NASA Planetary Defense Program

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Washington, DC

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Planetary Defense Coordination Office

The Planetary Defense Coordination Office (PDCO) was established in January 2016 at NASA HQ to manage planetary defense related activities across NASA, and coordinate with both U.S. interagency and international efforts to study and plan response to the asteroid impact hazard.

Mission Statement

Lead national and international efforts to:

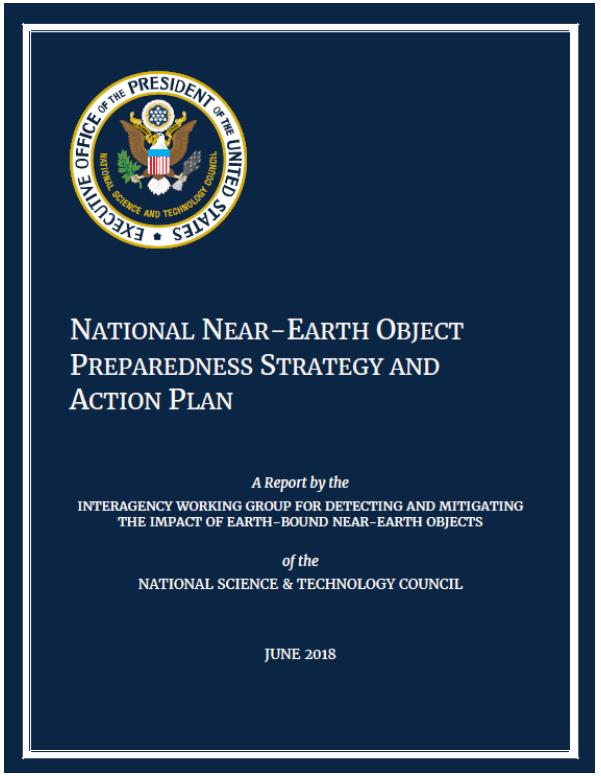
- Detect any potential for significant impact of planet Earth by natural objects
- Appraise the range of potential effects by any possible impact
- Develop strategies to mitigate impact effects on human welfare

US Planetary Defense Strategy

2018: National Near-Earth Object (NEO) Preparedness Strategy and Action Plan

The first National NEO Preparedness Strategy and Action Plan was released in 2018

- Outlined five strategic goals:
  1. Enhance NEO detection, tracking, and characterization capabilities
  2. Improve NEO modeling, prediction, and information integration
  3. Develop technologies for NEO deflection and disruption missions
  4. Increase international cooperation on NEO preparation
  5. Strengthen and routinely exercise NEO impact emergency procedures and action protocols
- Each goal is supported by a set of actions in a ten-year timeframe.



US Planetary Defense Strategy

2023: National Preparedness Strategy & Action Plan for NEO Hazards and Planetary Defense

The 2023 National Strategy and Action Plan reviews and updates the 2018 National Strategy and Action Plan

- Developed through extensive discussions by the **Planetary Defense Interagency Working Group**.
- Updates the 2018 five strategic goals and adds a sixth goal:
  1. Enhance NEO detection, tracking, and characterization capabilities
  2. Improve NEO modeling, prediction, and information integration
  3. Develop technologies for NEO reconnaissance, deflection, and disruption missions
  4. Increase international cooperation on NEO preparation
  5. Strengthen and routinely exercise NEO impact emergency procedures and action protocols
  6. Improve U.S. governance of planetary defense through new interagency collaboration
- Updates actions supporting each goal in a ten-year timeframe.

