

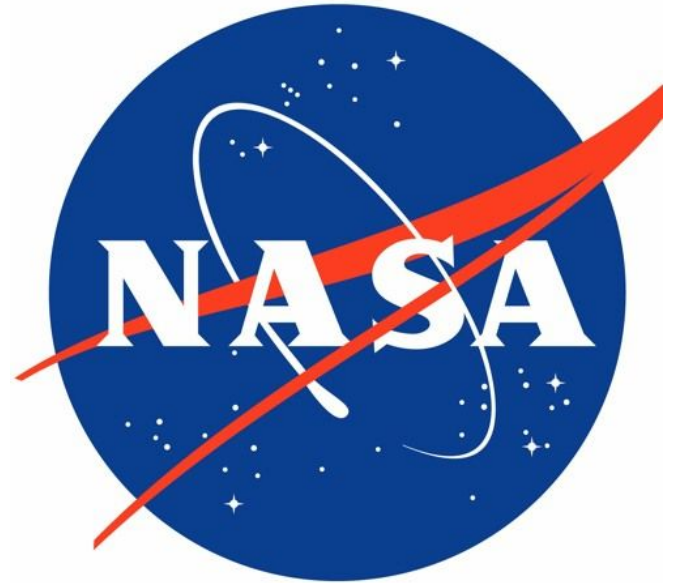
Near-Earth-Objects: Are We Doomed?



An analysis by Jacqueline Tsodikova, Alejandra
Magana, Robert Janke, Michael Albers, Fred Jambor

What are we analyzing?

Our group is researching the likelihood an asteroid or comet will potentially harm our planet. Using historical data, we will determine what thresholds are used to predict which NEOs are the most hazardous to Earth.





Why this topic?

A new movie on Netflix, *Don't Look Up*, was just released that had to do with a comet approaching Earth and scientists trying to warn the public about it. Although this movie is more about comedic humor, a comet or asteroid harming our planet is definitely something that could happen. We wanted to research and analyze the data to see how likely a NEO could harm us.

How many close approach objects will we have in the next decade?




On average, 200-400 space objects enter Earth's atmosphere every year, that's about one a day. But, these are usually small and not hazardous

Can we predict potentially hazardous objects in the future?



The probability of an object to be PHA is small, but the damages are definitely big. A comet that was 10 kilometers is what wiped out the dinosaurs.

Which NEOs are the most potentially hazardous?



Knowing exactly which NEOs are the most hazardous can help researchers track those more closely.

Description of the data source



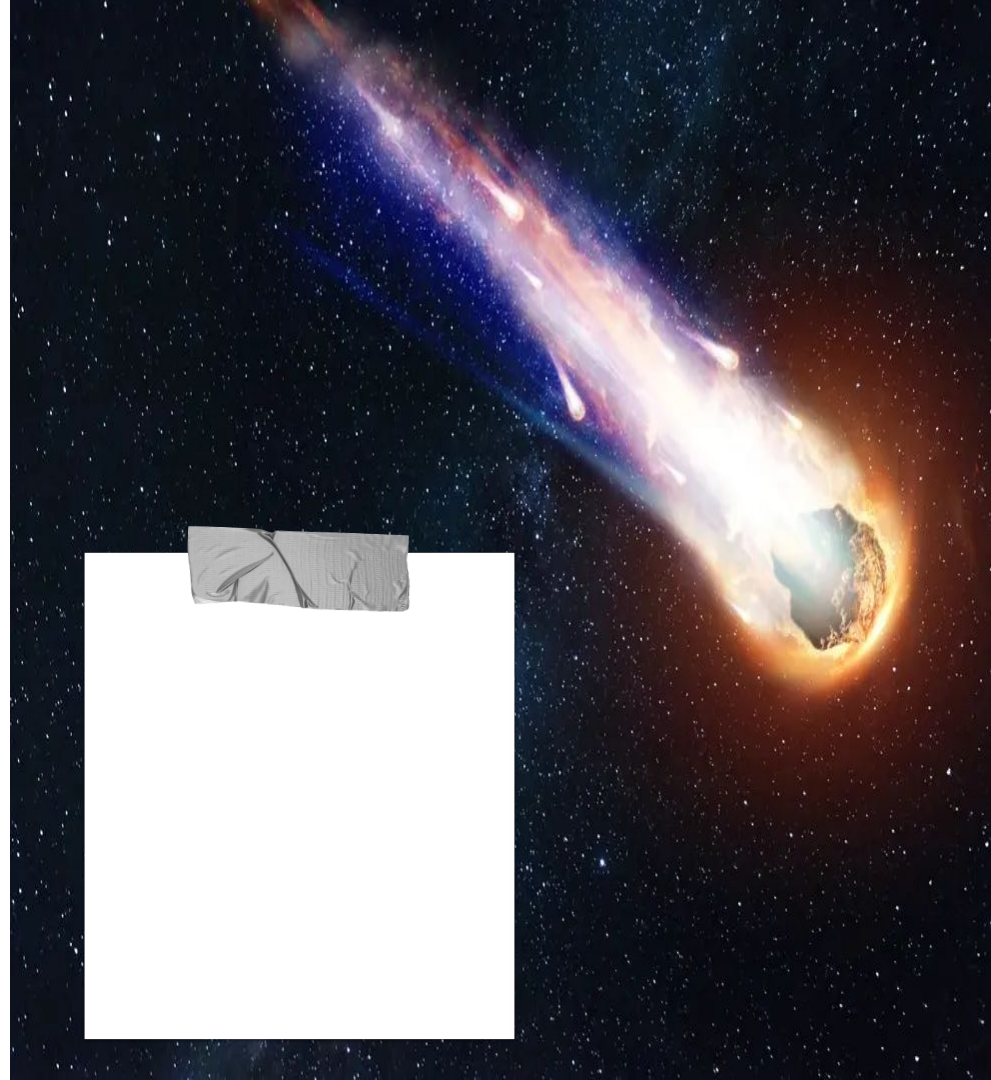
Jet Propulsion Laboratory
California Institute of Technology

