

## Public Engagement of Earth Science and Art using Astronaut Photography

Andrea L. Meado<sup>1</sup>, William L. Stefanov<sup>2</sup>, Melissa D. Higgins<sup>1</sup>, Lisa A. Vanderbloemen<sup>1</sup>

<sup>1</sup>Jacobs, NASA Johnson Space Center, Houston, TX 77058, USA

<sup>2</sup>NASA Johnson Space Center, Houston, TX 77058, USA

For over fifty years of crewed spaceflight missions, NASA astronauts have taken remarkable photographs of the Earth that offer various perspectives for viewing dynamic Earth processes. The International Space Station (ISS) today provides a unique platform to view and capture imagery of Earth at a variety of viewing angles, seasons, and times of day. Astronaut photos comprise a variable true-color (RGB) dataset taken with multiple handheld digital (and historically, film) cameras and lens types that differ from nadir-looking satellite-based remote sensing instruments with fixed temporal and spatial resolutions. The Crew Earth Observations (CEO) Facility within the Earth Science and Remote Sensing Unit at NASA's Johnson Space supports the acquisition, analysis, and curation of astronaut photography of Earth's surface and atmosphere. CEO's website, the Gateway to Astronaut Photography of Earth ([eol.jsc.nasa.gov](http://eol.jsc.nasa.gov)), provides free public access to view, search, and download over three million images taken by astronauts from Mercury, Gemini, and Apollo missions to current ISS missions. Handheld images taken by astronauts from the ISS are used for scientific research and public engagement in STEM fields, particularly earth science.

While segments of the public are actively interested in STEM fields, there may be groups who are underexposed to and disinterested in earth science or are unaware of astronaut photography from the ISS. A broader public audience can be introduced to earth science, STEM fields, and ISS research through artistic or abstract photos of the Earth. Wide angle pictures taken of Earth have identifiable landforms and bodies of water, however zoomed in, very high resolution photos without obvious geographic reference can attract new viewing audiences on a purely aesthetic basis. The CEO Facility actively curates a collection of exceptional astronaut photos of Earth as art used to reach a wider population through increased digital products and outreach events. This continuously-updated collection feeds development of freely accessible and high-quality downloadable materials including scientific articles, videos, computer wallpapers, and social media content. These materials are presented with science-based information that augments the artistic qualities of the imagery, and facilitate connection between art-engaged or non-STEM audiences to the ISS research platform and the need for future innovative STEM research.

Short abstract: A broader public audience can be introduced to earth science, STEM fields, and ISS research through artistic astronaut photos of Earth. The Earth Science and Remote Sensing Unit at NASA JSC provides free digital content from astronaut photos to attract both STEM and art-engaged groups to earth science from the ISS.