Scheduled for release April 1, 2023

Planetary Defense Interagency Working Group

Co-Chairs

Matthew Daniels, OSTP
Lindley Johnson, NASA PDCO

Members

Patrick Besha, NASA OTPS
Kevin Conole, NASA OIIR
Kelly Fast, NASA PDCO
Angelo Fernandez, DOD/JCS
Ralph Gaume, NSF
Kevin Greenaugh, DOE
Ryan Guglietta, State
Diane Howard, NSpC
Grace Hu, OMB
Christine Joseph, DOC/NOAA
Brig. Gen. Traci Keuker-Murphy, DOD/USSPACECOM
Renata Kommel, NASA OTPS
L.A. Lewis, FEMA
Lindsay Millard, DOD/OSD(R&E)
Joel Mozer, DoD/USSF
Dianne Poster, DOC
Timothy Titus, DOI/USGS
Ashley Vanderley, NSF

Changes to goals in previous slide are in red.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HIC SERVARE DIEM
ASSESS
Determine NEO population survey completeness and hazard from NEOs that pose the highest risk
CENTER FOR NEAR-EARTH OBJECT STUDIES (CNEOS)
SEARCH, DETECT & TRACK
Find the natural near-Earth objects – asteroids and comets – and track to determine those whose orbits create an impact hazard to Earth
