

[TESTING] 10th IAA Planetary Defense Conference 2027

Monday, May 3, 2027 - Friday, May 7, 2027

McGill University in Montreal, Quebec, Canada

Scientific Program

A broad theme of the conference is to highlight processes, technologies, techniques, missions, and data sets that have been and must be developed to support planetary defense and strengthen international cooperation for defending the Earth against impact hazards associated with asteroids and comets. Special highlights include recent space missions related to planetary defense, a hypothetical asteroid threat exercise, and panel discussions by decision-makers, young professionals, commercial space companies, communications experts, legal and policy experts, disaster managers, and others.

Topic areas

Apophis T-2 Years

- Current and proposed space missions to Apophis before, during, and after the April 13, 2029 Earth close approach
- Plans for ground-based observations, overall coordination, and viewing opportunities

Ongoing and Upcoming Mission Highlights

- Current and proposed space missions to inform and test planetary defense technologies
- Highlights of Hera, Hayabusa2#, DESTINY+, NEO Surveyor, OSIRIS-REx/APEX, Ramses, other Apophis missions, etc

Hypothetical Asteroid Threat Exercise

- The details of the hypothetical asteroid threat exercise will be available at <https://cneos.jpl.nasa.gov/pd/cs/pdc27/> in early August 2026
- Any contributions to the topics below based upon the exercise are welcome

Key International & Policy Developments

- Policy planning and developments towards an international planetary defense strategy
- National and international activities, strategies and plans for planetary defense

Near-Earth Object (NEO) Discovery

- Current NEO survey progress, requirements, and goals for future surveys
- Astronomical and space-based techniques for discovery of NEOs
- Prospects for future NEO survey systems and efforts (e.g., VRO / LSST, NEO Surveyor)

Near-Earth Object (NEO) Characterization

- Findings related to characterizing NEO physical, dynamical, and orbital properties.
- Characterization of properties most crucial to planetary defense mission success and disaster preparation
- Technologies to characterize NEOs via remote sensing and spacecraft flyby/rendezvous/landing
- Current and planned flight missions to NEOs; opportunities from NEO close approaches

Deflection / Disruption Modeling & Testing

- Results of modeling/experimentation that characterize effects of proposed NEO deflection and disruption techniques and technologies
- Progress on key technologies needed to deflect, disrupt, or otherwise mitigate hazardous NEOs

Space Mission & Campaign Design

Development and validation of critical technologies for planetary defense

- Designs for planetary defense flight validation missions
- Rapid response NEO reconnaissance mission concepts
- Design of in-space mission campaigns to hazardous NEOs (reconnaissance, deflection/disruption).

Earth Impact Effects & Consequences

- Hazards of individual impactors; ensemble hazard integrated over the predicted population of impactors
- Analysis tools that could aid decision makers
- Process of atmospheric break-up and airbursts for a variety of NEO types and lessons learned based on

Tunguska and Chelyabinsk super-bolides

- Transition from regional to global effects as a function of impactor size, location, and other factors
- New results on the effects of ocean and land NEO impacts and related damage footprints
- Short- and long-term post-impact effects on the atmosphere, environment, near-Earth space, and space systems (e.g., communications)

Defense Against Impacts on the Moon

- Impact risk on the Moon (and Mars), including risks from small impactors to structures on the airless moon
- Risk on Earth and for satellites from lunar impact ejecta.

Disaster Management & Impact Response

- Lessons learned from past natural disaster responses, exercises, alerts, public education, risk communications strategies and warnings, and their application to Planetary Defense Management
- Review of current and near-future disaster response plans and preparations specific to NEO impacts, incl. communication strategies for warning and informing decision makers, the general public and others
- International perspective on disaster management in view of regional and national asset

Public Education & Communication

- Current status of planetary defense / NEO-related communication and public education efforts, including dissemination, alerts, public engagement, student programs, outreach initiatives, etc.
- Concepts for improving trusted NEO / planetary defense public education and communication

The Decision to Act: Political, Legal, Social and Economic Aspects

The "Decision to Act" session particularly welcomes, and will prioritize, papers engaging directly with the PDC 2027

hypothetical impact scenario and its associated political, legal, social, economic, and decision-making challenges, such as:

- National and international planetary defense / NEO-response policies and decision-making processes, including any envisioned participation of nations' military organizations in planetary defense
- International coordination and collaboration, and distribution of responsibilities during a planetary defense response

- Legal and policy aspects of NEO mitigation
- Cost effectiveness and comparative evaluation of mitigation options
- Short- and long-term economic, political, and social consequences of a serious threat or impact
- Ethical challenges associated with planetary defense decision-making