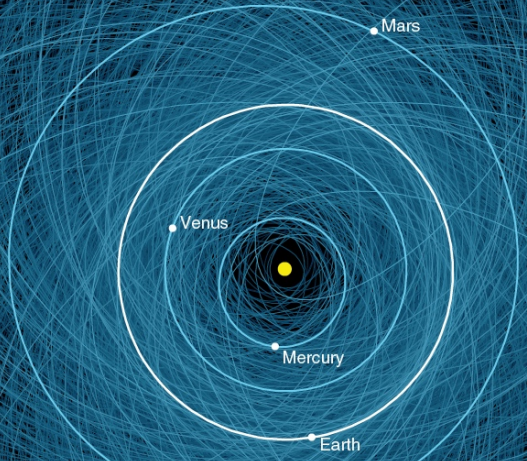
EXERCISE ONLY!!




# Impact Exercise, Day 5: April 19, 2027
# Small Asteroid to Impact over New York City in 10 Days

**Paul Chodas** (Jet Propulsion Laboratory/California Institute of Technology)

2019 Planetary Defense Conference, College Park, Maryland, May 3, 2019

EXERCISE ONLY!!

EXERCISE

# 60-m Asteroid Headed for NYC Impact

Jet Propulsion Laboratory
California Institute of Technology

- A 60-m fragment of asteroid 2019 PDC is on course for a certain impact over central New York City just after midnight on April 29, 2027
- The small asteroid will enter the atmosphere at 19 km/s (43,000 mph) producing a megabolide that could release ~5 to ~20 megatons of energy
- Just yesterday the asteroid was detected by Arecibo radar, and IAWN used those measurements to further narrow down the impact location
- Astronomers have been tracking the asteroid optically for 3 months, as it approached, and the predicted impact location has been localized to New York City for the last 2 months
- A last-ditch attempt to launch a nuclear explosive device to disrupt the asteroid could not be implemented within the 6 months available
- In several days, radar imaging will begin enabling refinements to the size, shape, mass and impact energy estimates
- For more info: **https://cneos.jpl.nasa.gov/pd/cs/pdc19/day5.html**

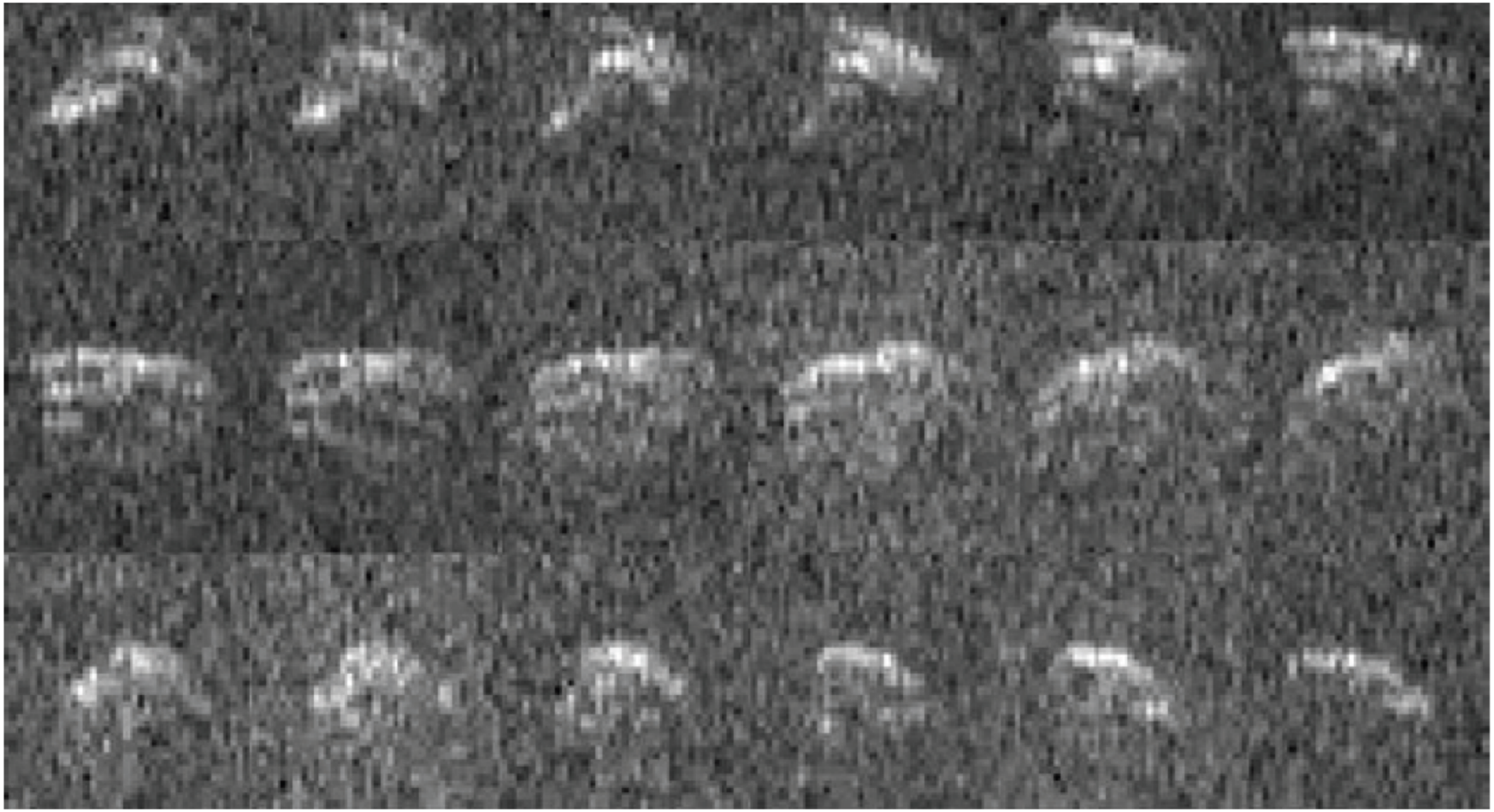
EXERCISE ONLY!!

