

EXERCISE

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NOT A REAL WORLD EVENT *This is part of an asteroid threat exercise conducted during the 2015 IAA Planetary Defense Conference.*

Asteroid's Chance of Impacting Earth in 2022 Now 43%

Paul W. Chodas (International Asteroid Warning Network/JPL)

Press Conference, April 4, 2016

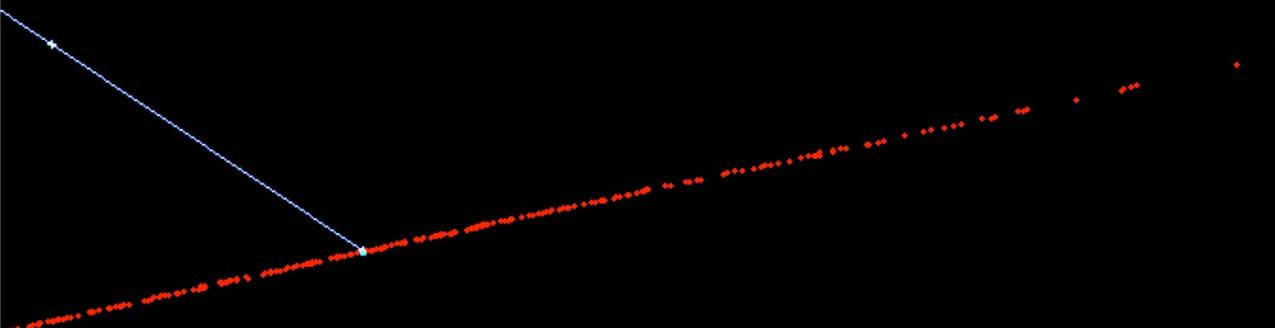
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Chance of Impact in 2022 is Now 43%

- ▶ After nearly a full year of continuous tracking, the orbit of asteroid 2015 PDC is known more accurately
- ▶ The new data did not eliminate the possibility of impact
- ▶ IAWN now estimates the likelihood of impact on Sept. 3, 2022 at **43%**; the Torino Scale rating is 5 (Orange)
- ▶ **No further updates are possible for 8 months**
- ▶ Several space-faring nations have already begun developing deflection missions; they would launch 3 years from now, in August 2019
- ▶ Size of 2015 PDC is still very uncertain, but the Spitzer Space Telescope might be able to observe it in early 2018
- ▶ For more info: **<http://neo.jpl.nasa.gov/pdc15/day2.html>**

