Global Friendship Through Space Education

AstrO

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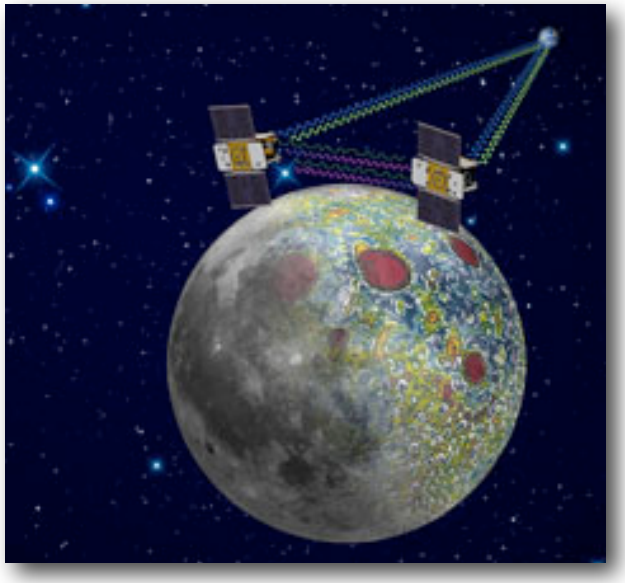
GRAVITY RECOVERY AND INTERIOR LABORATORY (GRAIL)

The GRAIL mission will place two spacecraft into the same orbit around the Moon. As they fly over areas of greater and lesser gravity, caused both by visible features such as mountains and craters and by masses hidden beneath the lunar surface, they will move slightly toward and away from each other. An instrument aboard each spacecraft will measure the changes in their relative velocity very precisely, and scientists will translate this information into a high-resolution map of the Moon's gravitational field.

GRAIL's engineering objectives are to enable the science objectives of mapping lunar gravity and using that information to increase understanding of the Moon's interior and thermal history. Getting the two spacecraft where they need to be, when they need to be there, requires an extremely challenging set of maneuvers never before carried out in solar system exploration missions.

The two GRAIL spacecraft were launched together on Sept 10, 2011 at 09:00AM and will fly similar but separate trajectories to the Moon after separation from the launch vehicle, taking about 3 to 4 months to get there. They will spend about 2 months reshaping and merging their orbits until one spacecraft is following the other in the same low-altitude, near-circular, near-polar orbit, and they begin formation-flying. The next 82 days will constitute the science phase, during which the spacecraft will map the Moon's gravitational field.

The two GRAIL spacecraft are near-twins, each about the size of a washing machine, with minor differences resulting from the need for one specific spacecraft (GRAIL-A) to follow the other (GRAIL-B) as they circle the Moon. The science payload on each spacecraft is the Lunar Gravity Ranging System, which will measure changes in the distance between the two spacecraft down to a few microns -- about the diameter of a red blood cell. Each spacecraft will also carry a set of cameras for MoonKAM, marking the first time a NASA planetary mission has carried instruments expressly for an education and public outreach project.



http://www.nasa.gov/mission_pages/grail/main/index.html

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THE LATEST MEET AND GREET VIDEOCONFERENCES

SANKO College (Gaziantep, Turkey) and Rawson - Sounders School (Austin, Texas, U.S.A.)

January 12, 2012 at 9 a.m. (Eastern Standard Time U.S.A.). Partners met each other and shared their interests and hobbies.

Photos: Rawson - Sounders School and SANKO College

Browne Academy (Alexandria, Virginia, U.S.A.) and Atasehir Doga College (Istanbul, Turkey)

The videoconference took place on January 13, 2012 at 9 a.m. (Eastern Standard Time U.S.A.). Atasehir Doga College has space-themed facilities . It was a nice surprise for the American students to see their Turkish partners in space suits, in a space room. Browne Academy students appreciated it when their Turkish partners spoke English. It was another surprise to hear that basketball is very popular in Turkey.

Photos: Atasehir Doga College

Kartal Doga College (Istanbul, Turkey) and Middle School 328 (New York City, New York, U.S.A.)

The videoconference took place on January 18, 2012 at 9 a.m. (Eastern Standard Time U.S.A.). Partners met each other and shared their mission patch designs.

Photos: Kartal Doga College

Astronomy Picture of The Day

A FULL SKY AURORA OVER NORWAY

An ***aurora*** (plural: *auroras* or *aurorae*) is a natural light display in the sky particularly in the high latitude (Arctic and Antarctic) regions, caused by the collision of energetic charged particles with atoms in the high altitude atmosphere (thermosphere). The charged particles originate in the magnetosphere and solar wind and, on Earth, are directed by the Earth's magnetic field into the atmosphere.

Higher than the highest building, higher than the highest mountain, higher than the highest airplane, lies the realm of the aurora. Auroras rarely reach below 60 kilometers, and can range up to 1000 kilometers. Aurora light results from energetic electrons and protons striking molecules in the Earth's atmosphere. Frequently, when viewed from space, a complete aurora will appear as a circle around one of the Earth's magnetic poles. The above wide angle image, horizontally compressed, captured an unexpected auroral display that stretched across the sky one month ago over eastern Norway.

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