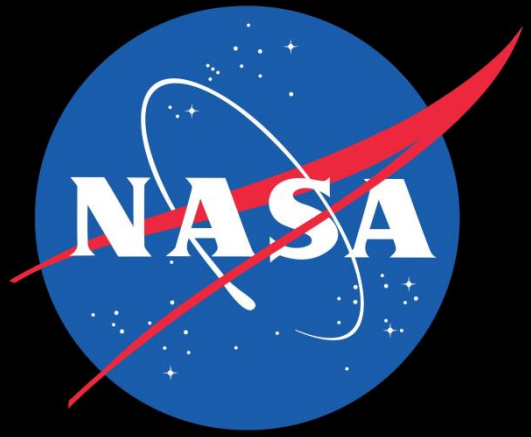
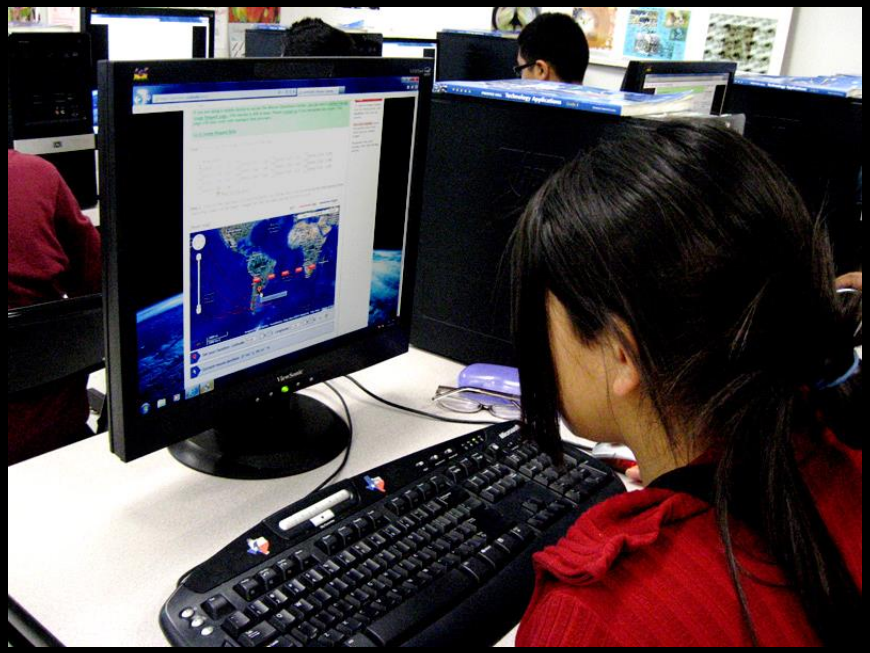
School and



Raul Yzaguirre School For Success (RYSS) - NASA International Space Station (ISS) Photographs of Earth II [2012-2013]



RYSS College Prep Academy students (grades 6 - 8) requested photographs of Earth from the NASA International Space Station via the EarthKAM (Earth Knowledge Acquired by Middle school students) mission program. They identified the locations on Earth via various orbital paths for the onboard camera to take their photographs.

The program is a NASA educational outreach program enabling students, teachers and the public to learn about Earth from the unique perspective of space. During EarthKAM missions (periods the EarthKAM camera is operational), middle school students around the world request photos of specific locations on Earth.

Latitude/Longitude Information:

Latitude (shown as a horizontal line) is the angular distance, in degrees, minutes, and seconds of a point north or south of the Equator. Lines of latitude are often referred to as parallels.

Longitude (shown as a vertical line) is the angular distance, in degrees, minutes, and seconds, of a point east or west of the Prime (Greenwich) Meridian. Lines of longitude are often referred to as meridians.

Distance between Lines If you divide the circumference of the earth (approximately 25,000 miles) by 360 degrees, the distance on the earth's surface for each one degree of latitude or longitude is just over 69 miles, or 111 km. Note: As you move north or south of the equator, the distance between the lines of longitude gets shorter until they actually meet at the poles. At 45 degrees N or S of the equator, one degree of longitude is about 49 miles.

Minutes and Seconds For precision purposes, degrees of longitude and latitude have been divided into minutes (') and seconds ("). There are 60 minutes in each degree. Each minute is divided into 60 seconds. Seconds can be further divided into tenths, hundredths, or even thousandths. (Worldatlas.com)

Orbit information:

The ISS orbits the Earth at 51.6° to the Equator, following the direction of the Earth's rotation from west to east. The Earth itself is tilted at 23.4° to the plane of its orbit around the sun (sun vector), so the ISS is orbiting at 75° to the sun vector. The ISS's altitude varies between 320 to 410 km, and it takes 92 minutes to circle the Earth. The orbit inclination offers good coverage of most of Earth's surface. (RuSpace)

ISS Camera information:

In conjunction with NASA and Sally Ride Science, a camera system has been installed on the International Space Station. This camera system is responsible for taking and downloading student image requests. The camera is mounted in a nadir pointing window on the ISS. EarthKAM is using the Nikon D2Xs Digital Camera, controlled by the Lenovo (IBM) T61p Laptop.

