An aerial photograph of Vienna, Austria, showing a dense urban grid, a river (the Danube) winding through the city, and various green spaces. The text is overlaid on the top left portion of the image.

**NASA Status Update for  
12<sup>th</sup> SMPAG  
Vienna, Austria  
13 February 2019**

**Rob Landis  
NASA**

# New White House Guidance Released on 20 June 2018

## Goals in the New Action Plan

- Enhance NEO detection, characterization, and tracking capabilities
- Improve modeling, predictions, and information integration
- Develop technologies for NEO deflection and disruption
- Increase international cooperation on NEO preparation
- Establish NEO impact emergency procedures and action protocols



## NATIONAL NEAR-EARTH OBJECT PREPAREDNESS STRATEGY AND ACTION PLAN

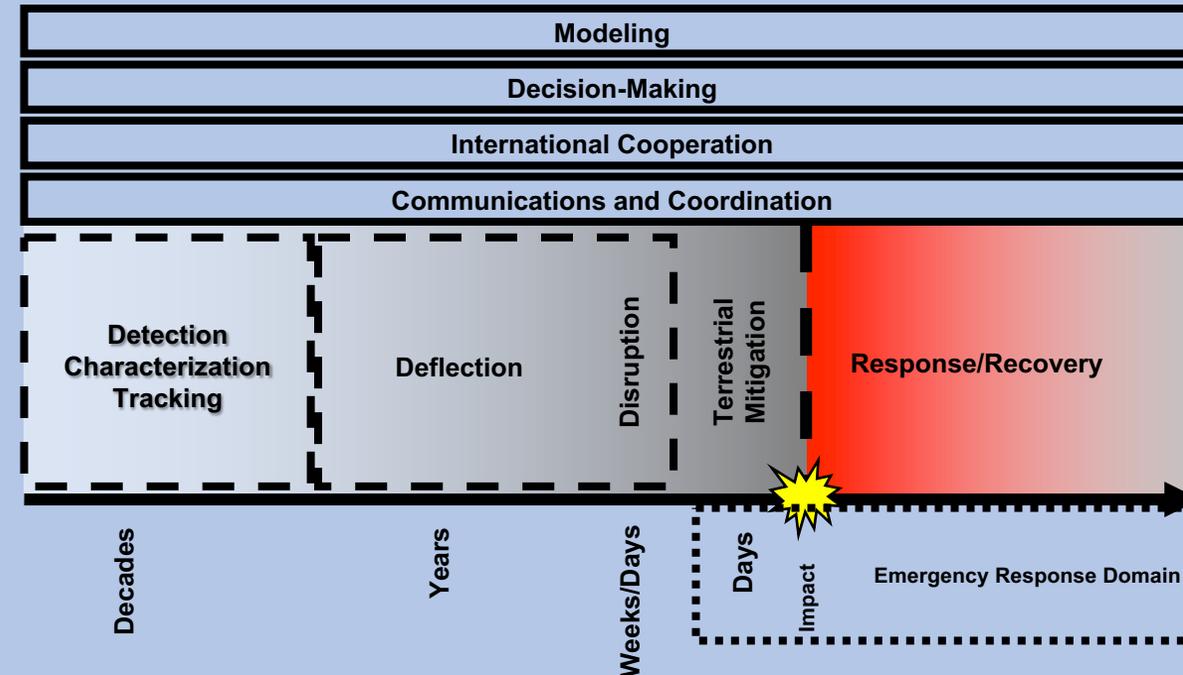
*A Report by the*  
INTERAGENCY WORKING GROUP FOR DETECTING AND MITIGATING  
THE IMPACT OF EARTH-BOUND NEAR-EARTH OBJECTS  
  
*of the*  
NATIONAL SCIENCE & TECHNOLOGY COUNCIL

JUNE 2018

<https://www.whitehouse.gov/wp-content/uploads/2018/06/National-Near-Earth-Object-Preparedness-Strategy-and-Action-Plan-23-pages-1MB.pdf>

# Planetary Defense Timeline\*

Multiple agencies and organizations have responsibilities to provide input to understanding the threat, and determining a response.