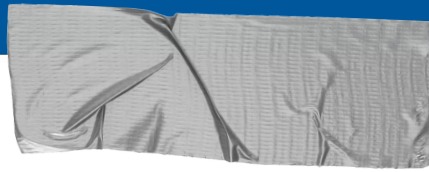
$$\begin{aligned}\frac{\partial b}{\partial \mathbf{e}} &= \sqrt{\frac{-a}{\mu}} \frac{1}{h} \left[v^2 \mathbf{r}^T - (\mathbf{r}^T \mathbf{v}) \mathbf{v}^T \right] \\ &= \sqrt{\frac{-a}{\mu}} \frac{1}{h} \left[v^2 \mathbf{r}^T - (\mathbf{r}^T \mathbf{v}) \mathbf{v}^T \right]\end{aligned}$$



Description of the data exploration phase

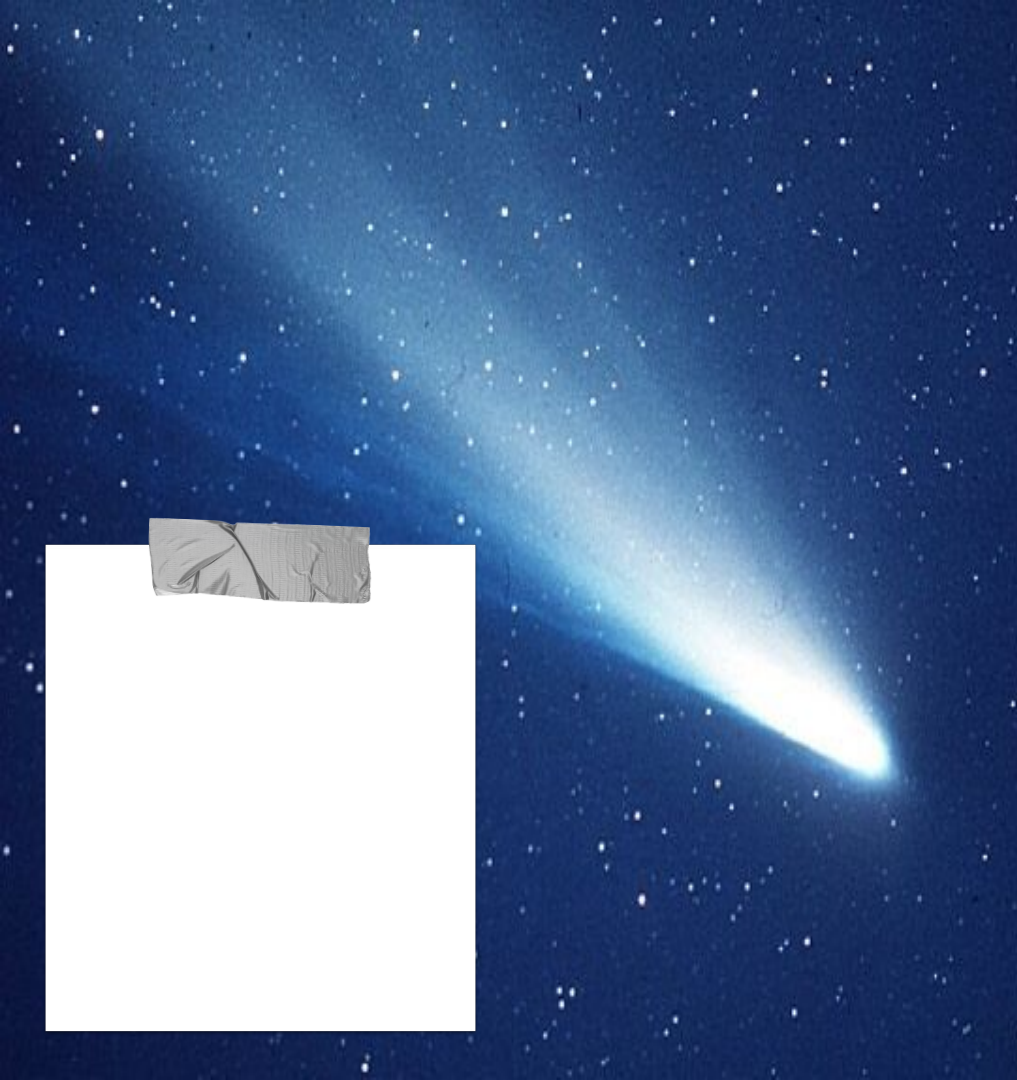
Description of the analysis phase



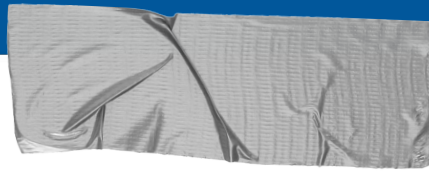




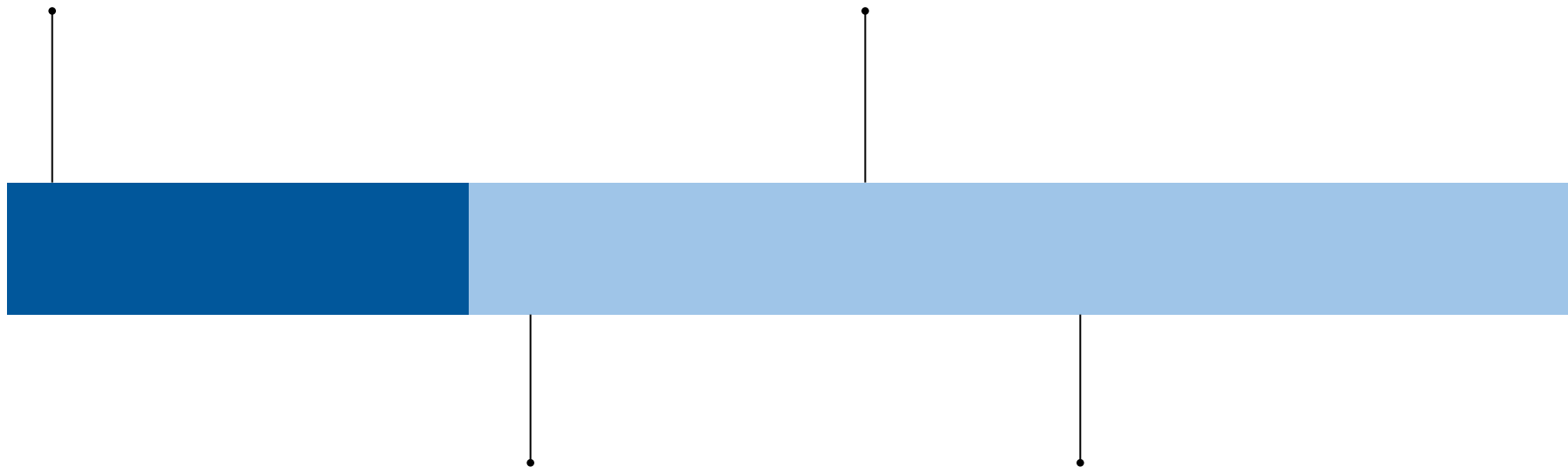








Timeline



Analysis Results

