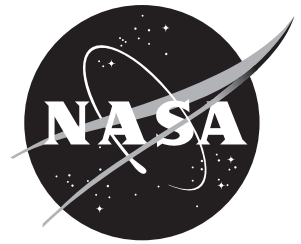


NASA Facts

National Aeronautics and
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Quick Scatterometer (QuikScat)

The Quick Scatterometer (QuikScat) mission is a "quick recovery" mission to fill the gap created by the loss of data from the NASA Scatterometer (NSCAT), when the satellite it was flying on lost power in June 1997.

QuikScat is planned for launch from California's Vandenberg Air Force Base aboard a Titan II vehicle in early 1999 and will continue to collect important ocean wind data that was begun by NSCAT in September 1996. The SeaWinds instrument on the QuikScat satellite is a specialized microwave radar that measures near-surface wind speed and direction under all weather and cloud conditions over Earth's oceans.

The SeaWinds instrument on QuikScat is part of NASA's Earth Observing System (EOS), which is designed to address global environmental changes. Winds are a critical factor in determining regional weather patterns and climate. Oceans cover 70 percent of Earth's surface, and scatterometers are the only remote-sensing system that can provide accurate, frequent, high-resolution measurements of ocean surface wind velocities, under all weather conditions. These instruments play an

increasingly important role in oceanographic, meteorological and climate studies.

As part of this mission, NASA sponsors a team of scientific investigators who provide advice during the development of the instrument and the ground data processing system. A science team will conduct research with the SeaWinds data; these studies are expected to lead to improved methods of global weather forecasting and modeling.

The main objective of the SeaWinds instrument to collect information about both the speed and direction of winds near the ocean surface. The instrument also provide researchers with data collected over land and sea ice.



JPL's NSCAT/SeaWinds Program Office has been assigned responsibility and provides management, ground systems and the SeaWinds instrument. NASA's Goddard Space Flight Center obtained the satellite from Ball Aerospace & Technologies Corp.

The SeaWinds instrument uses a rotating dish

antenna with two spot beams that sweep in a circular pattern. The antenna radiates microwave pulses at a frequency of 13.4 gigahertz across broad regions on Earth's surface. The instrument will collect data over ocean, land, and ice in a continuous, 1,800-kilometer-wide band, making approximately 400,000 measurements per day.

QuikScat will be launched into a sun-synchronous, 803-kilometer, circular orbit. Data acquisition will be performed by NASA's Wallops Flight Facility. Wallops will manage, implement and operate the NASA tracking stations at Poker Flats, Wallops Flight Facility, Svalbard and McMurdo.

Science Objectives

- ❑ Acquire all-weather, high-resolution measurements of near-surface winds over the global oceans
- ❑ Determine atmospheric forcing, ocean response, and air-sea interaction mechanisms on various spatial and temporal scales
- ❑ Combine wind data with measurements from scientific instruments in other discipline to help us better understand the mechanisms of global climate change and weather patterns
- ❑ Studies of annual and semi-annual rain forest vegetation changes
- ❑ Daily/seasonal sea ice edge movement and polar ice pack changes

Operational Objectives

- ❑ Improve weather forecasts near coastlines by using wind data in numerical weather- and wave-prediction models
- ❑ Improve storm warning and monitoring

Instrument Description

- ❑ Radar: 13.4 gigahertz, 110-watt pulse at 189-hertz PRF
- ❑ Antenna: 1-meter-diameter rotating dish that produces two spot beams, sweeping in a circular pattern
- ❑ Mass: 200 kilograms
- ❑ Power: 220 watts
- ❑ Average Data Rate: 40 kilobits per second

Measurements

- ❑ 1,800-kilometer swath during each orbit provides approximately 90-percent coverage of Earth's oceans every day.
- ❑ Wind-speed measurements of 3 to 20 meters/second, with an accuracy of 2 meters/second; direction, with an accuracy of 20 degrees
- ❑ Wind vector resolution of 25 kilometers.

QuikScat Team Leaders

- ❑ Program Manager: James E. Graf, JPL.
- ❑ Principal Investigators: W. Timothy Liu, JPL, and Michael H. Freilich, Oregon State University.

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