To Sun

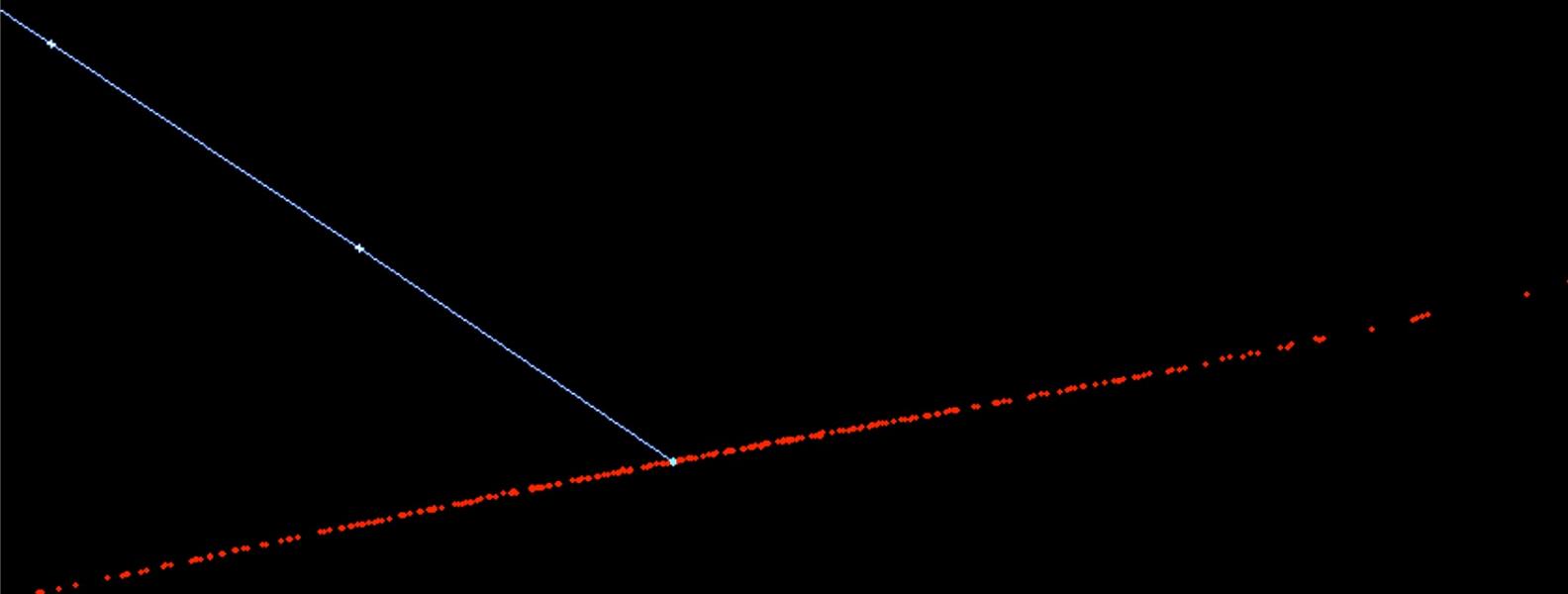
Uncertainty Region in 2022



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To Sun

