Moon's Aitken Crater

Scientists have detected an anomaly in the moon's gravitational field because of heavy metal lodged in the mantle deep below the moon's South Pole-Aitken basin (the largest preserved impact crater anywhere in the solar system).

Possible explanations for this anomaly are:

- The metal from the asteroid that formed this crater is still embedded in the Moon's mantle, rather than sinking to the Moon's core.
- The large mass might be a concentration of dense oxides associated with the last stage of lunar magma ocean solidification.
- This new hypothesis is based on data from NASA's Gravity Recovery and Interior Laboratory (GRAIL) and Lunar Reconnaissance Orbiter missions.

Gravity Recovery and Interior Laboratory (GRAIL)

Gravity Recovery and Interior Laboratory (GRAIL) was a dual-spacecraft mission that involved placing two identical spacecrafts (named “Ebb” and “Flow” to GRAIL-A and GRAIL-B respectively) in orbit around the Moon to use high-quality gravitational field mapping to determine its internal structure.

- The mission was launched in 2011 under NASA’s Discovery Program.
  - NASA's Discovery Program began in 1992 to achieve outstanding results by launching smaller missions using fewer resources and shorter development times.
  - Its main objective is to enhance our understanding of the solar system by exploring the planets, their moons, and small bodies such as comets and asteroids.
- Ebb and Flow were decommissioned and powered down in anticipation of deliberate impact on the lunar surface Dec. 17, 2012.

Lunar Reconnaissance Orbiter

- The Lunar Reconnaissance Orbiter (LRO) is a NASA moon mission that has been in operation since 2009.
- The mission particularly focuses on the moon's poles to search for water or ice that could exist in permanently shadowed craters.