GROUND & SPACE-BASED OBSERVATORIES, MINOR PLANET CENTER (MPC), INTERNATIONAL ASTEROID WARNING NETWORK
PLANETARY
DEFENSE
MITIGATE
Demonstrate technologies and techniques to divert or disrupt asteroids in space or inform emergency response activities on the ground
DOUBLE ASTEROID REDIRECTION TEST (DART), FEMA EXERCISES
CHARACTERIZE
Determine physical characteristics of NEOs (size, shape, composition, rotation) to understand their natural state
INFRARED TELESCOPE FACIITY, GOLDSTONE SOLAR SYSTEM RADAR, NEOWISE
PLAN & COORDINATE
Work with the U.S. interagency and international collaborations on effective actions for impact threat response
SPACE MISSION PLANNING ADVISORY GROUP, PLANETARY IMPACT EMERGENCY RESPONSE WG, PLANETARY DEFENSE IWG

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NASA-funded Near-Earth Object Survey (Discovery) Telescopes

NEOWISE

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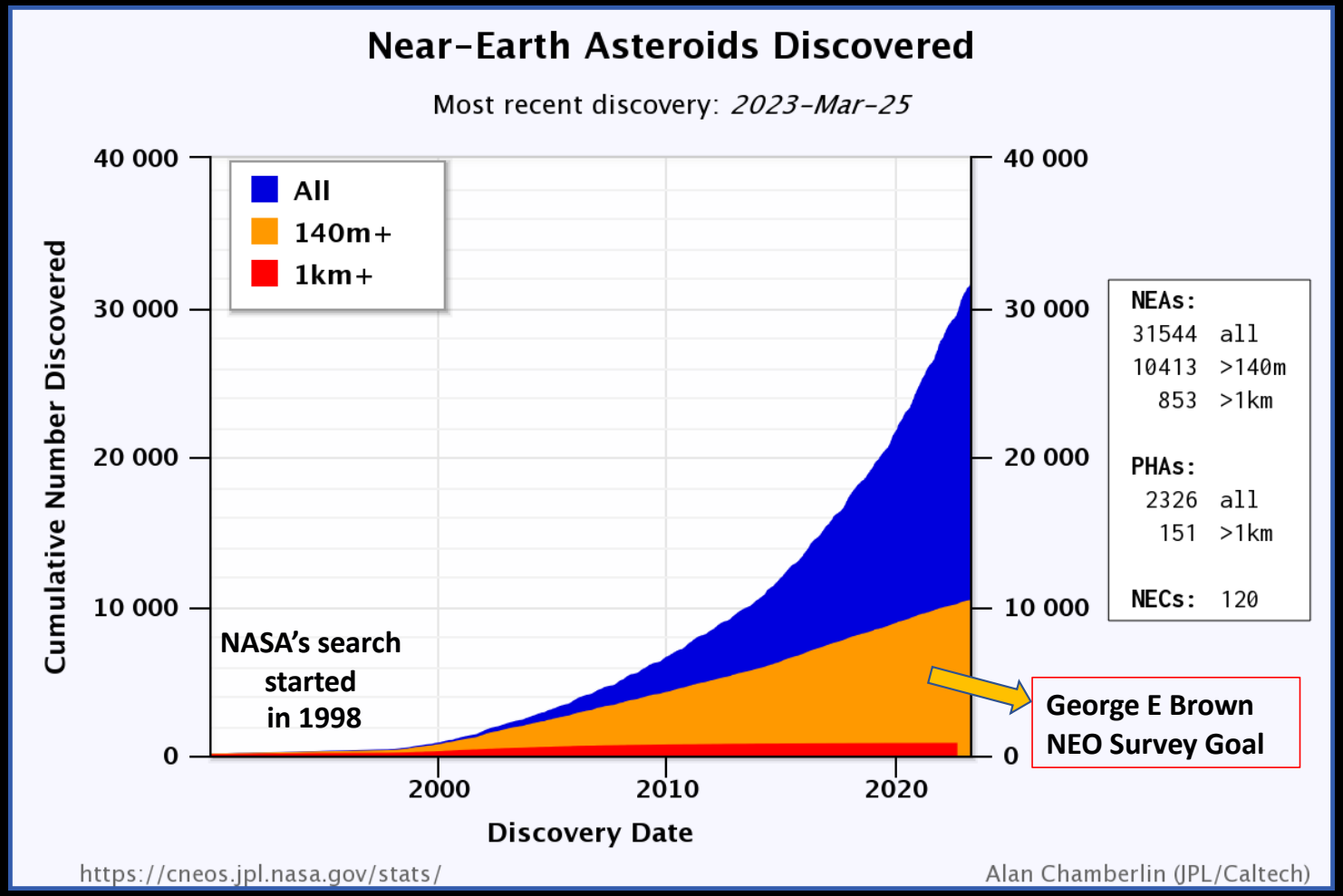