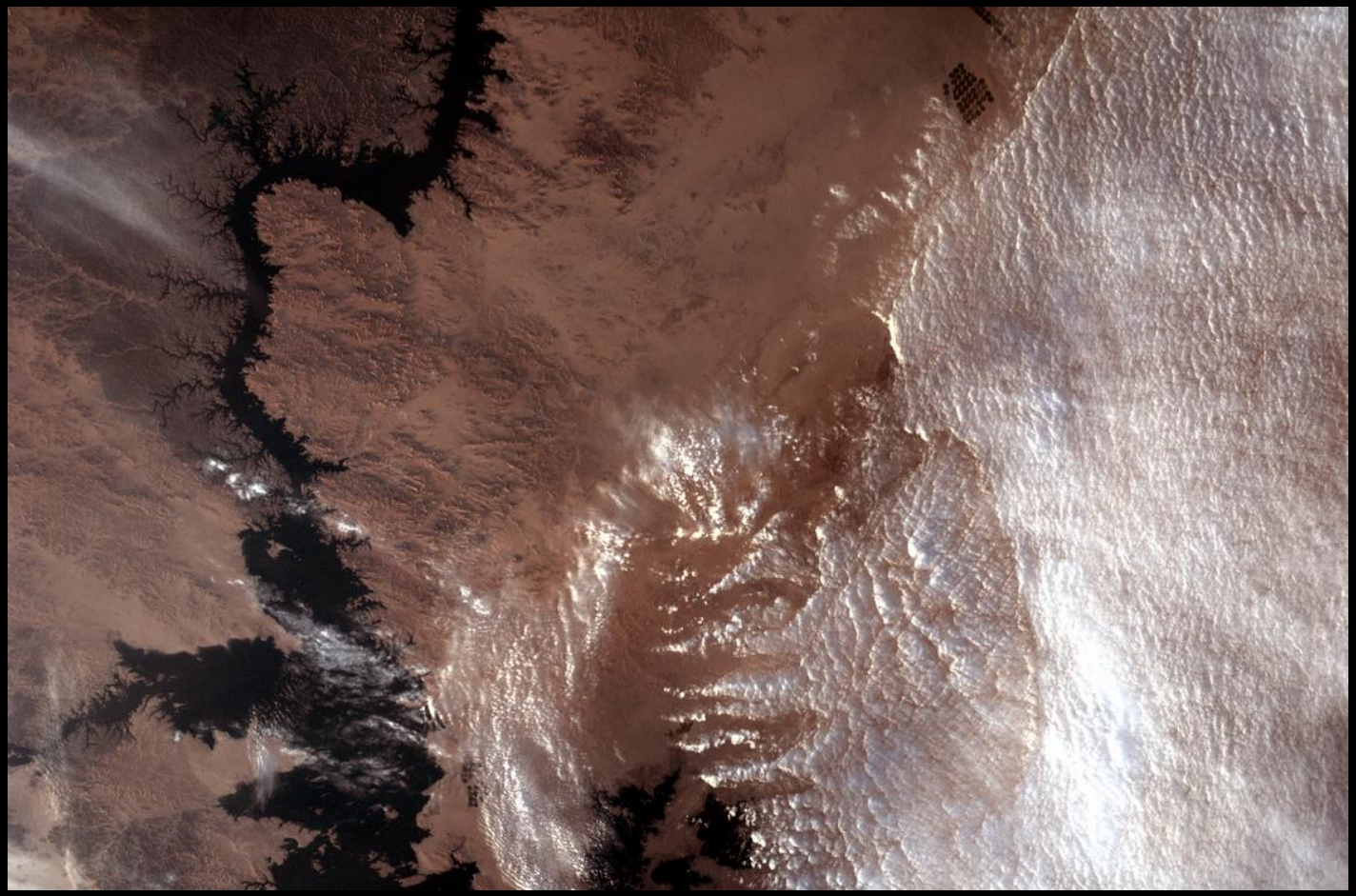


IMAGE_28282

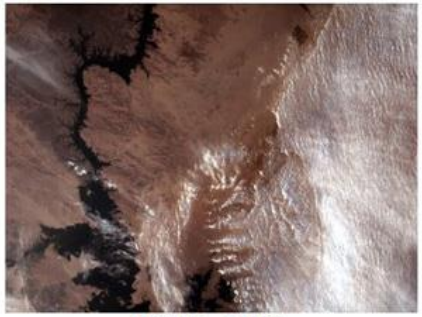


IMAGE_28282

Photo ID	28282
Time Taken (GMT)	2013/30/04:48:39
Center	23.30° E, 32.26° N
Request ID	55972
Codeword	ra28090032