# Impact Footprint for 2019 PDC Fragment

# Radar Images of the Fragment

Jet Propulsion Laboratory
California Institute of Technology

- When radar imaging begins in a few days, we may see that the fragment looks very much like ~60-m asteroid 2013 ET:

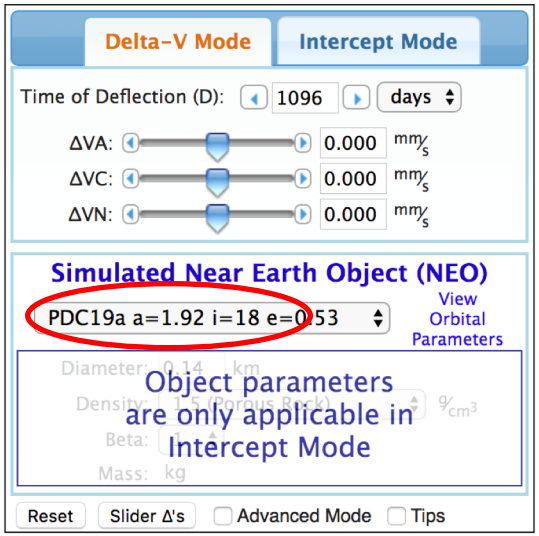


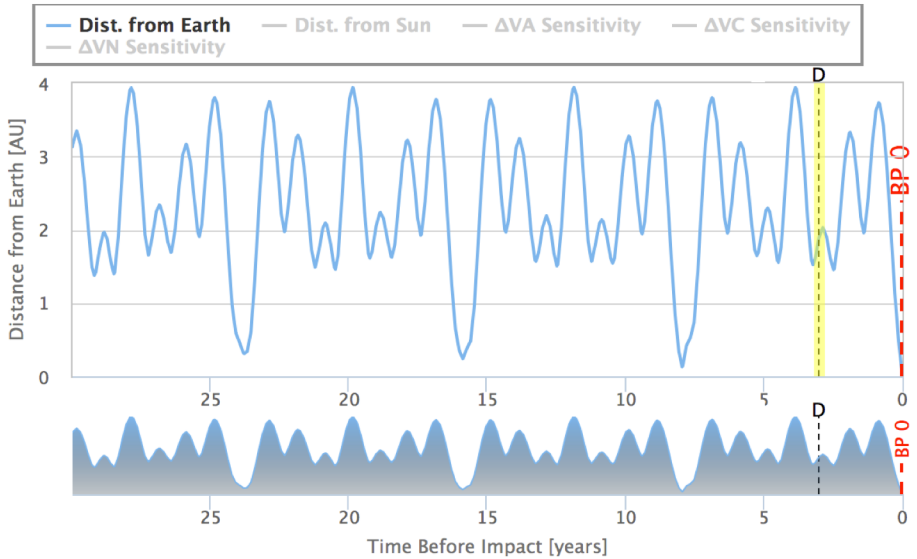
# CNEOS NEO Deflection App (NDA)