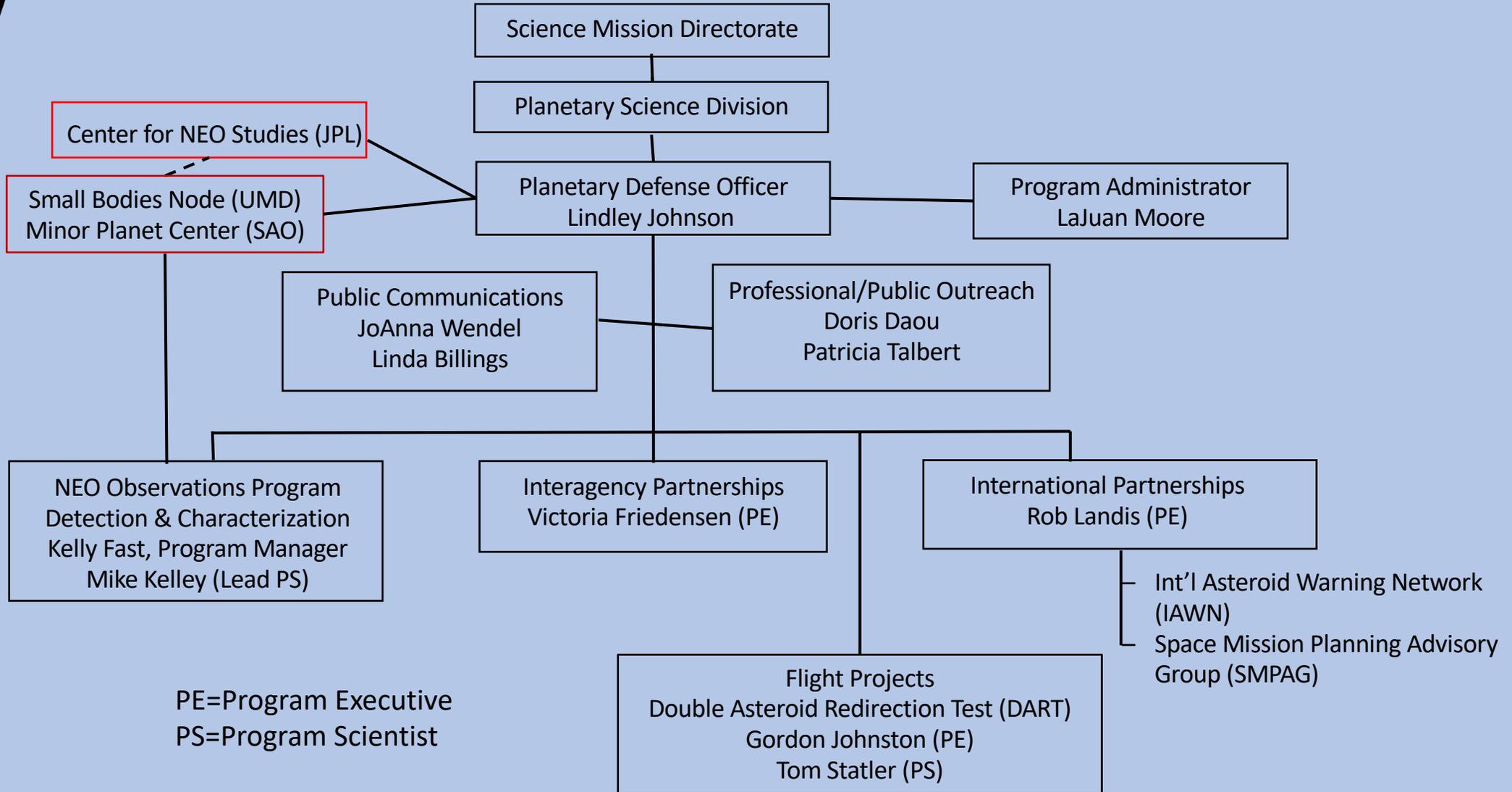


(Unlike other natural disasters or space weather events, asteroid impacts are predictable many years in advance and are potentially preventable.)

