



# 2011 Launches for NASA Missions

## GRAIL

(Gravity Recovery And Interior Laboratory)

**Launch Vehicle:** Delta II (7920 Heavy)

**Launch Site:** Cape Canaveral Air Force Station, Fla.

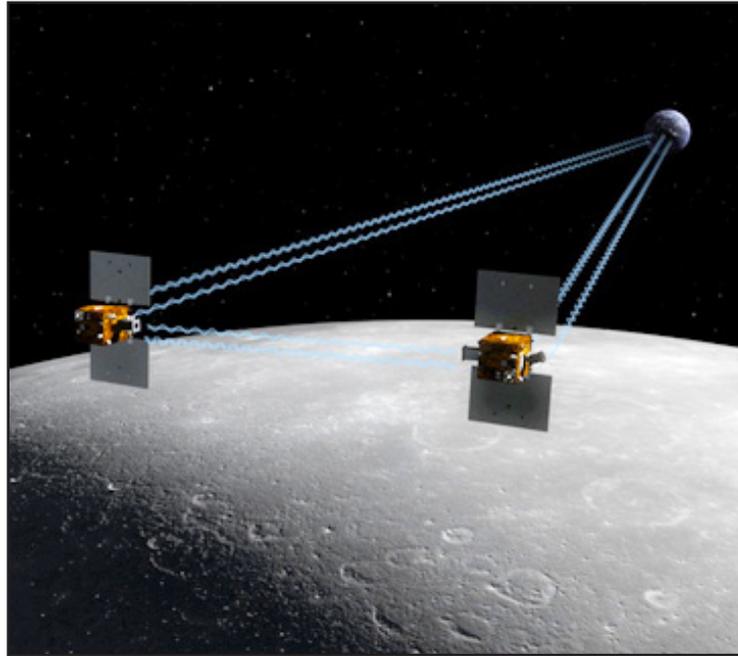
**Launch Pad:** Space Launch Complex 17B

**Launch Date:** Targeted for Sept. 8, 2011

**Launch Times:** 8:37:06 a.m. EDT or 9:16:12 a.m. EDT

**Mission:** As part of NASA's Discovery Program, the Gravity Recovery and Interior Laboratory (GRAIL) mission will fly twin spacecraft in tandem orbits around the moon for several months to measure its gravity field in unprecedented detail.

The mission is set to answer longstanding questions about Earth's moon and provide scientists a better



understanding of how Earth and other rocky planets in the solar system formed by determining the structure of the lunar

interior, from crust to core.

For more information, go to [www.nasa.gov/grail](http://www.nasa.gov/grail).

# NASAfacts



## NPP

(NPOESS Preparatory Project)

