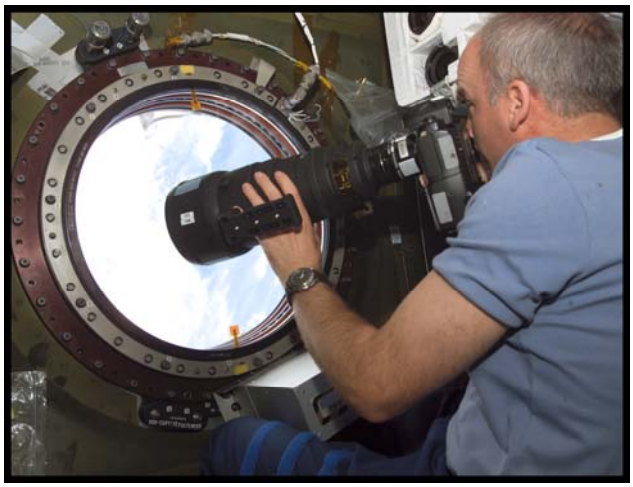
Earth Observation Photography

Crew Earth Observations

Astronauts have used hand-held cameras to photograph the Earth for more than 40 years. Beginning with the Mercury missions in the early 1960s, astronauts have taken more than 700,000 photographs of the Earth. Today, the International Space Station (ISS) continues the NASA tradition of Earth observation from human-tended spacecraft. Operational since November 2000, the ISS is well suited for documenting Earth features. The ISS maintains an altitude between 220 - 286 miles (354 - 460 km) above the Earth, and an orbital inclination of 51.6˚, providing an excellent stage for observing most populated areas of the world.



The U.S. Laboratory Module, Destiny, has a science window of high optical quality that is generally oriented perpendicular to the Earth's surface. Instrumentation for Earth observation currently includes professional digital cameras, and a variety of lenses. Other imaging systems may be added to the Station as part of future mission activities.

Astronauts are trained in scientific observation of geological, oceanographic, environmental and meteorological phenomena, and in the use of photographic equipment and techniques. Scientists on the ground select and periodically update a series of areas to be photographed as part of the Crew Earth Observations science payload. Messages are routinely sent to the station crew members listing the best opportunities for photographing target site areas. The sites include major deltas in South and East Asia, coral reefs, major cities, smog over industrial regions, areas that typically experience floods or droughts triggered by El Nino cycles, alpine glaciers, long-term ecological research sites, tectonic structures, and features on Earth, such as impact craters, that are analogous to structures on Mars.

Hand-held photography fills a niche between aerial photography and imagery from satellite sensors and complements these two formats with additional information. Near real-time information exchange between the crew and scientists expedites the recording of dynamic events of geological, oceanographic, environmental, and meteorological importance. Critical environmental monitoring sites are photographed repeatedly over time; some have photographic records dating back to the Gemini and Skylab missions. Data can be used to develop maps of land cover change. Earth limb pictures taken at sunrise and sunset document changes in the Earth's atmospheric layering, and record such phenomena as auroras and noctilucent clouds. Photographs of hurricanes, thunderstorms, squall lines, island cloud wakes, and the jet stream supplement satellite images, and verbal observations of Earth made by the flight crews of the International Space Station are used not only as scientific data, but also to educate students and the general public about the Earth.

How to View Images and Obtain Information on Astronaut Photographs

World Wide Web:
Search and view all photos at the following URL:
http://eol.jsc.nasa.gov

View a collection of outstanding photos with captions:
http://eol.jsc.nasa.gov/sseop/EFS/

Email:
jsc-earthweb@mail.nasa.gov

Prints, Slides & Transparencies:
Media Resource Center
NASA/Johnson Space Center
Mail Code AP32
Houston, Tx 77058
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Phone: (281) 483-2976
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Write to:
Image Science and Analysis Laboratory
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Top Photo: *image ISS013-E-24184; eruption of Cleveland Volcano, Aleutian Islands, Alaska.*

Bottom Photo: *image ISS010-E-12103; the city of Seoul, South Korea, at night.*

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