

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

EARTH

JUPITER