

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)  
LIFT OFF - PRIMARY AND SECONDARY SPACE EDUCATION (1)

Author: Mrs. Margot Solberg  
Ecuadorian Civilian Space Agency (EXA), Ecuador, msolberg@cotopaxi.k12.ec

Mr. Ronnie Nader  
Ecuadorian Civilian Space Agency (EXA), Ecuador, rnader@exa.ec

A SATELLITE IN THE CLASSROOM: 2ND GRADE STUDENTS WORK WITH REAL-TIME  
SATELLITE IMAGES

**Abstract**

“A Satellite in the Classroom” pilot program began in September 2009, with second grade students at Academia Cotopaxi’s International American school in Quito, Ecuador. Through real-time satellite images students are provided hands-on learning experiences which strengthen their understanding of space science and technology. The students are able to track real-time satellites on the globe, download live images, analyze the data, and share their findings with others. The program is based on the Delta operation mode of the HERMES-A/MINOTAUR Space Communications Gateway (SCG), built by the Ecuadorian Space Agency (EXA), and is possible due to its unique ability to act as a gateway between the Internet and the Earth’s orbit. While the academic benefits of utilizing this new technological tool are immediately evident in the classroom, the long-term goal is also to inspire students to pursue an interest in space science as a life-learning process.

In this paper we discuss the teaching methodology as well as actual classroom results from the utilization of the HERMES Delta virtual ground station at Academia Cotopaxi. Through rewarding educational experiences, accomplished with both guided instruction and cooperative groups, the students have interacted with satellite software, the computer and a SMART board. Additional activities carried out by the students have included observing anaglyph images, weather observation, creating weather stations, investigating maps, research, and recording data for the purpose of authentic learning experiences. As a result of this program, students have a greater understanding of technology, weather and geography; as well as an interest in the Earth’s atmosphere and space science. The broader community, at all levels, has also taken an interest in the project.

By providing real-time satellite images in the classroom for educational purposes, we have encouraged an interest in science, technology, engineering and mathematics in these young students. This teaching tool has increased the student’s understanding of science, and has motivated them to learn more than they might have otherwise through more traditional methods.

Presented material in the final paper will include several examples of student accomplishments and an overview of lessons learned in bringing a virtual ground station to the classroom. As the HERMES-A/MINOTAUR SCG is internet accessible, there is hope that the material in this paper will inspire other students and teachers around the world to also connect and bring outer space fully into the education and imagination of the next global generation.