*Potentially Hazardous Asteroids (PHAs) come within 7.5 million km of Earth orbit

nasa.gov/planetarydefense

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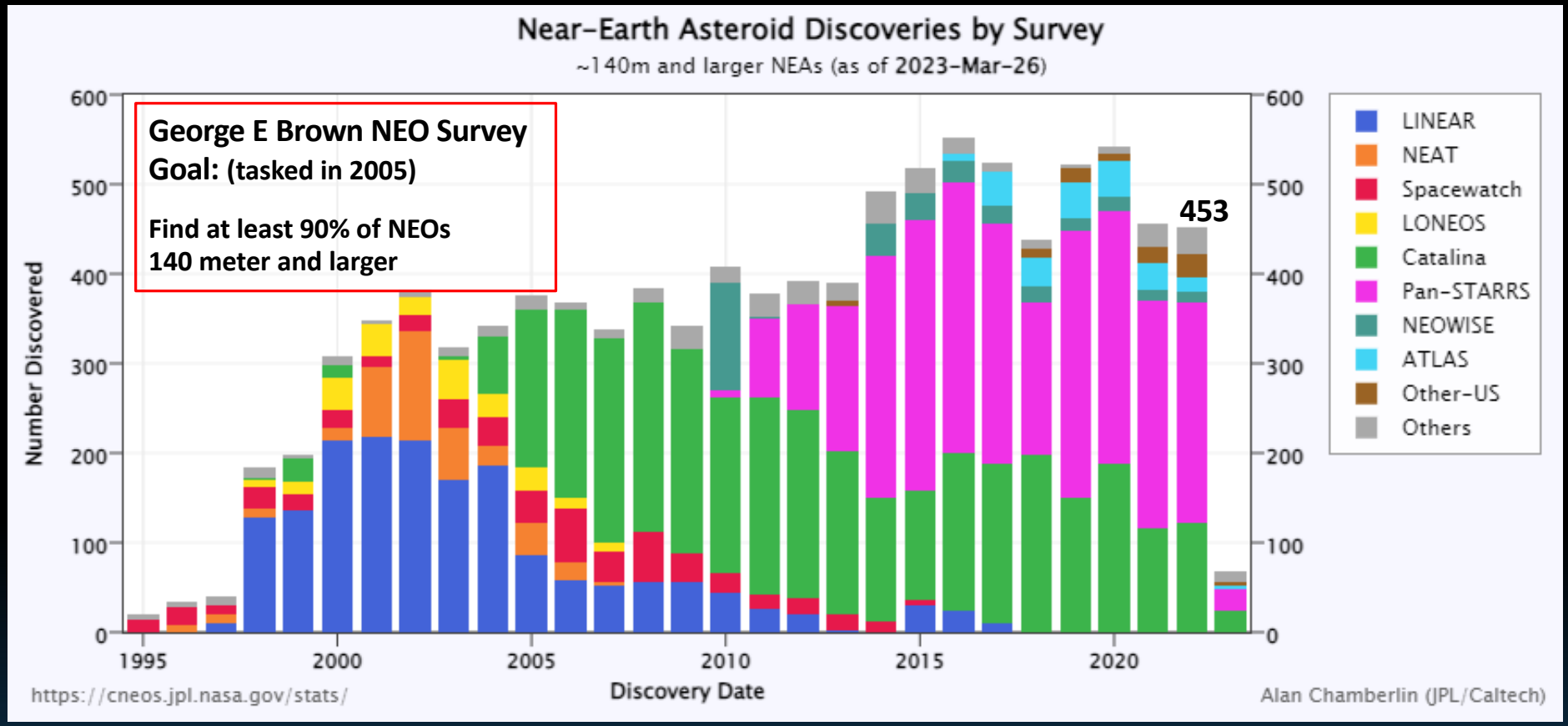

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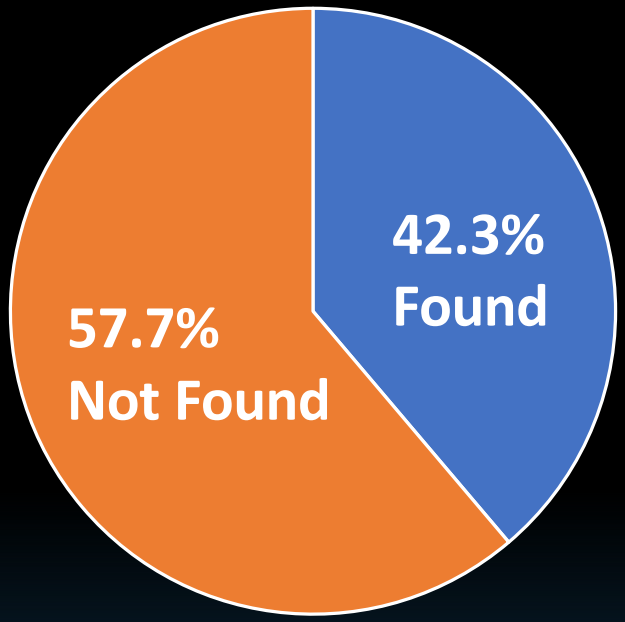
Progress: 140 Meters and Larger

Total Population estimated to be ~25,000

NEO Survey Status as of 31 Dec 2022

George E Brown NEO Survey Goal: (tasked in 2005)

Find at least 90% of NEOs 140 meter and larger within 15 years



At the current assets' discovery rate, it will take more than 30 years to complete the survey. New capabilities in development will cut that time in half.