Marissa Hernandez
8th Grade, RYSS
Egypt

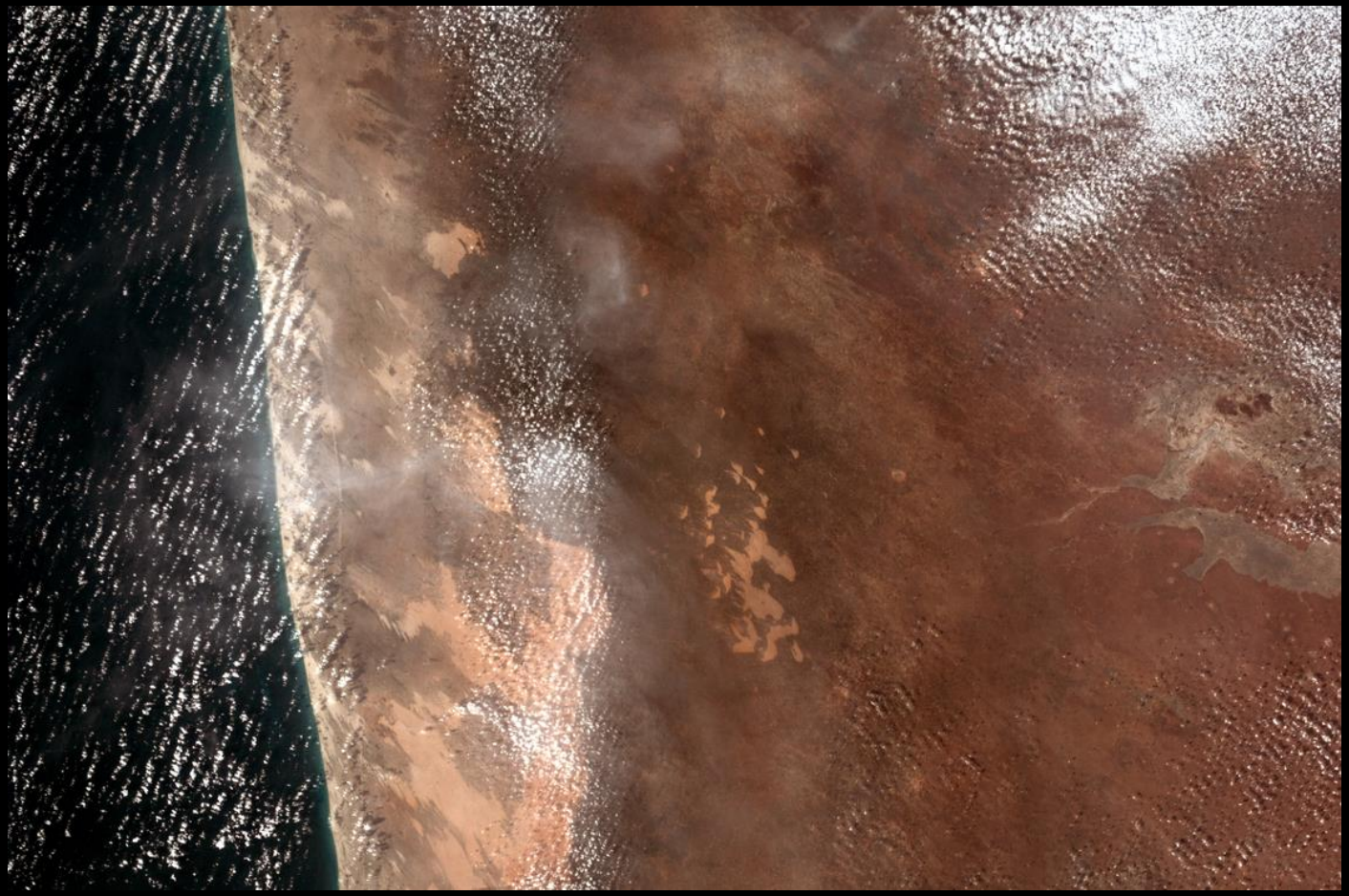


IMAGE_28298

Photo ID	28298
Time Taken (GMT)	2013/30/04:55:00
Center	4.27° E, 47.08° N
Request ID	55566
Codeword	ra28090028