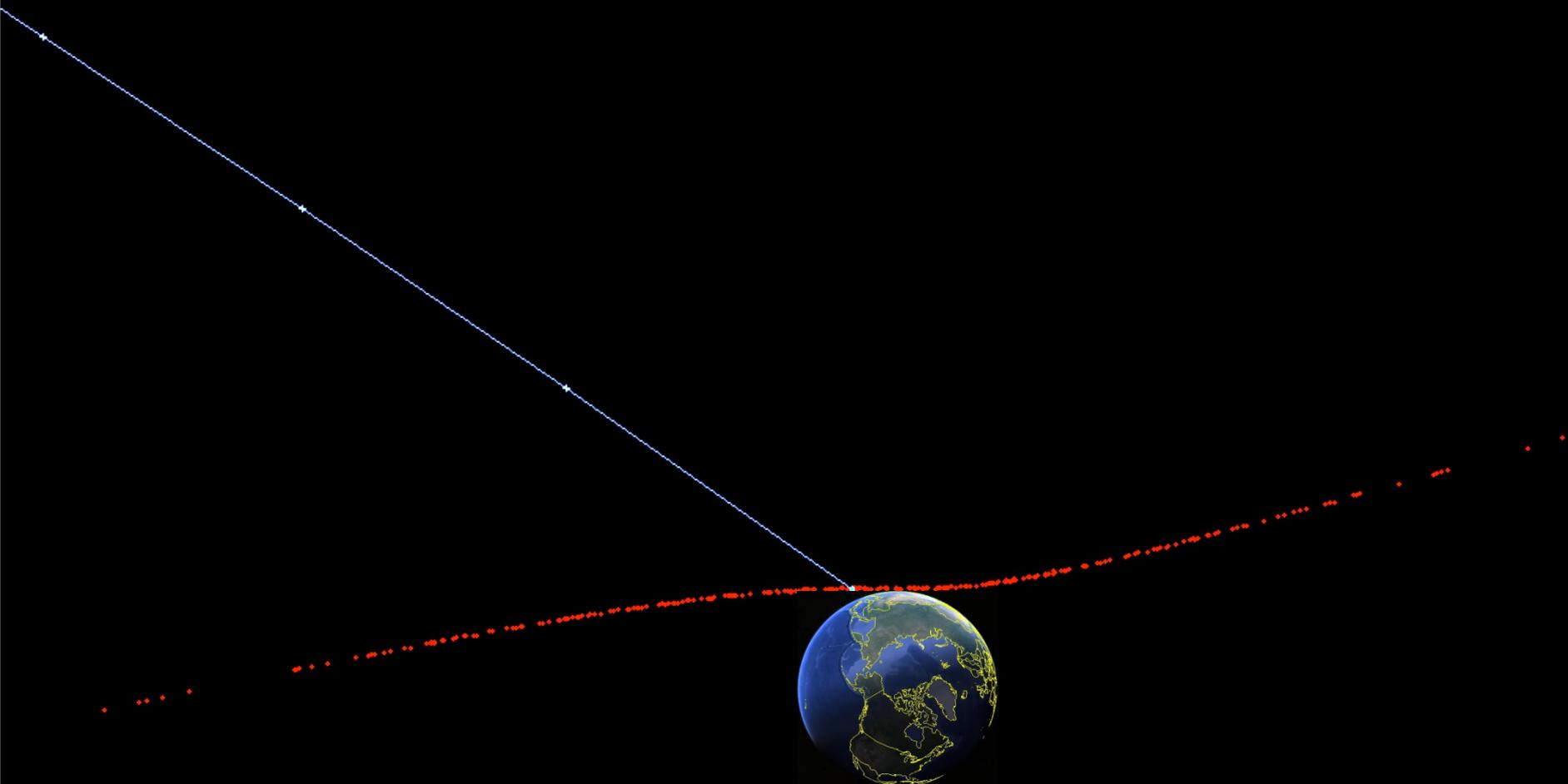
Uncertainty Region in 2022



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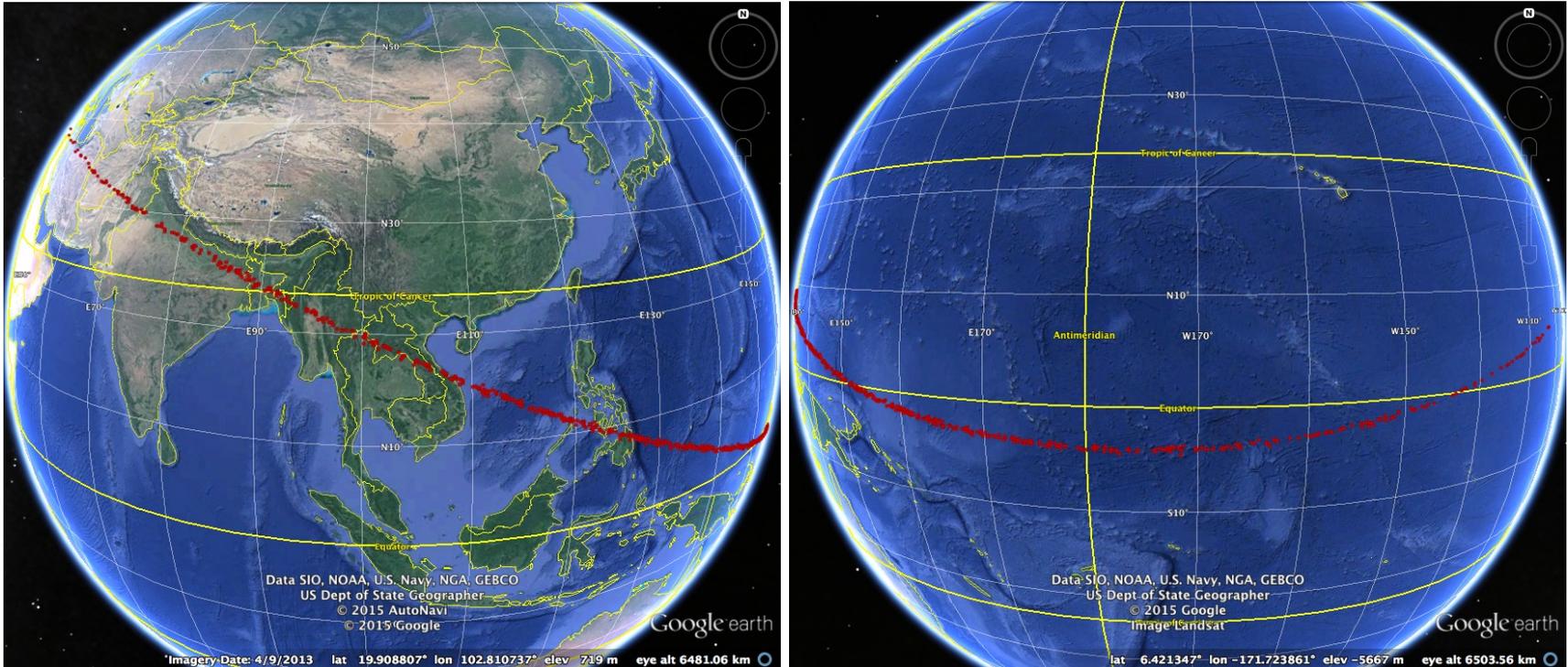
To Sun