\* From National NEO Preparedness Strategy and Action Plan, June 2018



# Planetary Defense Coordination Office



# NASA's OSIRIS-REx\*

Currently operating at  
101955 Bennu (1999 RQ<sub>36</sub>)



**8 September 2016: Launch**

**3 December 2018: Arrived at Bennu**

**~July 2020: Site selection for sample collection**

**March 2021: Departure window opens for return to Earth**

**24 September 2023: Sample Return to Earth**

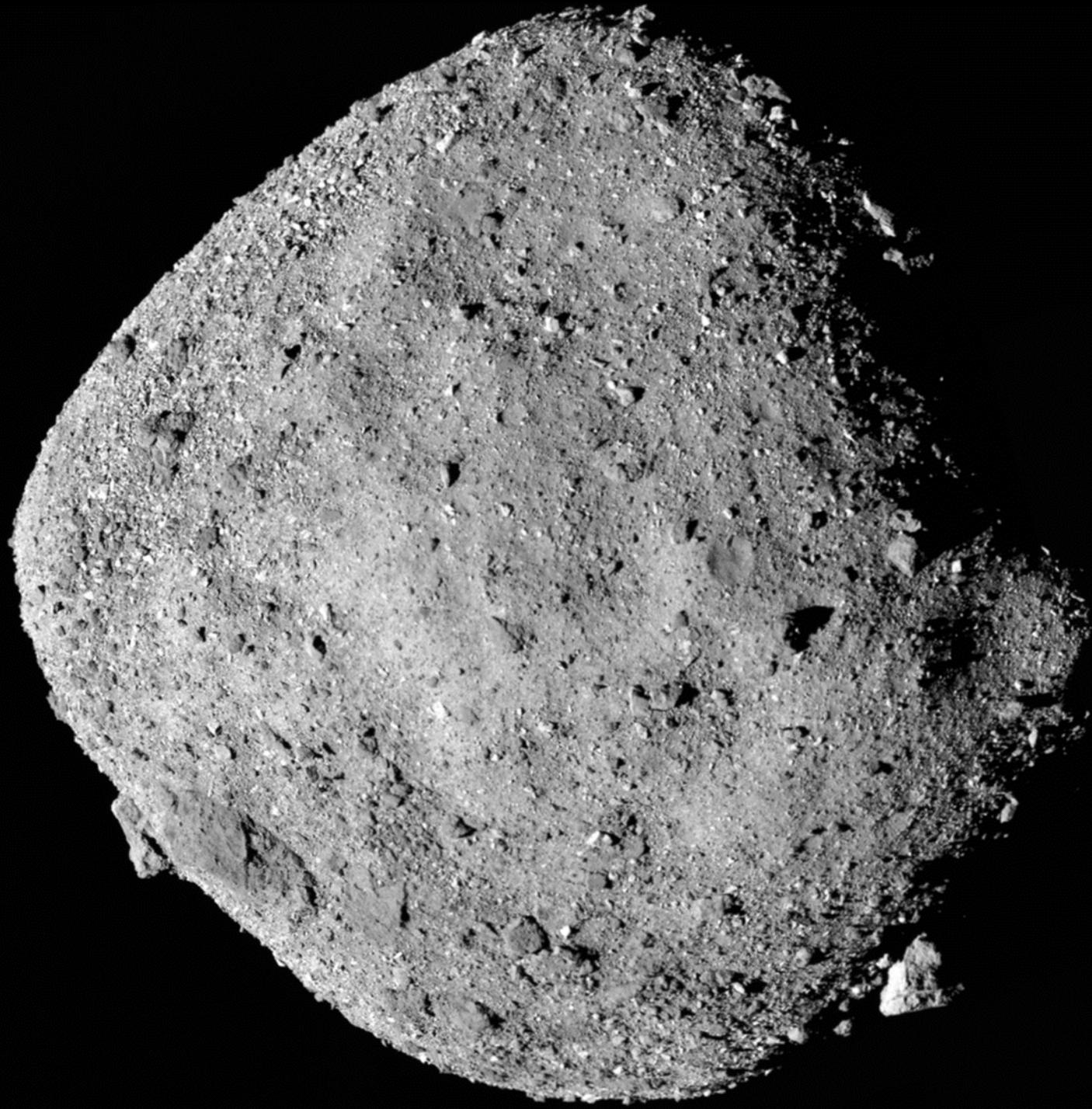
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**\*Origins Spectral Interpretation Resource  
Identification Security–Regolith Explorer**

**Ryugu (~900 meters)**



**Bennu (~520 meters)**



**Pre-arrival Polycam mosaic  
(12 images) from 2 Dec 2018**

**From ~24 km distant**

**Spacecraft currently orbits  
~1.75 km from center of Bennu**

# Double Asteroid Redirection Test (DART)

## DART Spacecraft

540 kg Arrival Mass  
20m<sup>2</sup> ROSA  
NEXT Thruster, DRACO Imager  
6.0 km/s Closing Speed

