



## Lunar CRater Observation and Sensing Satellite

### DSS- 12

By Alicia Scarberry, AAE Student

The Deep Space Station 12 (DSS-12) radio telescope is located at the Goldstone Deep Space Communications Complex in the Mojave Desert, near Barstow, California. The antenna has a dish 34 meters (110 feet) in diameter, is nine stories high, and weighs 850,000 pounds. DSS-12 is 11 times the diameter of a ten-foot microwave dish used for satellite television reception. DSS-12 has been used by NASA to communicate with robotic space probes for more than thirty years. DSS 12 is set to measure the flux densities at 2.3 and 8.4 GHz, the standard DSN S- and X-Band frequencies. DSS-12 was used by NASA's Deep Space Network to track such spacecraft missions as Voyager, Viking, and Galileo, as well as tracking spacecraft returning from the moon during the Apollo missions in the 1960s.



DSS-12 was listed to be decommissioned by NASA in 1994. When Rick Piercy, President/ CEO of the Lewis Center for Educational Research (LCER), heard about the decommissioning, he explored the possibility of acquiring the telescope for use by Lewis Center Students. Negotiations began and Dr. Michael J. Klein, JPL scientist, was assigned as the lead scientist to work with the Lewis Center and the GAVRT Program was born. Because of Dr. Klein's unique contribution to the program, the DSS-12 radio telescope was dedicated in his memory and renamed the Dr. Michael J. Klein Radio Observatory after his death in 2005. Rick Piercy's determination and Dr. Klein's sincere dedication has given students a once-in-a-lifetime opportunity.

Through the combined efforts of the Lewis Center for Educational Research in Apple Valley, California, Jet Propulsion Laboratory, and NASA, the Deep Space Network's Goldstone Complex has been converted into a one-of-a-kind interactive

research and instructional instrument available to classrooms around the world by way of the Internet. This outstanding learning opportunity is now known as the Goldstone-Apple Valley Radio Telescope (GAVRT) Program. The GAVRT Program is a major contribution to radio astronomy, inspiring students to reach for the stars! The goal of the program is to give school children, of all ages, the opportunity to work with scientists, conducting cutting-edge radio astronomical research. Because of the vision of professional scientists, educators, engineers, and community volunteers, students have the chance to learn beyond their imagination and open their minds to endless possibilities.



"Scientific discovery is possible; personal discovery is assured."  
- Michael Klein



GAVRT – Goldstone Apple Valley Radio Telescope Program  
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### DSS- 12 Facts

#### **DSS 12**

Jet Propulsion Laboratory, California Institute of Technology

4800 Oak Grove Drive

Pasadena, CA 91109

**Sponsor:** National Aeronautics and Space Administration (NASA)

**Reference:** Deep Space Network Flight Project Interface Design Handbook 810-5, Rev. D,  
Vol. II, JPL

**Location:** Goldstone, California

**Latitude:** 35° 17' 59.77391" N

**Longitude:** 243° 11' 40.23879" E

**Altitude:** 963 m

**Telescope:** Equatorial parabolic cassegrain antenna

**Diameter:** 34 m

**Height:** Approximately 18 m

**Coverage:** No coverage south of 35° el. at 180° az.

**Remarks:** These are equatorial antennas whose coverage is stated approximately.

**Observation Type:** Spacecraft communications and radio astronomy

**Frequency band(s):** 2250 MHz, 8.42 GHz

