Enigmatic Wrinkle Ridges in martian northern plains

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Comparison of Earth and Mars

Mars Global Surveyor Project

Earth Diameter: 12,756 km

Mars Diameter: 6,794 km
Mars Global Surveyor Project

Simple Facts About Mars

Diameter: 6,794 km (53% of Earth)
Mars Day: 24 hrs, 37 min
Mars Year: 687 Earth Days
Mass: 11% of Earth
Gravity: 38% of Earth
Atmosphere: 95% Carbon Dioxide, 3% Nitrogen
Atmospheric Pressure: 1% of Earth's Sea Level
Temperature at Surface: Average Between -140 to 20 Celsius
MGS Spacecraft In
Mapping Configuration

Structure Mass: 595 kg
Propellant Mass: 380 kg
Payload Mass: 75 kg
Total Mass: 1,050 kg (2,315 lbs)

Science Payload:
- Electron Reflectometer
- Magnetometer
- Mars Orbiter Laser Altimeter
- Mars Relay Radio System
- Radio Science
- Thermal Emission Spectrometer

NASA
JPL
Mars Global Surveyor Project

Mars Orbiter
Laser Altimeter

Measurements:
Altitude of Spacecraft above the Surface

Resolution:
Vertical: 2 m (local), 30 m (global)
Horizontal: 160 m

Laser Transmitter:
Diode Pumped, Q-Switched Nd:YAG Laser
40-45 mJ/pulse @ 10 pulses/sec continuous

Antenna Receiver:
50 cm Parabolic Antenna (0.85 mrad FOV)
with Si APD Detector
4 Electronic Filters (20, 60, 180 and 540 ns)

Electronics:
80C86 Microprocessor, 54HC Family Logic
Data Rate: 618 bits/sec

Physical Characteristics:
25.9 kg, 30.9 W (avg.), 34.9 W (peak)
Future Work

Examine high resolution images
Analyse profiles
Shorelines hypothesis?
Quantify relation to stress centres
Dissemination of Work

Continue collaboration with mentor and MOLA team
Present preliminary work at MOLA team meeting, Boulder, September
Present work at Fall AGU conference, San Francisco, December
Eventually publish in peer-reviewed literature
Chapter in thesis