Uncertainty Region in 2022



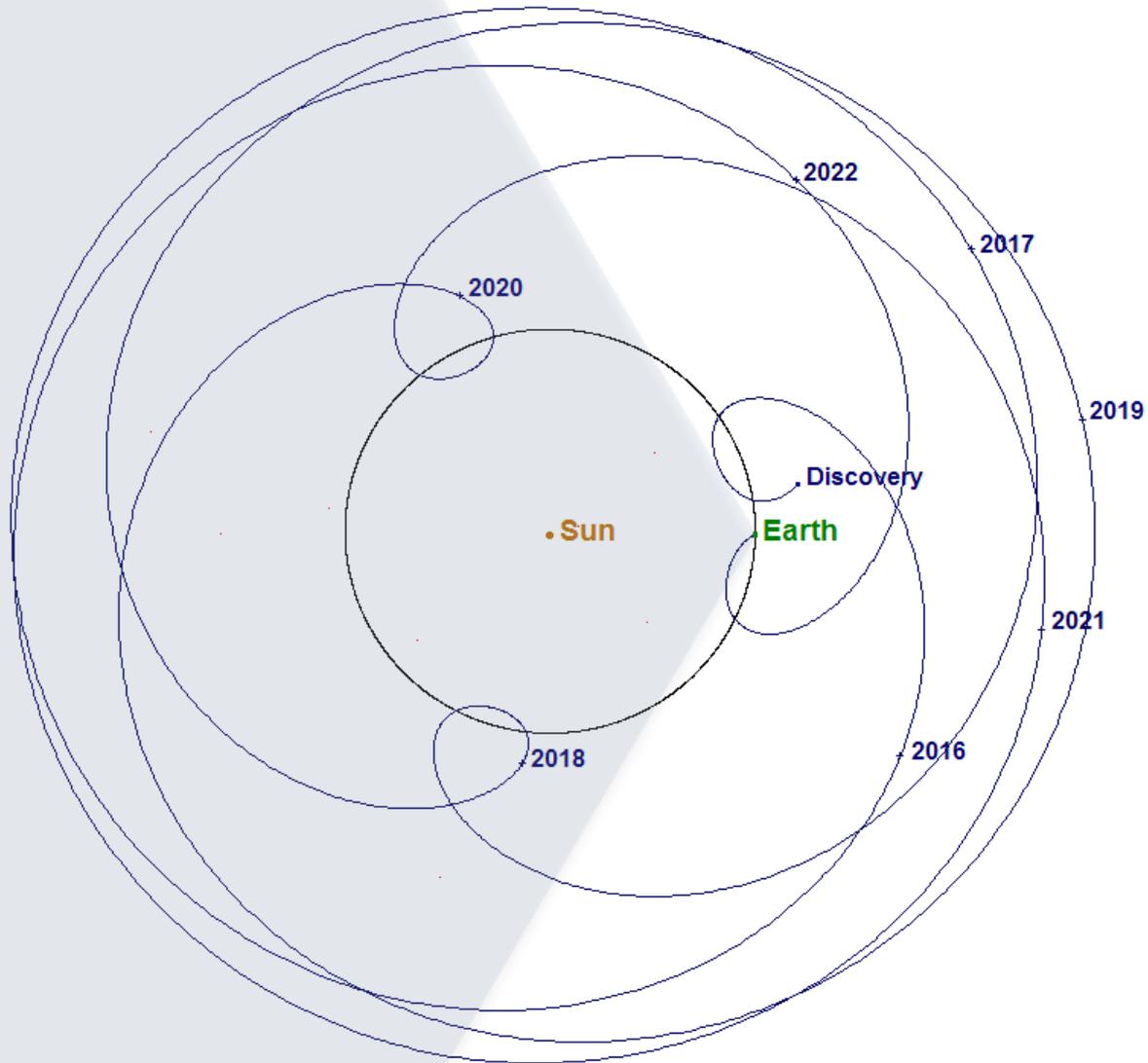
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Risk Corridor for 2015 PDC