## Cubesat

6U Argomoon Design  
WFOV and NFOV Imagers  
Agenzia Spaziale Italiana (ASI)

## Didymos-A

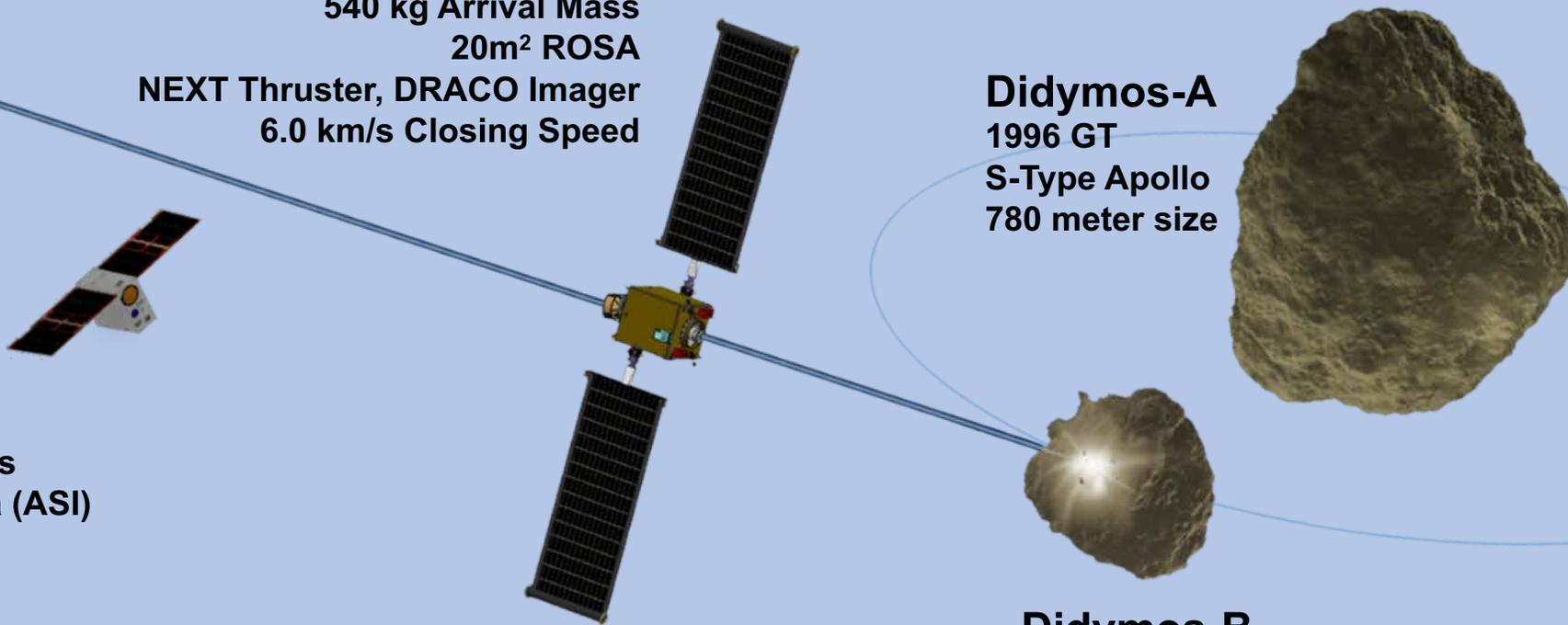
1996 GT  
S-Type Apollo  
780 meter size

