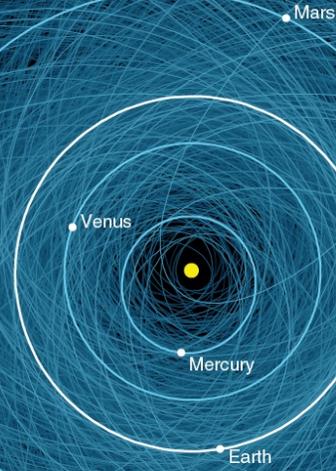


**EXERCISE ONLY!!**



**Impact Exercise, Day 3: December 30, 2021**

# **Closeup Images Reveal Asteroid 2019 PDC Is Headed for Denver Area: Efforts to Prevent Impact Accelerate**

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



**EXERCISE**

# Asteroid 2019 Headed for Denver Area



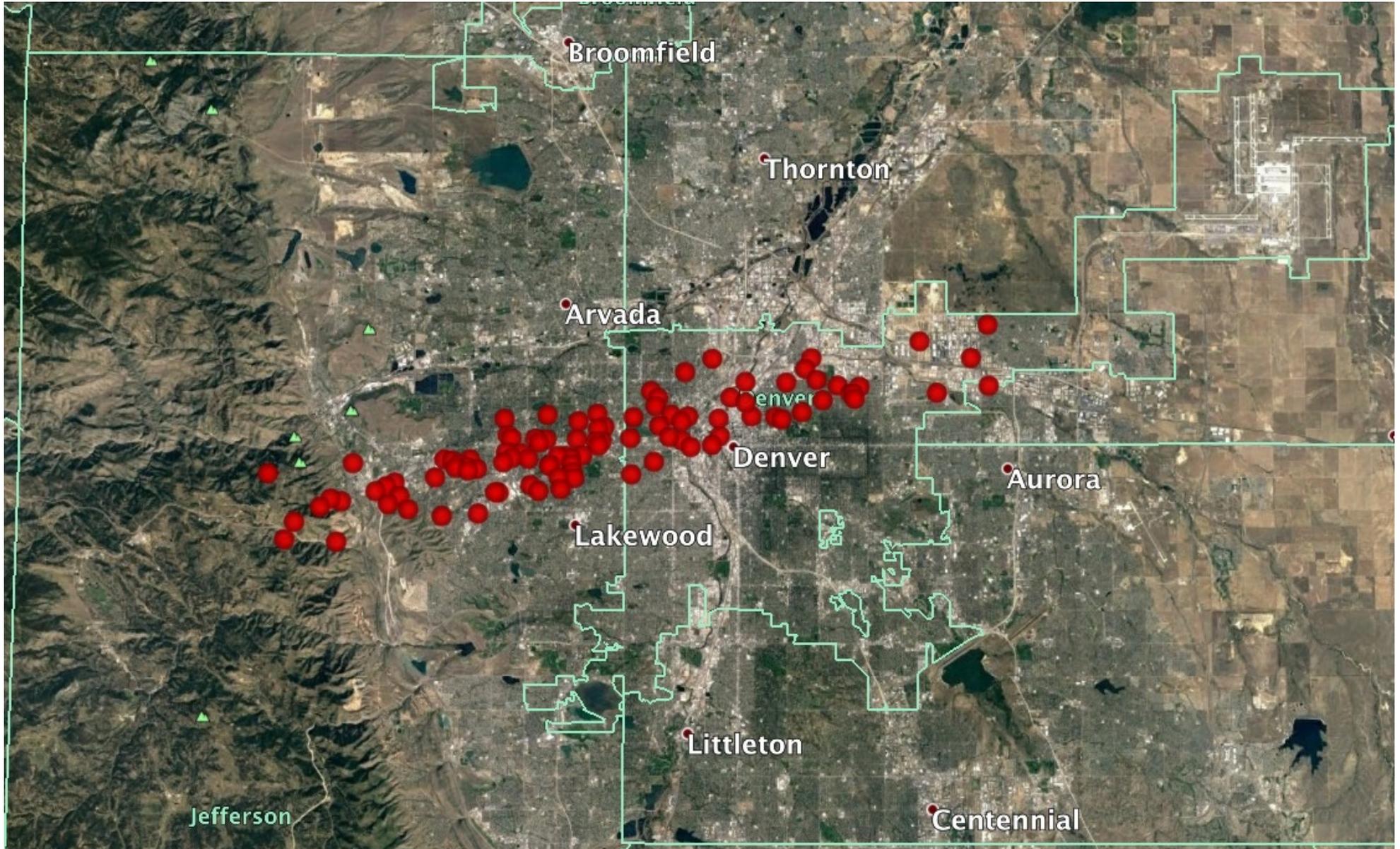
- Results from the mission Recon 1 have revealed that asteroid 2019 PDC is headed for certain impact near Denver, Colorado
  - This prediction from IAWN is based on precise measurements of the asteroid's position in spacecraft images taken before and during the encounter
- The closest images also revealed that 2019 PDC is elongated, roughly 260 meters long by 140 meters wide, apparently a contact binary
- Other results from the flyby suggest that asteroid is S-class, and appears to be a rubble pile, similar to asteroid Itokawa, but about half the size
- The asteroid is too small, and the flyby too fast, to obtain a direct estimate of asteroid mass, but with size and shape now known more accurately, and density better constrained, the mass is also known more accurately
- The estimated energy of the impact ranges from 150 to 500 megatons
- For more info: <https://cneos.jpl.nasa.gov/pd/cs/pdc19/day3.html>

**EXERCISE ONLY!!**



EXERCISE

# Impact Location of 2019 PDC





# Recon 1 Mission

- Designed, built, integrated, tested, shipped, and installed on the launch vehicle, all in 1.9 years
- Spacecraft mass: 500 kg
- Closest approach to Sun: 0.42 au
- Flight time to asteroid: 7 months
- Encounter velocity: 13 km/s