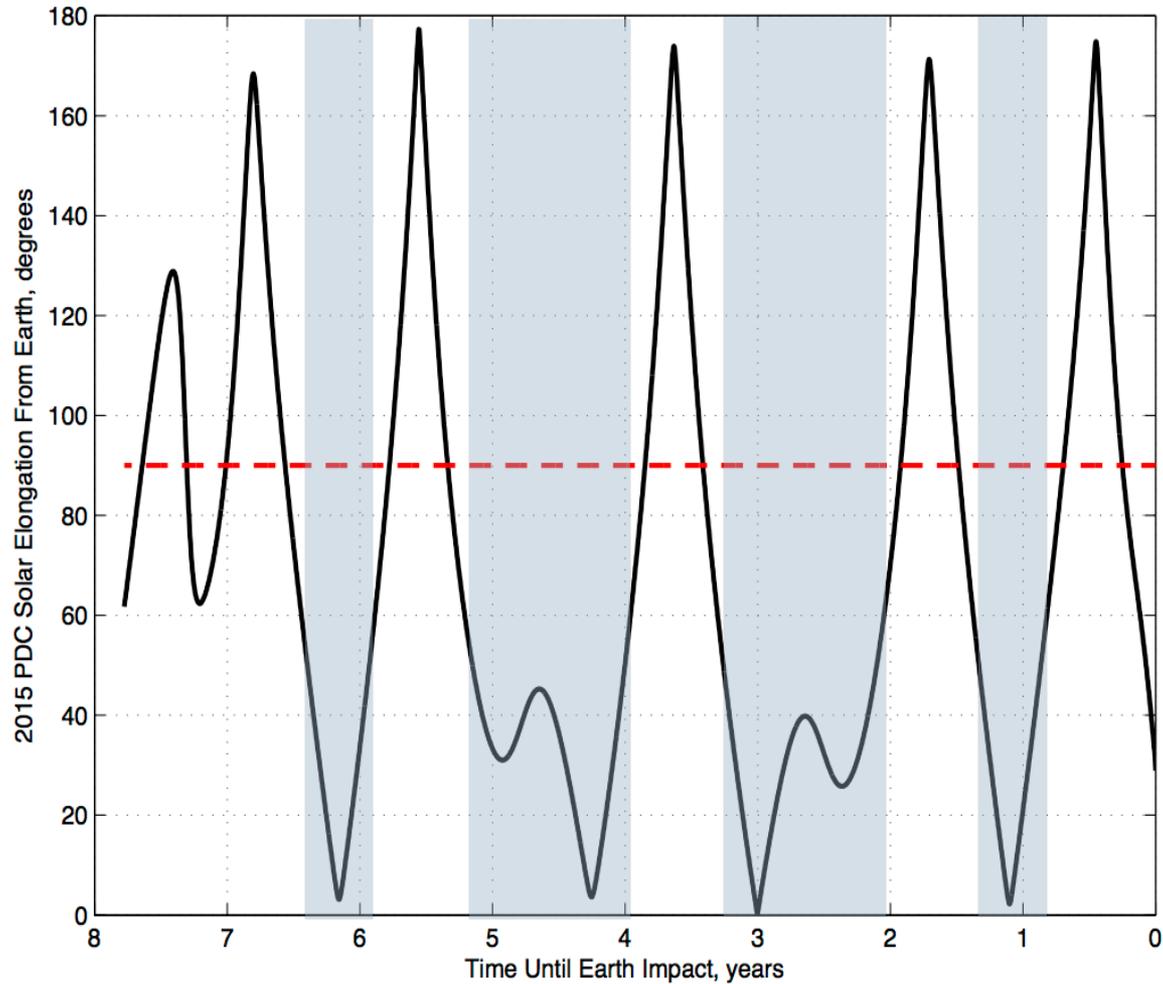
Risk corridor extends more than halfway around the world, from the eastern Pacific Ocean, across the South Pacific, through the Philippines, South China Sea, Southeast Asia, Myanmar, Bangladesh, India, Pakistan, Afghanistan, Iran, and Turkey