Jazmin Calixto
8th Grade, RYSS
Somalia

IMAGE_28298

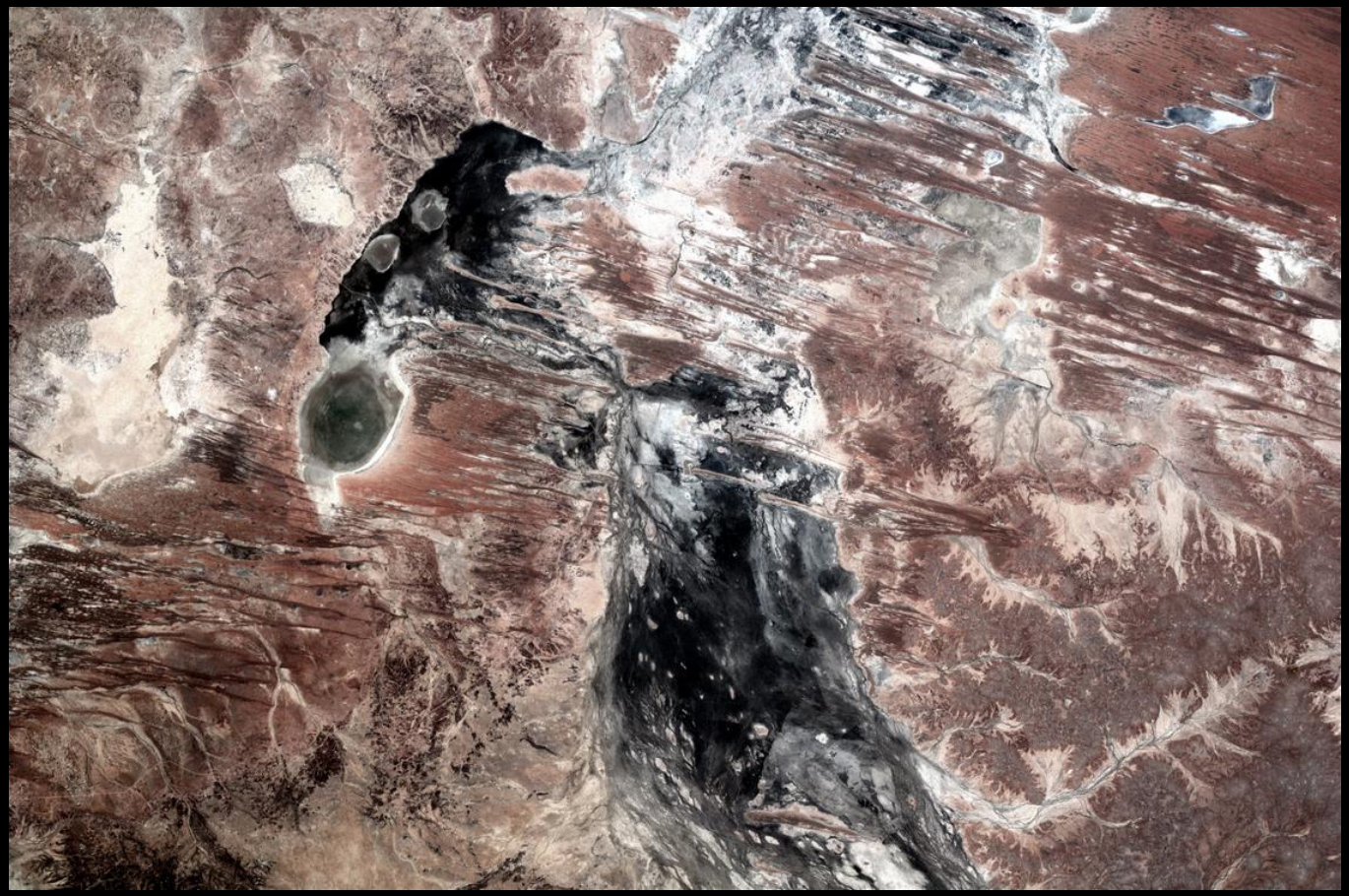


IMAGE_28214

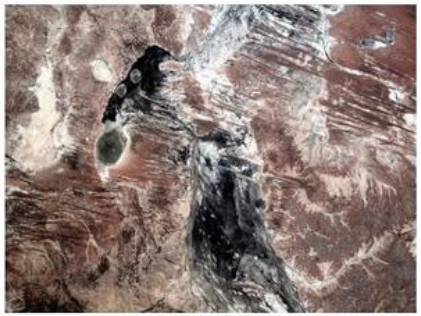
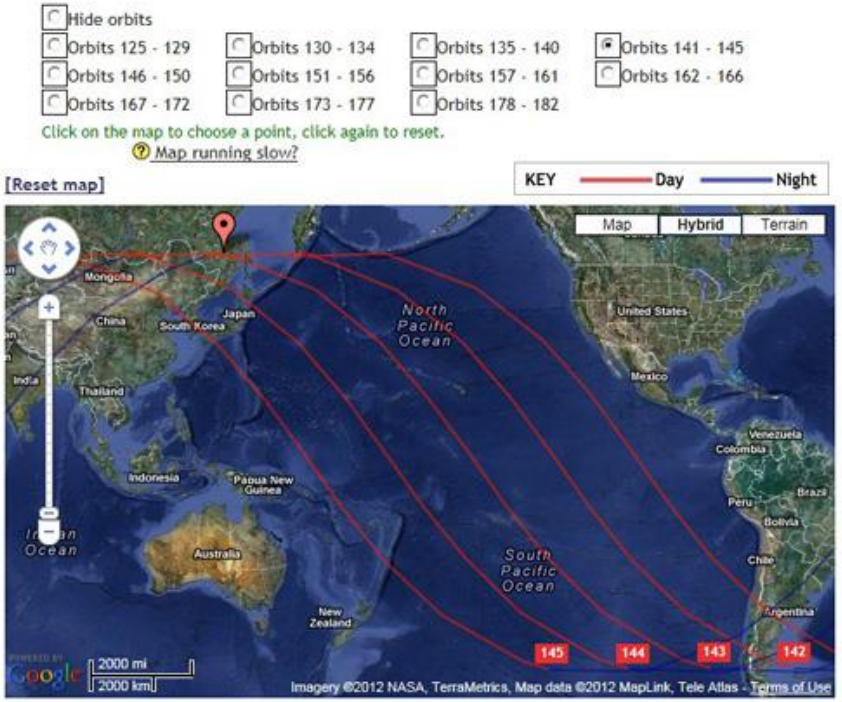


IMAGE_28214

Photo ID	28214
Time Taken (GMT)	2013/30/00:26:23
Center	24.40° W, 139.63° N
Request ID	55031
Codeword	ra28090015

Adrian Delgado
8th Grade, RYSS
Australia



Michael Avila, 7th Grade (2012-2013)

