

High Definition Earth Viewing (HDEV) Payload Achieving

Multifaceted ISS Utilization Results

The High Definition Earth Viewing payload broke new ground in using streamlined flight hardware processes to design and test a new thermal control container, operate as autonomously as possible, and expediting the delivery of a completed flight unit. HDEV's technical purpose is to examine the performance of four different types of commercial off-the-shelf high definition video cameras in space at the altitude of the ISS. The imagery is publically viewed and distributed through a NASA partnership with USTREAM. HDEV began as a technology development and demonstration payload yet has achieved practical applications in several of the ISS utilization categories, including Commercialization and Nongovernment Utilization, Remote Sensing/Earth and Space Observation, and STEM education.

For Commercialization and Nongovernment Utilization, HDEV has ignited ideas for using streaming high definition video of the Earth from the ISS. Museums, art galleries, orchestra performances, and numerous websites are using the HDEV imagery in a variety of different and creative ways. A specific example, is a device, called "ISS Above", which indicates when the ISS is overhead and also shows the HDEV view as it passes. ISS Above is currently for sale through its website. Also, a commercial imaging company called Urthecast, is partnering with the ISS payloads office, to run their own data packet receiving station for HDEV. They can then process the packets and get the HDEV imagery being downlinked to use as context views for their higher resolution commercial imagery also being taken from the ISS.

HDEV contributions to STEM Education include students being involved, through the High Schools United with NASA to Create Hardware (HUNCH) program, to design and fabricate sets of brackets and isolators. The isolators isolated the HDEV electronics mechanically and thermally from the ISS mounted Columbus External Payload Assembly. STEM Education and Remote Sensing/Earth and Space Observation were combined when the German Aerospace Center, DLR (Deutsches Zentrum für Luft- und Raumfahrt) sponsored an educational program developed by the University of Bonn, Germany. This project uses HDEV as one of the resources to engage students in remote sensing and Earth Science. Three papers have been presented about the DLR/University of Bonn educational project at as many conferences to date.

In addition to the established ISS utilization categories, HDEV has greatly contributed to public awareness and connection to the ISS and human space travel by seeing what the astronauts see from orbit around the Earth. The public and space agency employees alike, around the world, enjoy watching the Earth pass by in the imagery downlinked by the "simple" payload called HDEV.

Technically, after almost a year, there are only a few pixels on the nadir camera which show any evidence of damage of the camera sensors. More in-depth analysis will take place when the HDEV hardware is returned sometime late in 2016.