## Didymos-B

~160 meter size

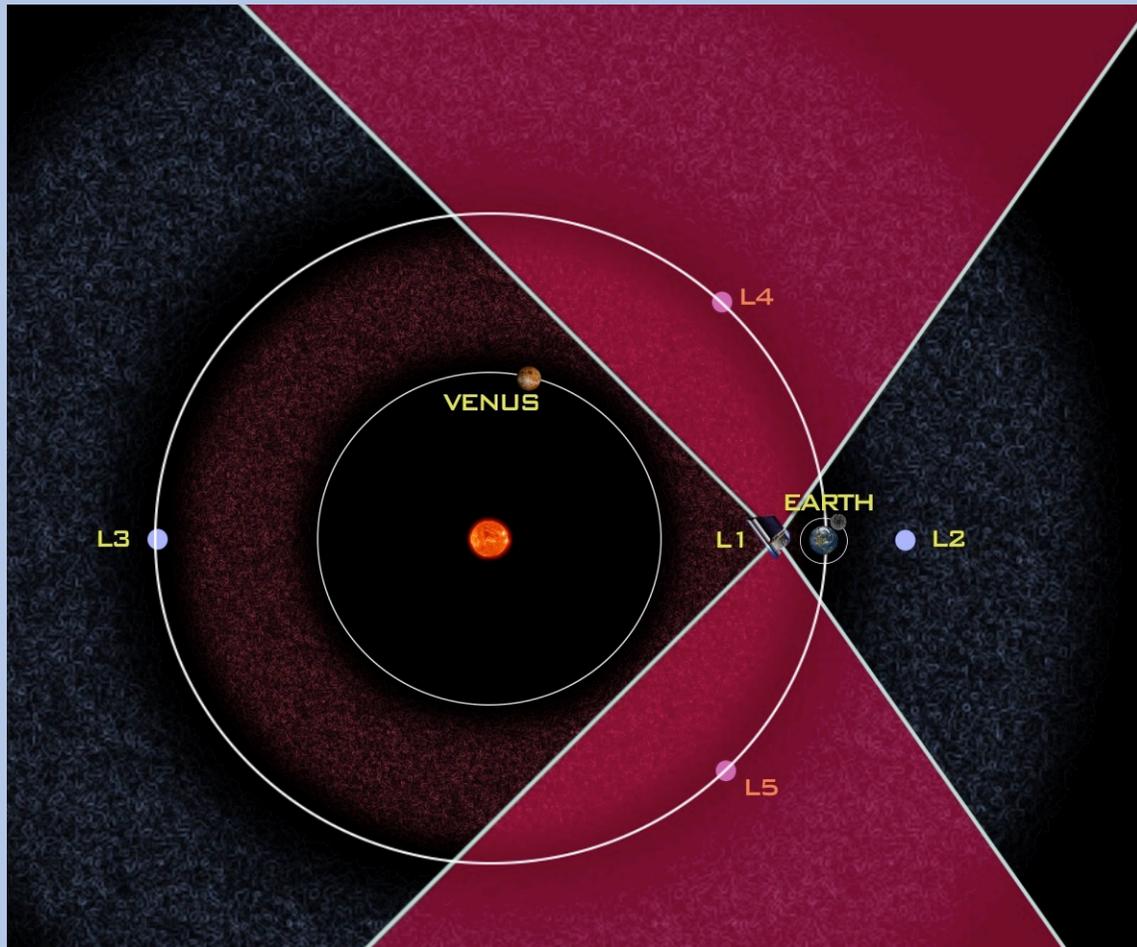
## Earth-based Observations

~10 million km range at time of impact



# NEOCam

NEOCam is a planetary defense mission designed to **detect, track, and characterize** small bodies throughout our solar system. It provides critical decision support for stakeholders who must assess the risks of NEO impacts to Earth and must identify potential mitigation strategies.



NEOCam is a dual-channel imager operating in a single step-and-stare survey mode.

- 50 cm telescope
- Two 16 megapixel HgCdTe focal planes at 4-5.4 & 6-10  $\mu\text{m}$  simultaneously imaged
- Detectors passively cooled to 40°K
- Sun-Earth L1 (SEL<sub>1</sub>) orbit
- First proposed 2005
- **Awarded technology development funding in 2011 Discovery**
- **Awarded Extended Phase A in 2016**
- **System Requirements Review/Mission Definition Review passed Feb. 2018**
- Pre-Key Decision Point B Review for instrument passed Nov. 2018

# PDCO Flight Mission Projects

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## NEOWISE

- Continues in extended NEO survey operations
- Expected to exceed max useful temps in Summer 2019

## DART: Double Asteroid Redirection Test

- Demonstration of kinetic impactor technique
- Target - moonlet of 65803 Didymos
- Launch NET Jun 2021, impact Oct 2022
- Completed Mission-level PDR 10-12 April 2018
- KDP-C “Confirmation” signed 16 August 2018
- CDR scheduled for June 2019

## NEOCam: Near-Earth Object Camera

- Infrared survey telescope optimized for meeting congressional mandate to find and characterize NEOs down to 140 meters in size
- Finished Extended Phase A Study
- SRR/MDR completed 27-28 February 2018
- NEO survey instrument development initiated; IDR held 15-16 Nov 2018