International Space Station (ISS), orbit 142, Russia

Latitude: 51°.16' North

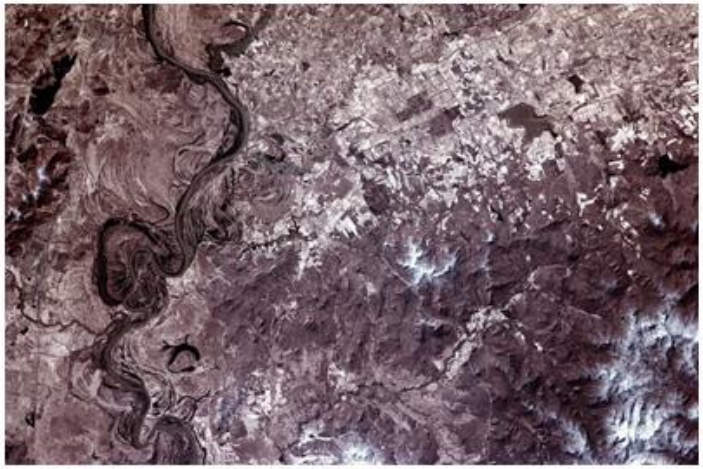
Longitude: 135°.74' East

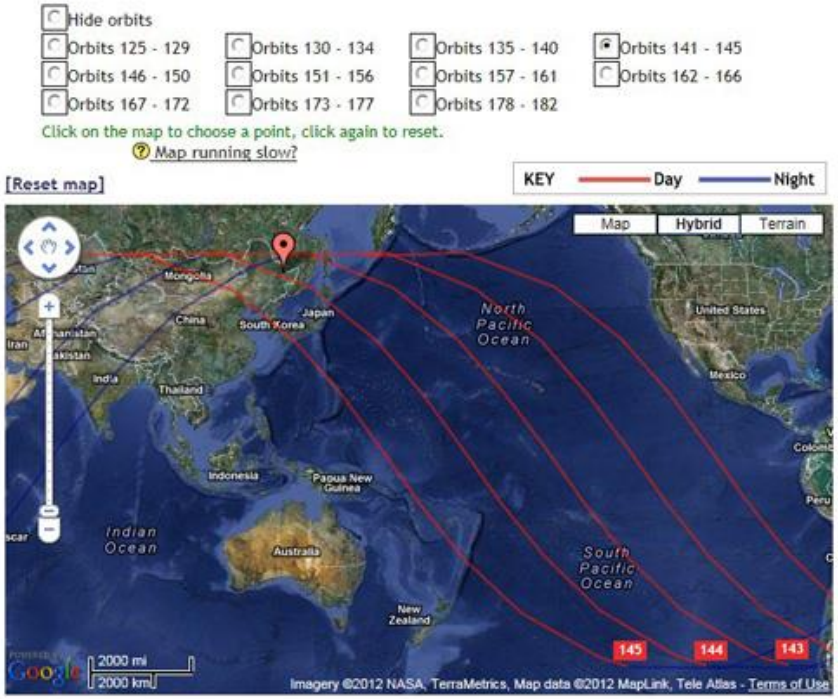
Altitude: 428

Camera lens: 180mm

Image #: 25377

Time taken (GMT): 2012/319/22:40:55





Dalia Barron, 7th Grade (2012-2013)

International Space Station (ISS), orbit 144, China:

Latitude: 47°.37'

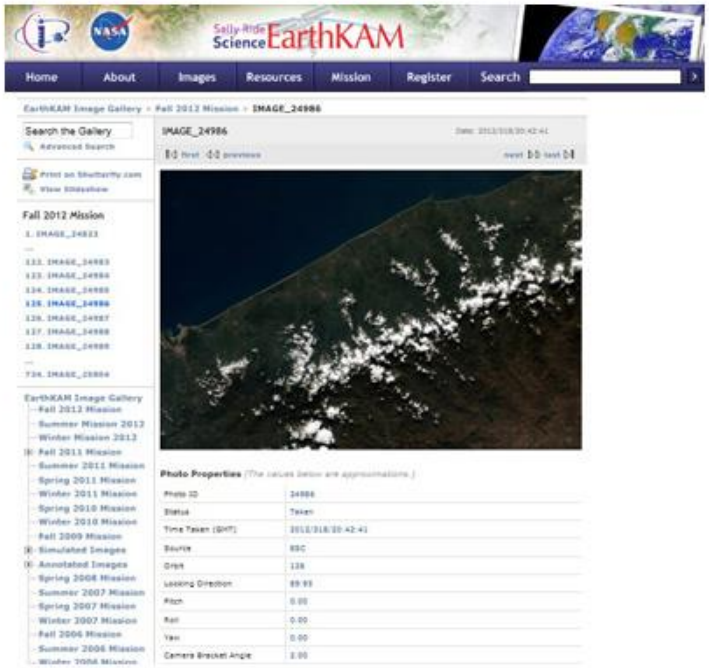
Longitude: 130°.21'

