Brief Overview of JPL

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November 2012

Deputy Director for Earth Science
NASA Jet Propulsion Laboratory
California Institute of Technology
From Caltech students testing rockets to exploring the planets in our lifetime

- Caltech students (1936)
- Missiles (1940s)
- Explorer 1 (1958)
- Mars Exploration Rovers (2004 – present)
- Spitzer Space Telescope (2004 – present)
- Earth Science (1978 – present)
JPL is part of NASA and Caltech

- Federally-funded (NASA-owned) Research and Development Center (FFRDC)
- University Operated (Caltech)
- 5,000 Employees
- 177 Acres
JPL’s mission for NASA is *robotic* space exploration

- Mars
- Solar system
- Exoplanets
- Astrophysics
- Earth Science
- Interplanetary network
24 Spacecraft and 10 Instruments Across the Solar System and Beyond

- **GALEX**
- **ACRIMSAT**
- **Mars Odyssey**
- **Cassini**
- **CloudSat**
- **Spitzer**
- **Kepler**
- **Juno**
- **Aquarius CONAE**
- **GRACE DLR, GFZ**
- **Two Voyagers**
- **Dawn**
- **Opportunity**
- **EPOXI-Deep Impact**
- **GRAIL**
- **Mars Science Laboratory**
- **Wide-field Infrared Survey Explorer (WISE)**
- **Mars Reconnaissance Orbiter**
  - **Instruments:**
    - **Earth Science**
    - MIRO
    - Diviner
  - **Planetary**

**Jason 1 and Jason 2 CNES**

**Nuclear Spectroscopic Telescope Array (NuSTAR)**
Mars Science Laboratory Overview

Launch and Cruise Configuration

- Cruise Stage
- Backshell
- Descent Stage
- Rover
- Heatshield with MEDL
- Parachute

MSL is 3 sub-spacecraft in one

Rover Family Portrait

<table>
<thead>
<tr>
<th></th>
<th>Pathfinder</th>
<th>MER</th>
<th>MSL</th>
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<tbody>
<tr>
<td>Entry mass (kg)</td>
<td>580</td>
<td>830</td>
<td>3400</td>
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<tr>
<td>Landed mass (kg)</td>
<td>290</td>
<td>540</td>
<td>930</td>
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<tr>
<td>Rover mass (kg)</td>
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<td>175</td>
<td>930</td>
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<tr>
<td>Instrument Mass (kg)</td>
<td>1</td>
<td>5</td>
<td>80</td>
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Curiosity’s New Home
JPL Memorialized on MARS

Morse Code

J .---
P .--.
L .--.

Morse Code
Cassini/Huygens studies Saturn, Enceladus’ geysers, and Titan’s lakes
Dawn Image of Vesta – Taken July 12, 2011
Multiple ways to look at a changing Earth