Apparent Motion of 2015 PDC



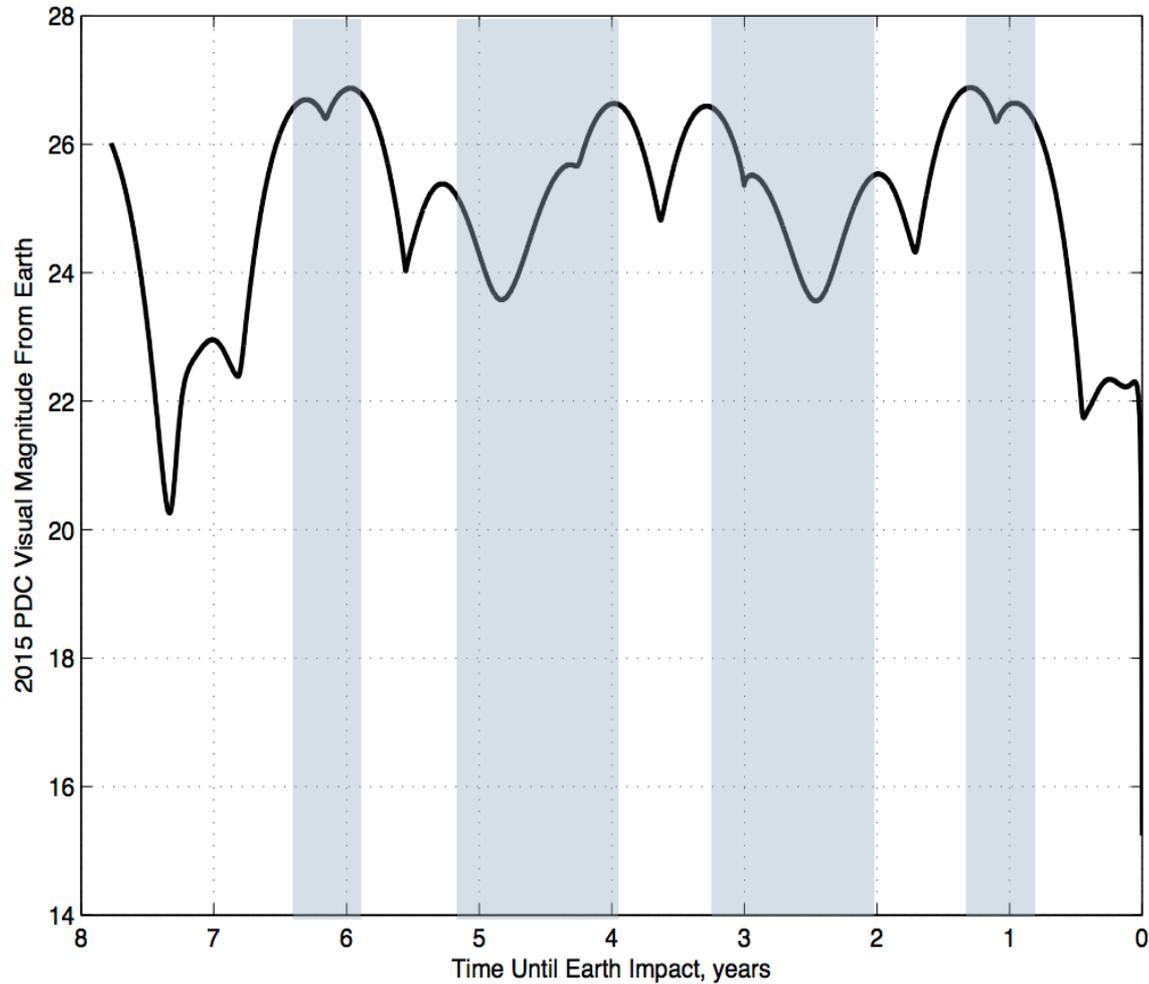
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Solar Elongation vs. Time to Impact



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Visual Magnitude vs. Time to Impact



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Design Your Own Deflection Mission