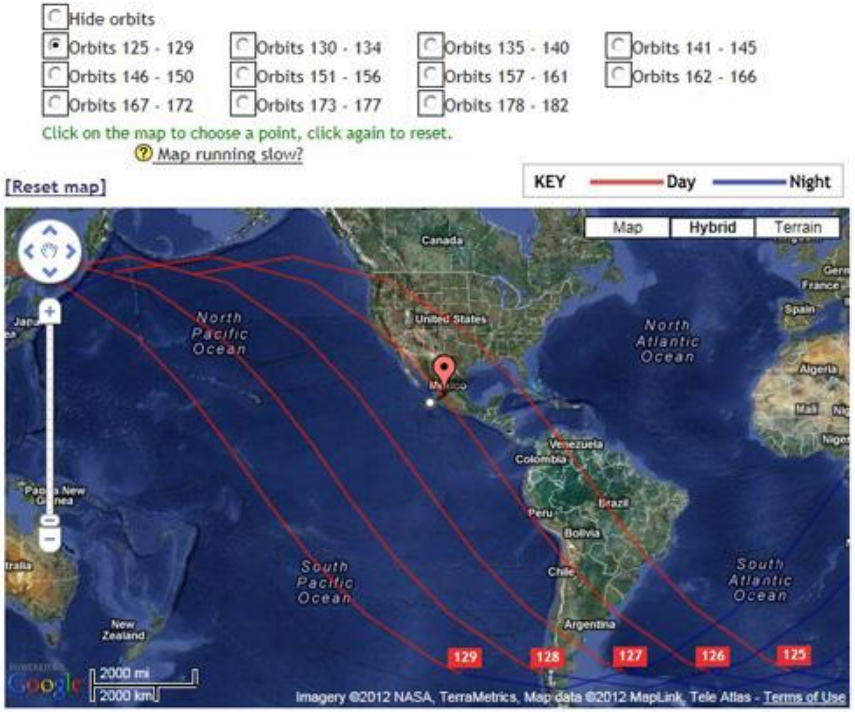
Altitude: 428

Camera lens: 180mm

Image #: 25400

Time taken (GMT): 2012/320/01:53:45





Gerardo Vasquez, 7th Grade (2012-2013)

International Space Station (ISS) orbit 126, Mexico:

Latitude: 19°.42' North

Longitude: 101°.86' West

Altitude: 419

Camera lens: 180mm

Image #: 24986

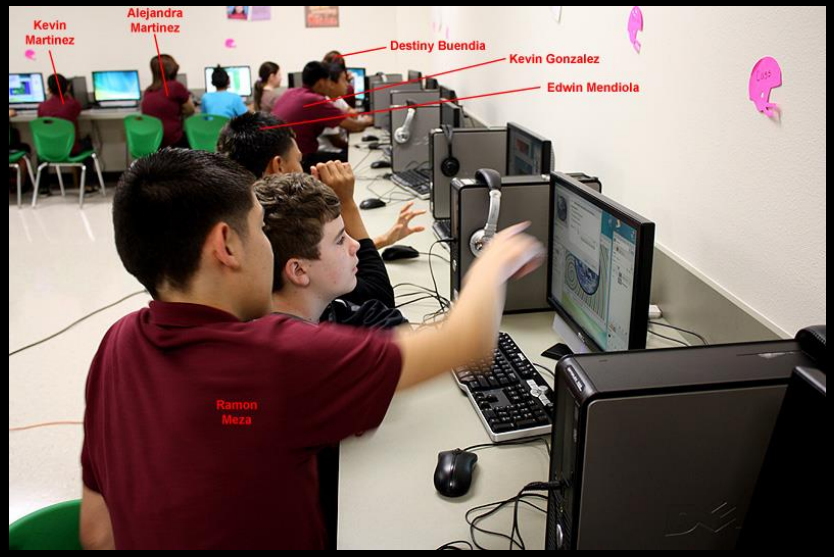
Time taken (GMT): 2012/318/20:42:41

Dublin/RYSS Space Weather/NASA Magnetospheric Multiscale [MMS] 2014 Digital Art Exhibition

The students at both schools were tasked ... as a part of the ISTE [International Society of Technology for Education] - NASA Space Curriculum Development initiative ... to research the various topics/concepts about Space weather [Sun, Sunspots, solar flares, CMEs (Coronal Mass Ejections), solar winds, Earth, Earth's magnetic fields, Earth's magnetosphere, magnetic reconnection, Auroas] as well as NASA's MMS 2014 Mission, and then translate the information in photo software as Digital Art.

Student Workshops:

The RYSS students traveled to Dublin ISD [Dublin, TX] earlier [April 11/12, 2012] to not only mentor these fifth grade students [exhibitors], but also sixth, seventh and eighth grade students in the use of graphics software to create Digital Art.




