

Overview of MDS-2 Project

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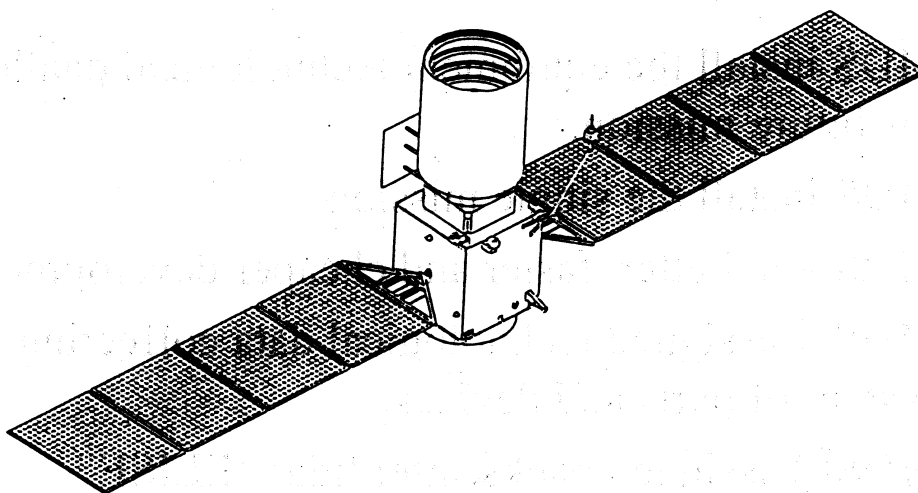
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Abstract

NASDA is trying to develop the Mission Demonstration Satellite (MDS) series for future space activity. MDS series are newly categorized satellite for technological demonstration in space, aim better, faster, and cheaper development.

MDS-1 assigned technological data collecting system of parts and devices, and MDS-2 assigned Experimental Lidar In Space Equipment (ELISE). ELISE is one of spaceborne back-scatter Lidar. Both satellites and mission equipment are under developing now and will be launched 2000 and 2001. This paper described about objectives, current status and some characteristics of MDS-2/ELISE.



What is MDS ?

- MDS are general name of Mission Demonstration Satellite series.
- MDS series are newly categorized satellite for technological demonstration.
- MDS series are planning three types satellite.
 - Group A : LEO 500 Kg (approx.)
 - Group B : GEO 1,000 Kg (approx.)
 - Group C : LEO 100 Kg (approx.)

Concept of MDS

- MDS install the equipment technological challenge for future mission.
- MDS install the single mission.
- MDS aim better, faster and cheaper development.
- MDS-1 assigned technological data collecting system of parts and devices.
- MDS-2 assigned backscatter lidar “ELISE”.
(ELISE : Experimental Lidar In space Equipment)

Mission 1 - Technological Demonstration

- System analysis
 - laser power, repetition frequency, beam divergence
 - evaluate the system performance
- System design
 - thermal design, mechanical design
 - evaluate the distortion and misalignment
- Basic technology of the critical components
 - laser oscillator, large diameter mirror, Photon Counting APD
 - acquisition of technological data under space environment

Mission 2 - Experimental Observation

- Demonstrate the availability of the lidar data and show scientific value.
- High altitude thin clouds (cirrus)
 - Representation of climate processes in models.
- Multiply layered clouds
- Aerosols
 - Negative radiative forcing.
 - Tracer for stratospheric circulation and material transport.

Outline of MDS-2/ELISE(1/2)

- Orbit (tentative)

- Orbit circular
- Altitude 550 Km
- Inclination 30 deg.
- Period 95 min.

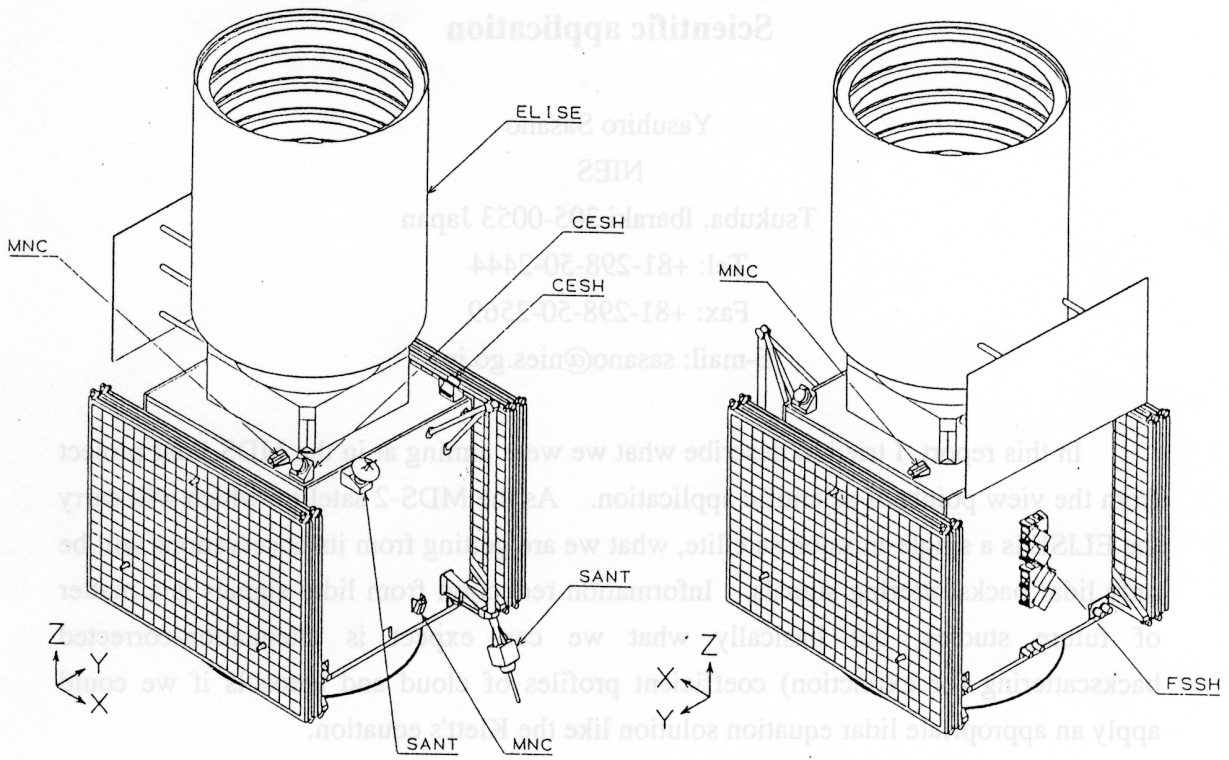
- Main Characteristics (tentative)

	BUS	ELISE
- Dimension	1.2 x 1.2 x 1.5 m	1.4 x 1.6 x 2.6 m
- Weight	350 Kg	250 Kg
- Power	600 W	250 W

Outline of MDS-2/ELISE(2/2)

- Launch time TBD
- Operation 1 year (four seasons)
- Ground station NASDA Katsuura Tracking Station
- Observation Pre-planned observation by command
- HSB data downlink (observation data)
 - Frequency 2276.99MHz
 - Modulation BPSK
 - Data rate 1,048 Kbps
 - Data recorder ≥ 1 Gbits
- Data product NASDA/TKSC provide data sets

Conceptual Figure



Conceptual Figure