**Launch Vehicle:** Delta II (7920 Heavy)

**Launch Site:** Vandenberg Air Force Base, Calif.

**Launch Pad:** Space Launch Complex 2W

**Launch Date:** Targeted for Oct. 25, 2011

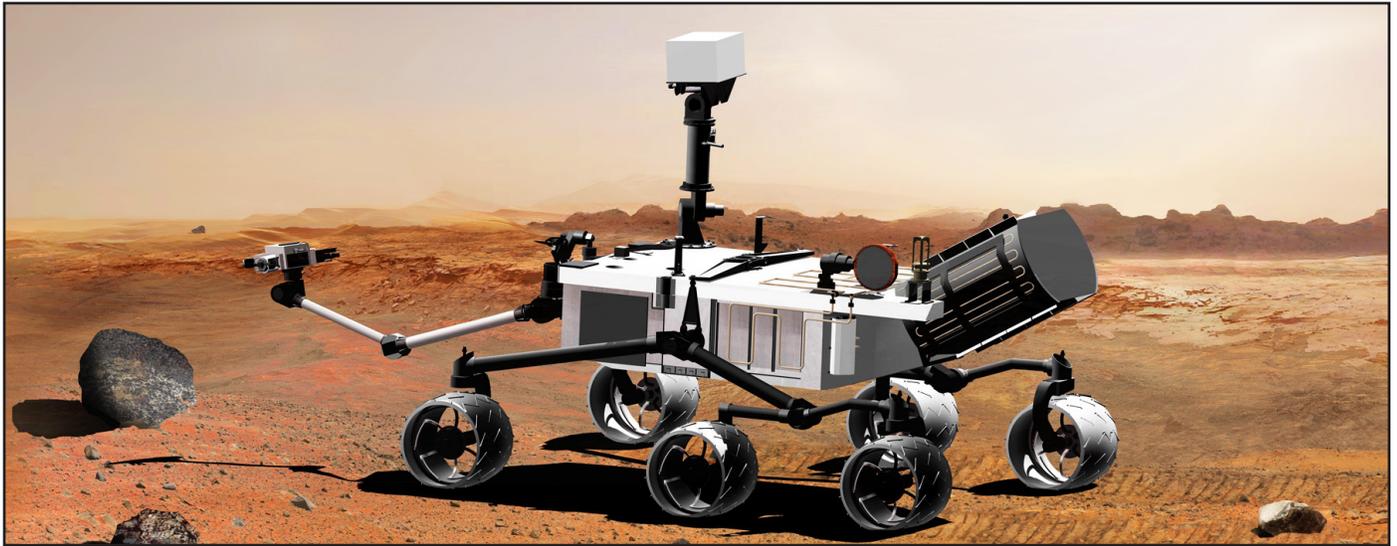
**Launch Window:** 5:47 to 5:57 a.m. EDT

**Mission:** The National Polar-orbiting Operational Environmental Satellite System (NPOESS) Preparatory Project (NPP) mission for NASA will monitor a broad range of land, ocean and atmospheric phenomena.

From a vantage point 512 miles above the Earth's surface, the minibus-sized satellite will orbit about 16 times each day to measure Earth's atmospheric and sea surface temperatures, humidity sounding, land and ocean biological activity and cloud and aerosol properties. The data it collects of nearly the entire globe will help continue critical research for climate change science.

NPP will carry the first new sensors developed for NOAA's Joint Polar Satellite System (JPSS) satellite fleet, which is set to extend and expand the knowledge gained from the Earth Observing System (EOS) satellites.

For more information, go to [www.nasa.gov/NPP](http://www.nasa.gov/NPP).



## Mars Science Laboratory (Curiosity)

**Launch Vehicle:** Atlas V-541 (AV-028)

**Launch Site:** Cape Canaveral Air Force Station, Fla.

**Launch Pad:** Space Launch Complex 41

**Launch Date:** Targeted for Nov. 25, 2011

**Launch Time:** 10:21 a.m. EST

**Mission:** The Mars Science Laboratory is a large rover called Curiosity that will assess whether Mars ever was, or is still today, an environment able to support microbial life and to determine the planet's habitability.

Curiosity is equipped with 10 science instruments to search for signs of life, including methane, and help determine if the gas is from a biological or geological source. During the 23 months after landing on the Red Planet, the rover will use a laser to look inside rocks and release the gas so its spectrometer can analyze and send the data back to Earth.

For more information, go to [www.nasa.gov/msl](http://www.nasa.gov/msl).

## SpaceX

**Launch Vehicle:** Falcon 9/Dragon

**Launch Site:** Cape Canaveral Air Force Station, Fla.

**Launch Pad:** Space Launch Complex 40

**Launch Date:** No Earlier Than  
Nov. 30, 2011

**Launch Time:** TBD

**Mission:** As part of NASA's Human Exploration and Operations Mission Directorate, the agency is working to expand human presence in space by enabling and expanding the U.S. commercial space transportation industry. Space Exploration Technologies Corp. (SpaceX) is one of two companies under contract with NASA to take cargo to the International Space Station.

NASA is working with SpaceX to combine its last two demonstration flights. If approved, the Falcon 9 rocket would launch the Dragon capsule to the orbiting laboratory for a docking. For more information, go to

[www.nasa.gov/cots](http://www.nasa.gov/cots).



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