Evelyn Guajardo
Esmeralda Gutierrez
Ariel Salazar

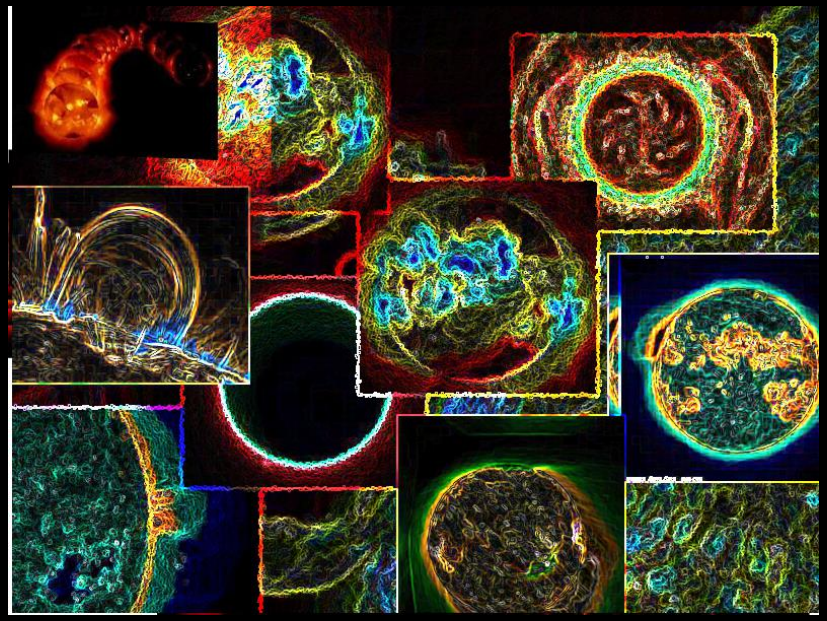

Emily Lopez

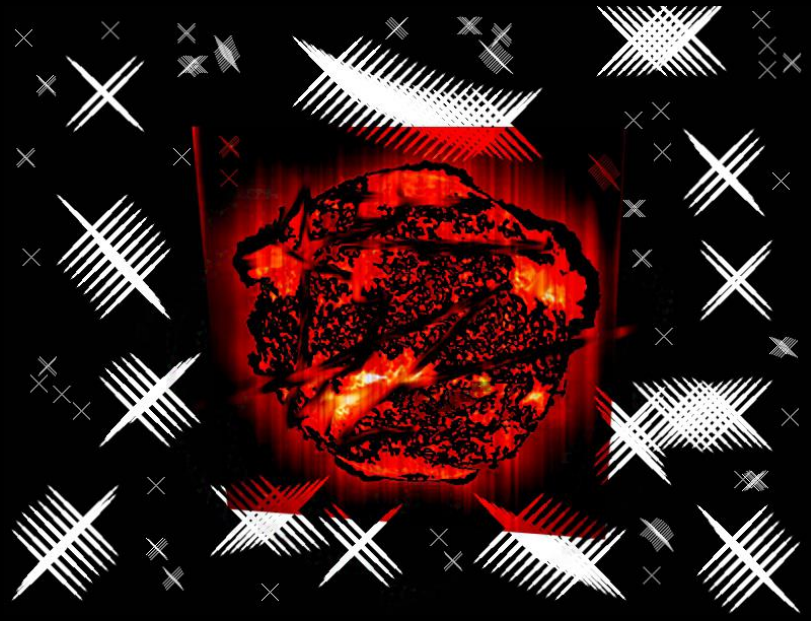

Ramon Meza
Edwin Mendiola


Brandon Aleman
Kevin Martinez
Alejandra Martinez
Francisco Rosas
Gabriel Bahena
Dulce Ramirez

Installation at Dublin High School.

Installation at Dublin Intermediate School.





Raul Yzaguirre School For Success [RYSS] - NASA Saturn V Tour, Lunar Lab Tour and Opuntia Cactus Research Discussion [August 24, 2011]

Destiny Buendia is seen [left] interviewing Dr. Muirhead as Janet Mendiola looks on.

Destiny Buendia continues the interviewing of Dr. Muirhead as the other students wait their turn for a question and answer session. Notice the growing chambers for the cacti to the left of Dr. Muirhead.

The question and answer session continues as one of Dr. Muirhead's research associates looks on.

Dr. Muirhead continues his discussion of the Opuntia cactus growing under elevated carbon dioxide levels of the International Space Station ... seen as a simulation in the top growing chamber that Dr. Muirhead is pointing towards.

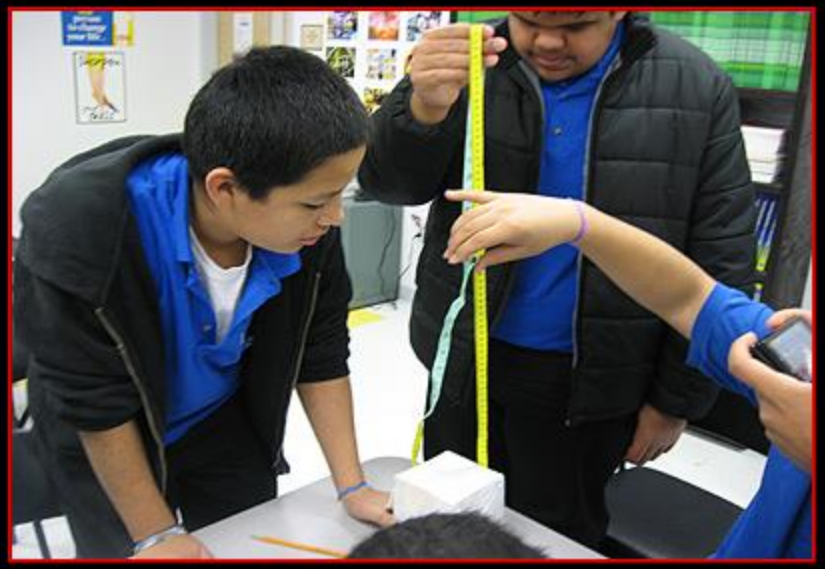
The project tests growing Opuntia cacti under elevated levels of atmospheric carbon dioxide and how to produce essential non-food products for space habitats and deserts on Earth. Cacti will play a major role in reducing global warming by taking up the world's increasing levels of carbon dioxides in dry regions of the world.The specific application of the project is conversion of the Opuntia plant's mucilage to coagulant to purify turbid water. The plant is grown under elevated carbon dioxide levels of the International Space Station (4,000 ppm), and simple processes are developed to convert the plant material to coagulant, which can be used to remove clay from turbid waters.

