NEO SURVEYOR

Near-Earth Object Surveyor Space Telescope

NASA's NEO Surveyor is the first mission designed specifically to detect, track, and characterize near-Earth objects (NEOs) that may pose a risk to Earth. Positioned between Earth and the Sun, NEO Surveyor's state-of-the-art telescope will view the solar system in infrared wavelengths, enabling it to detect and distinguish NEOs that ground-based observatories or space-based visible instrumentation may miss. The mission will provide the clearest pictures of NEOs to date, helping scientists and global stakeholders to assess potential impact risks and develop mitigation strategies to protect our planet.

OUR ROLE

Collaborating with NASA's Jet Propulsion Laboratory (JPL), the Space Dynamics Laboratory (SDL) plays an integral role in NEO Surveyor, providing several crucial technologies and capabilities.

Instrument Subsystems

- Camera enclosure assembly
- Central electronics unit
- Cabling
- Focal plane electronics housing
- Focal plane modules

Instrument AI&T

SDL is responsible for assembling, integrating, testing, and calibrating the NEO Surveyor instrument in specially designed facilities on our Innovation Campus.

INSTRUMENT PROFILE	
Instrument Size	2.5 m x 2.9 m x 6.2 m
Aperture Size	50 cm
Observatory Mass	1,680 kg
Instrument Mass	575 kg
Focal Planes	2 channels, each with a 1 x 4 array of 16-megapixel HgCdTe focal planes
Observation Wavelengths	4 to 5.2 µm & 6 to 10 µm
Position in Space	L1 Lagrange point
Primary Objective	Identify NEOs >140 m in diameter

The instrument enclosure for NEO Surveyor is prepared for environmental testing at Johnson Space Center. (Credit: NASA)

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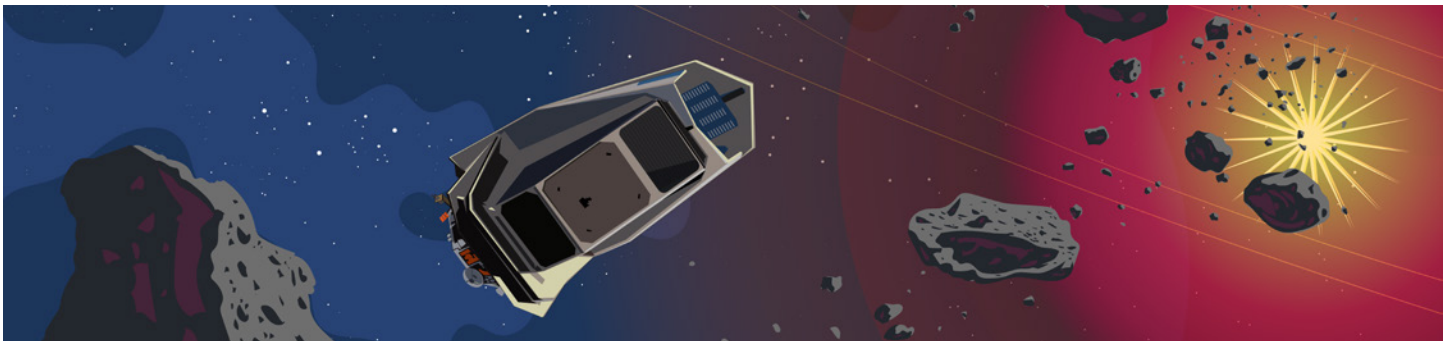
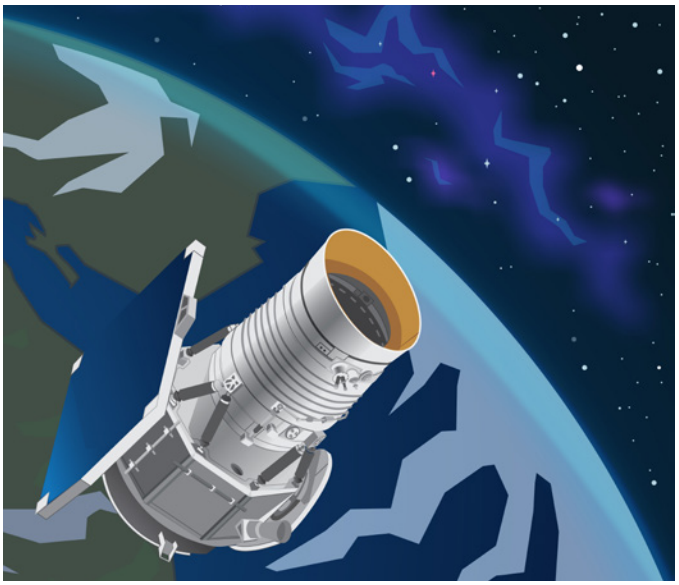
NEO SURVEYOR Near-Earth Object Surveyor Space Telescope



A HERITAGE OF PLANETARY DEFENSE

In collaboration with JPL, SDL has helped deliver the technology enabling scientists to discover and study objects in our solar system while evaluating potential risks to our planet. SDL's expertise played an important role in NEO Surveyor's predecessor missions WISE and NEOWISE.



WIDE-FIELD SURVEY EXPLORER (WISE)

WISE's highly sensitive astronomical telescope featured a 40-centimeter aperture and used 13 mirrors coated in gold to optimize infrared reflection. Four advanced infrared detectors captured images in different wavelengths, enabling scientists to identify and characterize space objects with remarkable detail.

Mission Facts

- Launched in 2009
- Scanned the entire sky twice
- Cataloged ~740 million astronomical objects
- Placed in hibernation in 2011

Our Role

- Instrument design, build, test & calibration
- Support for instrument-spacecraft integration, pre-launch operations & on-orbit operations

NEAR-EARTH OBJECT EXPLORER (NEOWISE)

After WISE data revealed the instrument's ability to capture never-before-seen asteroids and comets, NASA reactivated it for a new mission to identify and characterize NEOs. NEOWISE provided crucial insights into the physical properties of NEOs, knowledge which NASA will build upon in the NEO Surveyor mission.

Mission Facts

- Spacecraft reactivated in 2013
- Detected ~44,000 objects, including ~3,000 NEOs
- Discovered ~64 Potentially Hazardous Asteroids (PHAs)
- Decommissioned in 2024

Our Role

- Instrument command sequence review & approval
- Telemetry daily monitoring
- Instrument performance review & long-term trending