

PLANETARY DEFENSE  
INTERAGENCY  
TABLETOP EXERCISE 4



# Asteroid Impact Risk: Module 1

71% chance of Earth impact in under 6 months

Lorien Wheeler

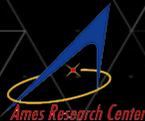
Jessie Dotson, Michael Aftosmis, Eric Stern, Donovan Mathias

Asteroid Threat Assessment Project (ATAP)

NASA Ames Research Center



FEMA



JOHNS HOPKINS  
APPLIED PHYSICS LABORATORY

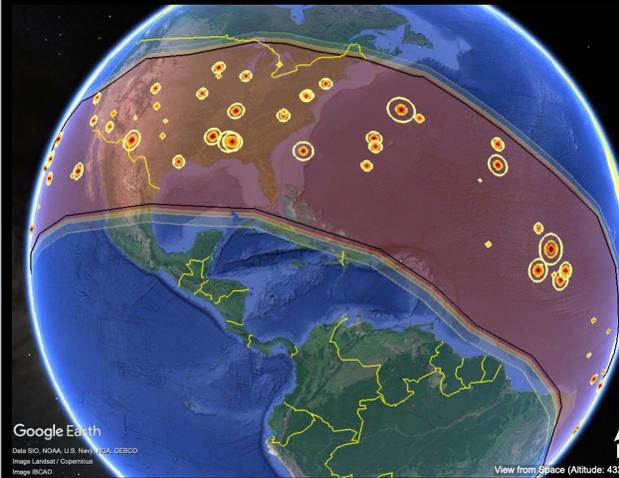


# Impact Risk Summary: Module 1

## Asteroid Characterization Summary

- Assessment date: Feb. 23, 2022 (T- <6 months)
- Potential impact date: Aug. 16, 2022
- Earth impact probability: 71%
- Large uncertainties in asteroid size, energy, and other properties
- Diameter: 40–440 m (130–1440 ft), most likely ~55–160 m (180–520 ft), median size 110 m (360 ft)
- Energy: 1–3000 megatons (Mt), most likely ~2–100 Mt, median 46 Mt

## Risk Region Swath

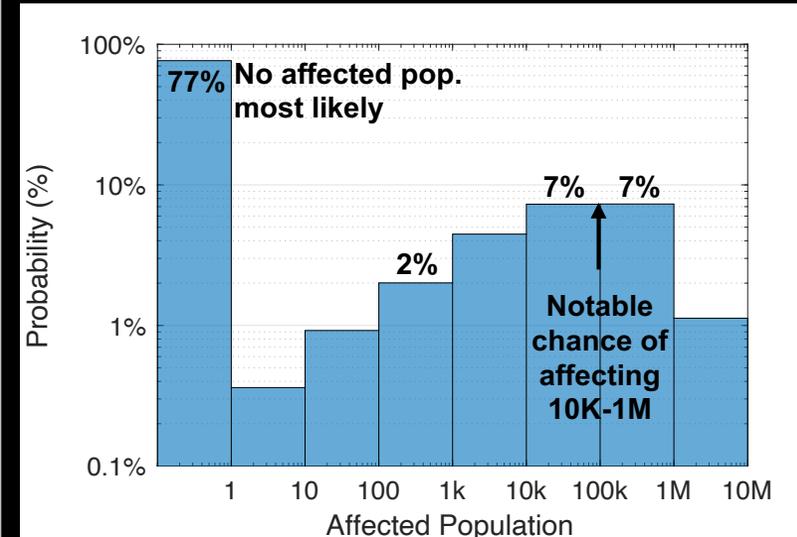


Regions potentially at risk, given range of potential damage locations and sizes. Average sized damage footprints are shown over sample US cities.



## Impact Hazard Summary

- Potential damage sizes and locations are very uncertain
- No damage is most likely (~77% chance) with moderate chance of large damage areas affecting 10k-1M people
- Primary hazard: Blast damage, ranging from blown out windows, to structure damage, to potentially unsurvivable levels
- Damage radii: 0–120 mi, most likely range 12–70 mi, median 40 mi
- Tsunami damage is unlikely and mostly minor
- Affected Population: 0–millions, 50K total average risk, 20% chance of affecting >1K ppl, 16% >10K, 8% >100K, 1% >1M



## Population Risk

Probabilities of how many people could be affected by the potential damage

(total probabilities including 71% Earth-impact probability)