

NASA Facts

National Aeronautics and
Space Administration

Marshall Space Flight Center
Huntsville, Alabama 35812



EarthKAM

(Earth Knowledge Acquired by Middle school students)

Missions: Launched during Expedition 1, ISS Mission 5A, STS-98 Space Shuttle Flight

Experiment Location on ISS: The U.S. Laboratory Window

Principal Investigator: Dr. Sally Ride, University of California, San Diego

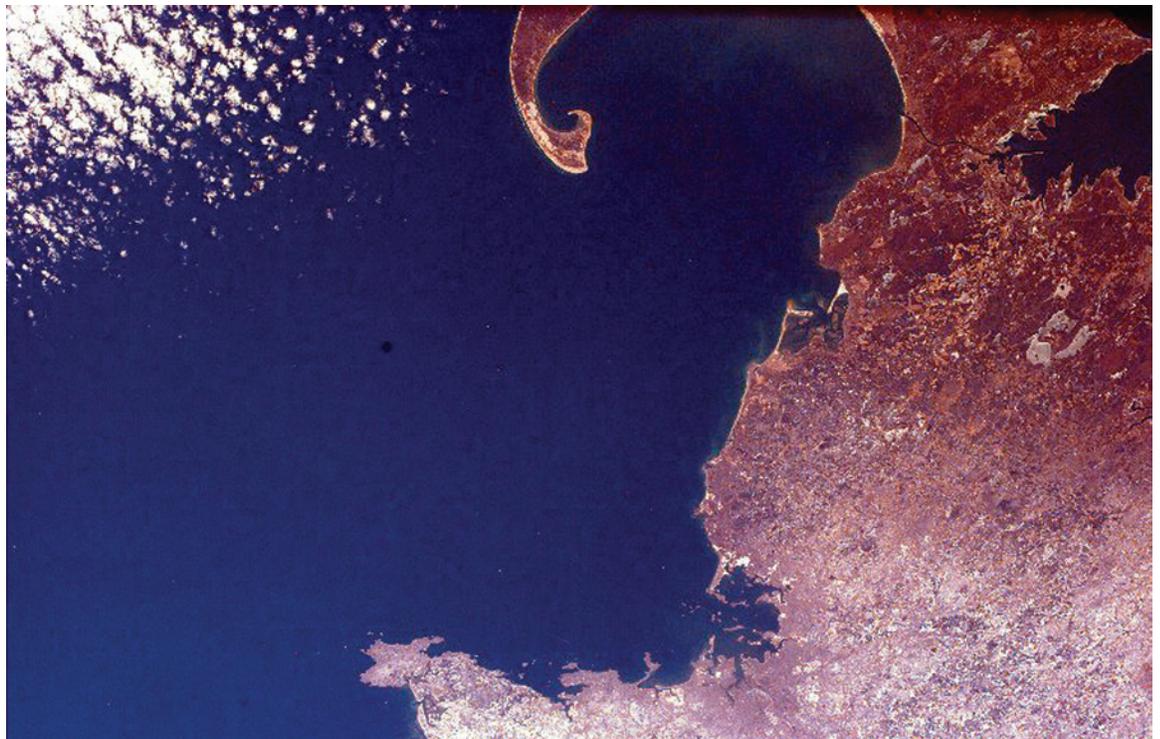
Project Manager: Brion J. Au, NASA Johnson Space Center, Houston, Texas

Overview

EarthKAM (Earth Knowledge Acquired by Middle school students) is a NASA education program that enables thousands of students to photograph and examine Earth from a space crew's perspective.

Using the Internet, the students control a special digital camera mounted on-board the International

Space Station. This enables them to photograph the Earth's coastlines, mountain ranges and other geographic items of interest from the unique vantage point of space. The team at EarthKAM then posts these photographs on the Internet for the public and participating classrooms around the world to view. NASA fuels discoveries that make the world smarter, healthier and safer.



This EarthKAM image shows the Northeastern coast of the United States at Boston, Massachusetts.

Experiment Operations

Funded by NASA, EarthKAM is operated by the University of California, San Diego, and NASA field centers. It is an educational payload that allows middle school students to conduct research from the International Space Station as it orbits 240 miles above the Earth. Using the tools of modern technology—including the Internet and a digital camera mounted to the Space Station's laboratory window—EarthKAM students are able to take stunning, high-quality photographs of our planet.

The EarthKAM camera was installed in the International Space Station during the STS-98 Space Shuttle Mission, part of Expedition 1, ISS Mission 5A, in February 2001. After the crew mounted the camera at the window, the payload required no further crew interaction for nominal operations.

EarthKAM photographs are taken by remote operation from the ground. After the students target the images they want to acquire, their requests are collected and compiled into a "Camera Control File" at the University of California in San Diego.

The camera control file is uplinked to a Station Support computer aboard the Space Station. This laptop activates the camera at specified times, taking the desired images and transferring them to the camera's hard disk card, capable of storing up to 81 images.

The laptop computer immediately transfers these images to its own hard drive, storing them until downlinked to Earth via the Operations Local Area Network (OPS LAN). In approximately one hour, the EarthKAM team posts the images at <http://www.earthkam.ucsd.edu> for easy Web access by participating schools.

EarthKAM is monitored from console positions at the Tele-Science Support Center (Mission Control) at Johnson Space Center in Houston, and operated from the EarthKAM Mission Operations Center at the University of California, San Diego. Because EarthKAM is classified as a payload, its Space Station operations

are coordinated through the Payload Operations Center (POC) at NASA's Marshall Space Flight Center in Huntsville, Ala. EarthKAM is a long-term payload that will remain on the Space Station for several missions.

Flight History/Background

In 1994, Dr. Sally Ride, a physics professor and former NASA astronaut, started what is now EarthKAM with the goal of integrating education with the space program. EarthKAM has flown on five Shuttle flights. Its first flight was aboard Space Shuttle Atlantis in 1996, with three participating schools taking a total of 325 photographs. Since 1996, EarthKAM students have taken thousands of photographs of Earth.

EarthKAM invites schools from all around the world to take advantage of this educational opportunity. Previous participants include schools from the United States, Japan, Germany and France.

Benefits

EarthKAM brings education out of textbooks and into real life. By integrating Earth images with inquiry-based learning, EarthKAM offers students and educators the opportunity to participate in a space mission and develop teamwork, communication and problem-solving skills.

Long after the photographs are taken, students and educators continue to reap the benefits of EarthKAM. Educators later use the images alongside suggested curriculum plans for studies in physics, computers, geography, math, earth science, biology, art, history, cultural studies and more.

More information on EarthKAM and other Space Station experiments can be found at:

<http://www.earthkam.ucsd.edu>

<http://www.nasa.gov>

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