth to provide accurate forecasting, severe storm tracking, and meteorological research data.

There are two operational GOES satellites, GOES-East located at 75° west longitude and GOES-West at 135° west longitude. The two satellites operate together to send overlapping full-disk images of the Western Hemisphere, both day and night, keeping a constant vigil for atmospheric "triggers" for severe weather. GOES images are seen daily during television weather broadcasts. The imagery is used to estimate rainfall during thunderstorms and hurricanes for flash flood warnings, snowfall accumulations, and the overall extent of snowcover. Such data help meteorologists issue winter storm warnings and issue spring snowmelt advisories.

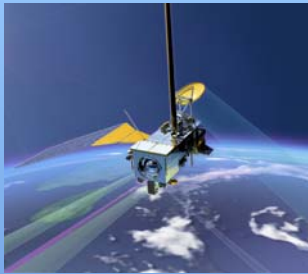


### **Defense Meteorological Satellite Program (DMSP)**

The DMSP satellites are operated by NOAA in conjunction with the Department of Defense. DMSP satellites operate in a sun-synchronous polar (450 nautical mile altitude) orbit to provide meteorological and environmental data for the Department of Defense and authorized users. These satellites orbit the Earth every 102 minutes, passing near the North and South Poles on each orbit. Each DMSP satellite views any point on Earth at least twice per day.

The Department of Defense's DMSP constellation comprises a minimum of two fully operational satellites and other secondary satellites. The DMSP satellite's primary weather sensor provides continuous visual and infrared imagery of cloud cover over an area 1,600 nautical miles wide. Additional satellite sensors measure atmospheric vertical profiles of moisture and temperature, oceanic information, and data about the sun's effects on the Earth.

## Future Programs



### National Polar-orbiting Operational Environmental Satellite System (NPOESS)

Beginning in 2009, NPOESS satellites will replace the DMSP and POES constellations. New advanced sensors on NPOESS will greatly improve currently available measurements and provide vital new operational measurements presently only available as research products.

NPOESS will provide complete coverage of meteorological conditions for civil, military, and scientific purposes while cutting operational costs dramatically.



### Geostationary Operational Environmental Satellite (GOES) N-O-P

The next generation of GOES spacecraft will be used to continue and enhance the functions of the current GOES I-M series of spacecraft. GOES N-P will carry an Imager and a Sounder to provide regular measurements of earth's atmosphere, cloud cover and land surfaces. Imager and Sounder instruments for GOES N-P will have substantially increased capability to take meaningful data through eclipses. Two of the satellites also will carry a Solar X-ray Imager and Space Environment Monitor instruments.



U.S. Department of Commerce

National Oceanic and Atmospheric Administration

National Environmental Satellite, Data, and Information Service

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### NESDIS' MISSION

NOAA's National Environmental Satellite, Data, and Information Service (NESDIS) provides timely access to global environmental data, manages the operational environmental satellites, and conducts related research to promote, protect, and enhance the Nation's economy, security, environment, and quality of life.

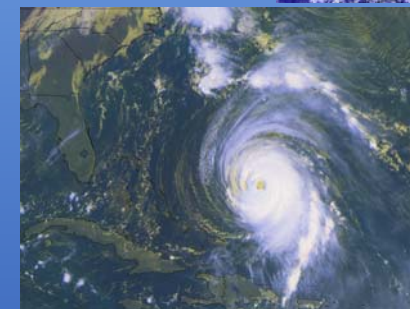
For additional information, visit our

web site at:

[www.nesdis.noaa.gov](http://www.nesdis.noaa.gov)

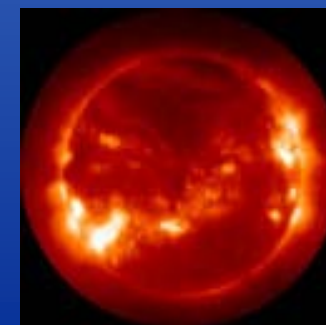
## NOAA's National Environmental Satellite, Data, and Information Service Satellite Programs

POES image of Eastern U.S. snowcover



GOES Image of Hurricane Isabel

DMSP image of U.S. nighttime lights



GOES X-Ray Image of the Sun