

Close encounters of the asteroid kind

With up to 1,000 asteroids and comets large and close enough to be a threat to the Earth, including 184 identified as being on potentially hazardous orbits, astronomers have devised a scale to measure the risk of an impact and to alert the public to the seriousness of close encounter predictions

The Torino Scale

0 Zero likelihood of collision.

Also small objects that will burn up in atmosphere

1 Collision extremely unlikely

2 Close, but not unusually so. Collision very unlikely

3 Close encounter – 1% or greater chance of collision causing localized destruction

4 Close encounter – 1% or greater chance of collision causing regional devastation

5 Significant threat of collision causing regional devastation

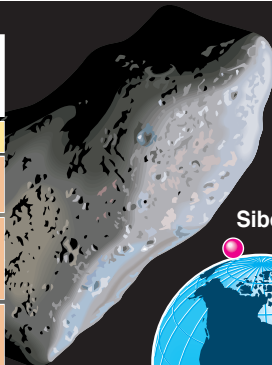
6 Significant threat of collision causing global catastrophe

7 Extremely significant threat of collision causing global catastrophe

8 Certain collision causing localized destruction (once per 50-1,000 years)

9 Collision causing regional devastation (once per 1,000-100,000 yrs)

10 Collision causing global climatic catastrophe (once per 100,000 yrs or less)



March 23, 1989:
Quarter-mile
diameter asteroid
comes within
400,000 miles
of Earth



1908: Tunguska,
Siberia – asteroid 330ft
across explodes,
devastating
0.5 million
acres of
forest

65 million
years ago:
6-mile diameter asteroid
impacts in Gulf of Mexico – thought
to have caused dinosaur extinction

Solar system asteroid distribution

Asteroid belt
Tens of thousands
– most on stable,
elliptical orbits

Near Earth Asteroids
Apollos (362 identified).
Cross Earth's orbit
with period greater
than one year

Atens (54).
Less than
a year

Amors (344).
Cross Mars' orbit

Ceres
Largest
known
asteroid,
600-mile
diameter

MARS

SUN

JUPITER

EARTH