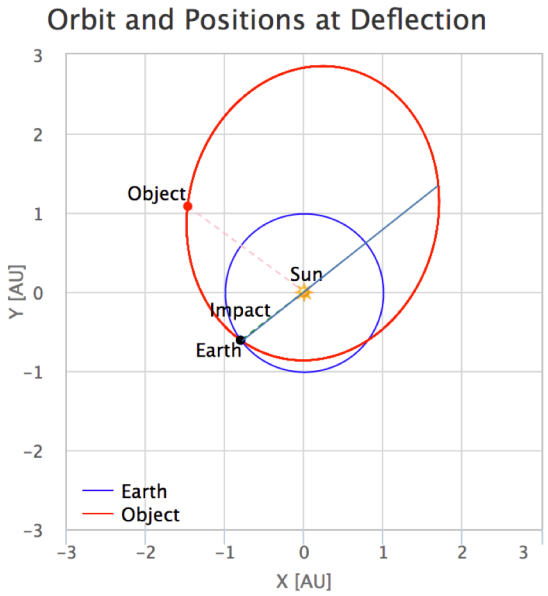
https://cneos.jpl.nasa.gov/nda/nda.html

EXERCISE

Jet Propulsion Laboratory
California Institute of Technology



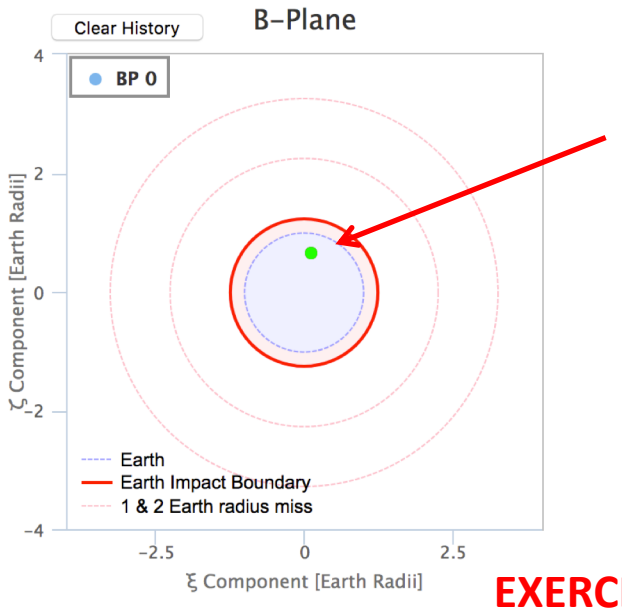

**Orbit Changes**
ΔVA: 0.000 mm/s
ΔVC: 0.000 mm/s
ΔVN: 0.000 mm/s
Total ΔV: 0.000 mm/s
Period at D: 970.980 d
Δ Period: 0.0000 s

**B-Plane Values**
ζ (zeta): 0.653 $R_e$
ξ (xi): 0.109 $R_e$
B magnitude: 0.662 $R_e$
Capture Rad.: 1.239 $R_e$
Perigee Dist.: 0.446 $R_e$

**IMPACT**
$V_\infty$: 15.271 km/s

* $R_e$ = Earth Radii

Save Current Session




Impact Location without deflection

EXERCISE ONLY!!

# Many Thanks to the 2019 PDC Exercise Team:

**JPL/CNEOS**:
Javier Roa, Alan Chamberlin, Ryan Park, Marina Brozovic,
Stas Petropoulos, Jon Giorgini, Shigeru Suzuki

**NASA Ames/ATAP**:
Lorien Wheeler, Donovan Mathias, Clemens Rumpf,
Jessie Dotson, Michael Aftosmis

**NASA GSFC**: Brent Barbee, Joshua Lyzhoft, Bruno Sarli

**Sandia National Laboratories**: Barbara Jennings, Bill Fogleman

**Los Alamos National Laboratory**: Mark Boslough

**NASA/PDCO**: Lindley Johnson, Kelly Fast, Linda Billings, Victoria Andrews

**The Aerospace Corp.**: Bill Ailor, Nahum Melamed

**University of Maryland**: Tim Spahr, Gerbs Bauer