This project is also a unique collaboration between Mexico and the United States. The Houston researchers [Dr. Muirhead] are working with Professor Aldo Tovar Puentes, Chief of the Chemistry Lab and Professor in Academia at the Catedrático del Instituto Tecnológico de Linares.

Another unique part of this research is the involvement of students from Raul Yzaguirre School For Success in Houston. The students are assisting the researchers by making an impartial, independent documentary of the project which explores the important economic, social and technological issues related to the role that plants play in the exploration of space and the environmental problems facing the world. [Opuntia cactus]

NASA STEM Educational Outreach Pilot Program at Raul Yzaguirre School For Success . Two core groups of students [8th Grade] from Raul Yzaguirre School for Success [RYSS] participated in the NASA STEM Educational Outreach Pilot Program by setting up three Space Science experiments, or activities in the Technology Applications classroom to explore, and learn Engineering, Science, and Mathematics concepts.

The program is related to the International Space Station (ISS) as a National Laboratory. This new NASA program is about to go through beta testing and review, and Raul Yzaguirre School For Success, and other schools were involved in this PILOT program. The feedback from the students, and teachers will be incorporated into the final Educator Resource Guide that will undergo NASA Education Product Review. As a tribute to the schools involved, the final educational products will list them as participants in this NASA development effort. The curriculum will have an "ISS is Cool" campaign which will focus on making ISS and STEM interesting for children.



Christopher Martinez [left], Adrian Castillo, and Nathaniel Morales [arm extended holding debris] are seen doing a drop test with the simulated debris to test the material for pass/fail. Mr. Arredondo, Teaching Assistant, is seen recording the drop time.

Christopher Martinez [left], Adrian Castillo, Tania Nieves, Nathaniel Morales, Sandra Salgado, Natali Guajardo, Fedrick Alvarado, Gustavo Rodriguez, and Gabriel Luevano [arm extended holding debris] are seen doing a drop test with the simulated debris to test the material for pass/fail. Mr. Arredondo, Teaching Assistant, is seen recording the drop time.

Edward Lopez [foreground left], Christopher Martinez, Adrian Castillo [tying the string around the eraser to simulate the rocket], Mr. Arredondo [Teaching Assistant], Nathaniel Morales, and Fedrick Alvarado are seen getting ready to test vertical, then lateral velocity to put a rocket into orbit.

Sandra Salgado [back to camera] works with lateral velocity to keep the eraser [rocket] going around [orbiting] the ball [Earth] as Gustavo Rodriguez [left], and Mr. Arredondo, Teaching Assistant look on.

The students are seen working with lateral velocity to keep the eraser [rocket] going around [orbiting] the ball [Earth].

Mr. Chambers, Technology Applications teacher, is seen having a discussion with the core group of students [Karen Pena (left foreground), Nathaniel Morales, Christopher Martinez, Edward Lopez, Adrian Castillo, Fedrick Alvarado, Gabriel Luevano, Natali Guajardo, and Tania Nieves] about the experiment to see if they understand the concept of lateral velocity.

Gustavo Rodriguez holds his damaged part of the solar array as he is making his calculations.

Fedrick Alvarado looks on as Mr. Arredondo, Teaching Assistant [out of camera range] demonstrates the damaged solar array, and discusses the calculations. In the background, Edward Lopez [standing] helps Nathaniel Morales with his calculations.

Ms. Chambers, Engineer, Space Suit and Crew Survival Systems Branch, NASA Johnson Space Center is seen getting the students' feedback on the activity, and talking with them about Space Engineering at NASA.

Ms. Chambers is seen continuing the discussion with comments about her education, and career as an engineer at NASA as Mr. Cano, Principal, Junior Academy, RYSS looks on.


Christopher Martinez
Marvelin Martinez
Fedrick Alvarado
Denorah Espinoza
Janiemari Guajardo
Students rush into the Apollo Era Mission Operations Control Room. Notice the Apollo 11 Mission on the video , top left.


Fedrick Alvarado is seen checking out the “red phone” used in case of an emergency during the missions. Notice the now antiquated control panels, foreground and background.

Kassandra Rodriguez works with the switches at the Flight Director's console in the Apollo Era Mission Operations Control Room.

Mr. Freedman talks to the students about the history of the Apollo Control Room and the missions. Notice the video of the Apollo recovery at sea.

Students check out the consoles in the Apollo Era Mission Operations Control Room as their classmates [background] talk with Mr. Freedman's assistant.

RYSS students, 2010

RYSS students, 2010

RYSS student, 2010

Gene Kranz, Flight Director, Gemini 9A Mission, NASA, 1966

Thank you.

Tom R. Chambers
tom@tomrchambers.com