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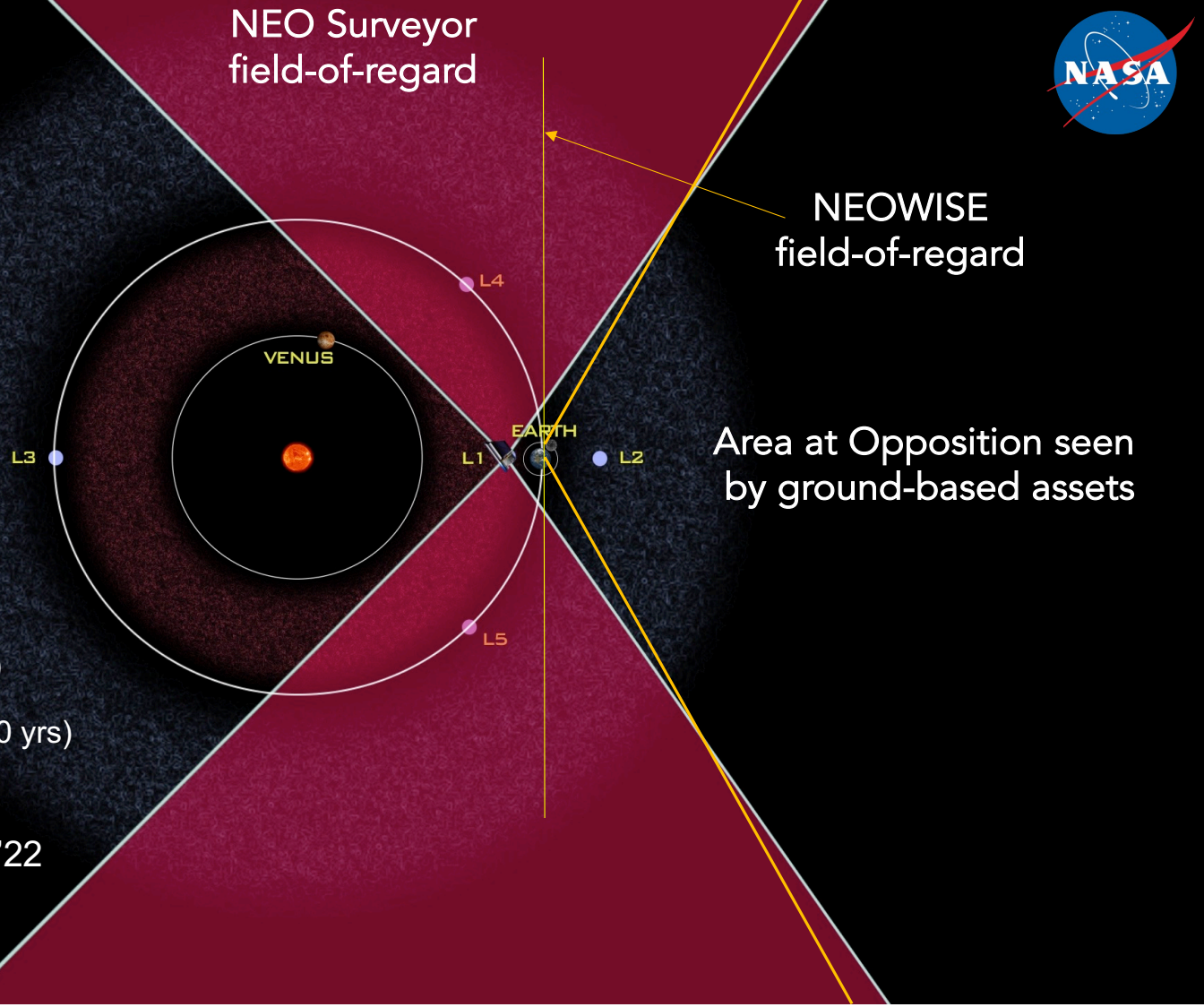
NEO Surveyor

- Space-based infra-red telescope
- Objectives:
  - Find 65% of Potentially Hazardous Asteroids (PHAs) >140 m in 5 years (>90% in 10 yrs)
  - Estimate object sizes
- Confirmed for Development Nov ’22
  - LRD NLT June 2028

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