<http://neo.jpl.nasa.gov/nda>

Delta-V Mode | **Intercept Mode**

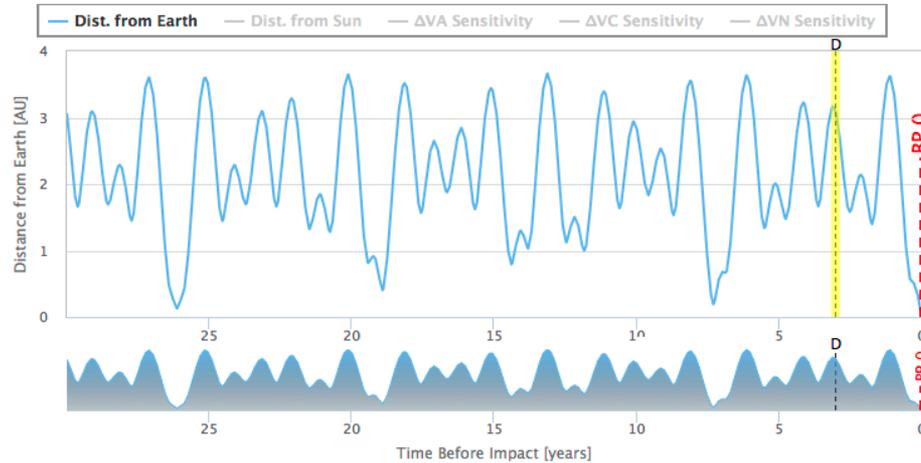
Time of Deflection (D): 1096 days

ΔVA : 0.000 mm/s
 ΔVC : 0.000 mm/s
 ΔVN : 0.000 mm/s

Simulated Near Earth Object (NEO)
 PDC15 a=1.78 i=5 e=0.49

Object parameters are only applicable in Intercept Mode

Reset | Slider Δ 's | Advanced Mode | Tips

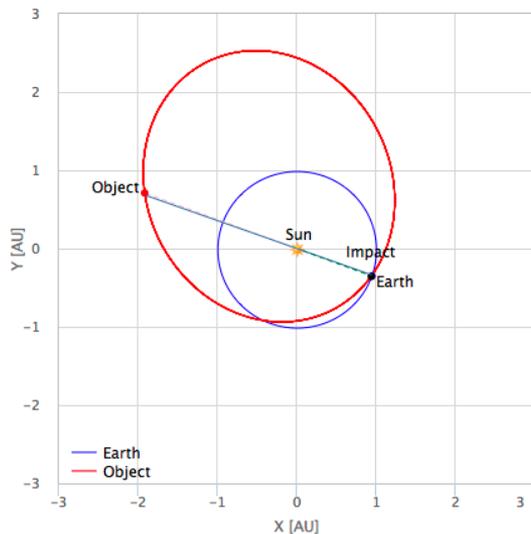


Read overview

Start the app

Take a tour of the app using the 2015 PDC scenario

Orbit and Positions at Deflection



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: 864.071 d
 Δ Period: 0.0000 s

B-Plane Values

ζ (zeta): 0.621 R_e
 ξ (xi): -0.436 R_e
 B magnitude: 0.759 R_e
 Capture Rad.: 1.420 R_e
 Perigee Dist.: 0.405 R_e

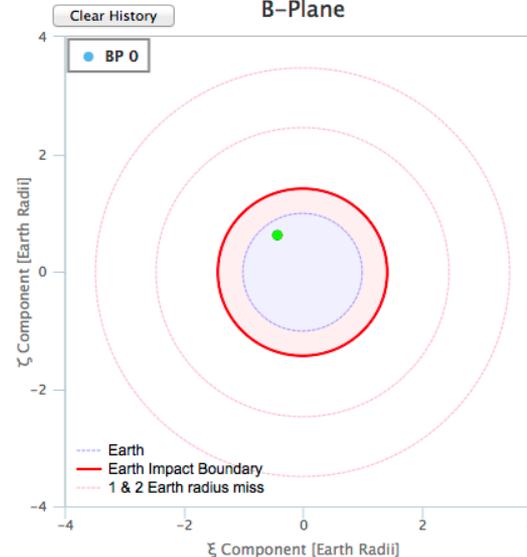
IMPACT

V_∞ : 11.087 km/s

* R_e = Earth Radii

- Save Current Session
- Restore Session
- Deflection Map

B-Plane



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