



Association of Space Explorers NEO Hazard Update

**Progress Report to
COPUOS STSC**

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15 Feb 2011



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Overview

- Introduction
- ASE NEO Hazard Decision-Making
- Results: Mission Planning & Operations Group Workshop
- Opportunities for International NEO Cooperation





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2005



2011

Comet Tempel 1



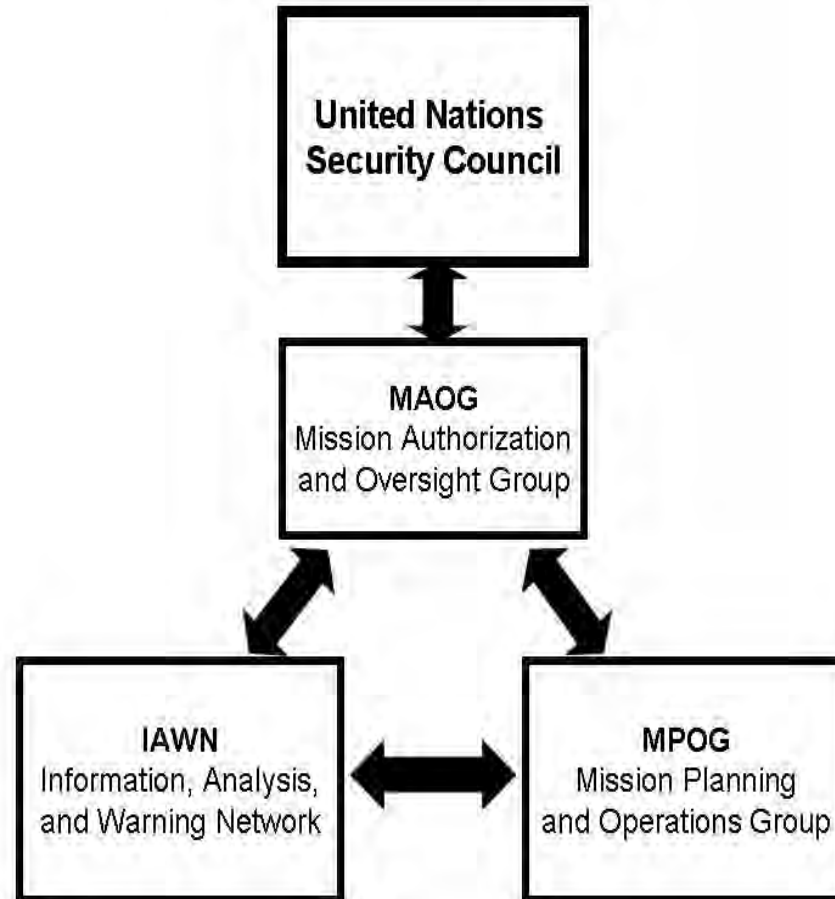
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ASE NEO Decision-Making Process

- Authored by ASE Panel on Asteroid Threat Mitigation, 2007-2008
- “Asteroid Threats: A Call for Global Response”
 - <http://space-explorers.org/committees/NEO/neo.html>
- International Process for NEO Decision-Making
- Functional Diagram for NEO Response Process



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ASE NEO Decision-Making Process

- “Asteroid Threats: A Call for Global Response”
 - <http://space-explorers.org/committees/NEO/neo.html>
- Submitted to COPUOS in 2009
- COPUOS STSC Provides Template for Framework and Future Agreement
- Follow-up Workshops to Define NEO Decision-Making Process



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ASE Co-sponsored NEO Workshop Series, with:

- Secure World Foundation
- Foreign Ministry, Mexico
- Regional Centre for Space Science and
Technology Education for Latin America and
the Caribbean
- European Space Agency
- IAWN Workshop (Mexico City, January 2010)
- MPOG Workshop (Darmstadt, October 2010)





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MPOG Workshop Executive Summary

MPOG Proposed Role:

- Information Requirements Enabling
Planning & Operations
- Deflection Decision & Event Timing
- Evaluate Deflection Concepts
- Cost Models
- Help MAOG Identify Operations
Process



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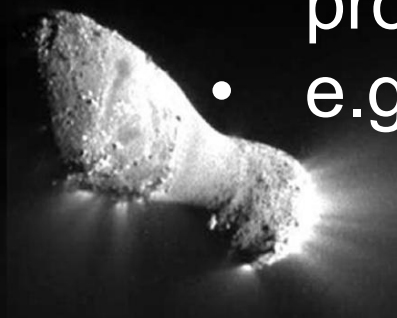
MPOG workshop participants (credit ESA)



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MPOG Workshop Executive Summary Findings

1. MPOG-like group should be established by space agencies
2. Identify to space agencies the technical issues to be explored for planetary defense
 - Create synergies among international programs and activities
 - e.g. planetary defense, science, exploration





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MPOG Workshop Executive Summary Findings

3. Propose NEO Research Objectives to Guide Space Agencies

- Addressing critical areas for effective NEO deflection strategies

5. Recognized value of finding hazardous NEOs early

- Identify threats
- Obtain precision tracking for decision making
- Averts costs of future deflection missions
- Strategy requires upgraded search capability



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Forward Work on NEO Decision-Making

- COPUOS should now endorse the formation and work of IAWN and MPOG
 - Support from member states, space agencies
- Mission Authorization and Oversight Group
 - Multi-lateral discussions at COPUOS among member states, agencies
- Member States & Agencies Cooperate on Technical Research and Programs to Inform Decision-Making



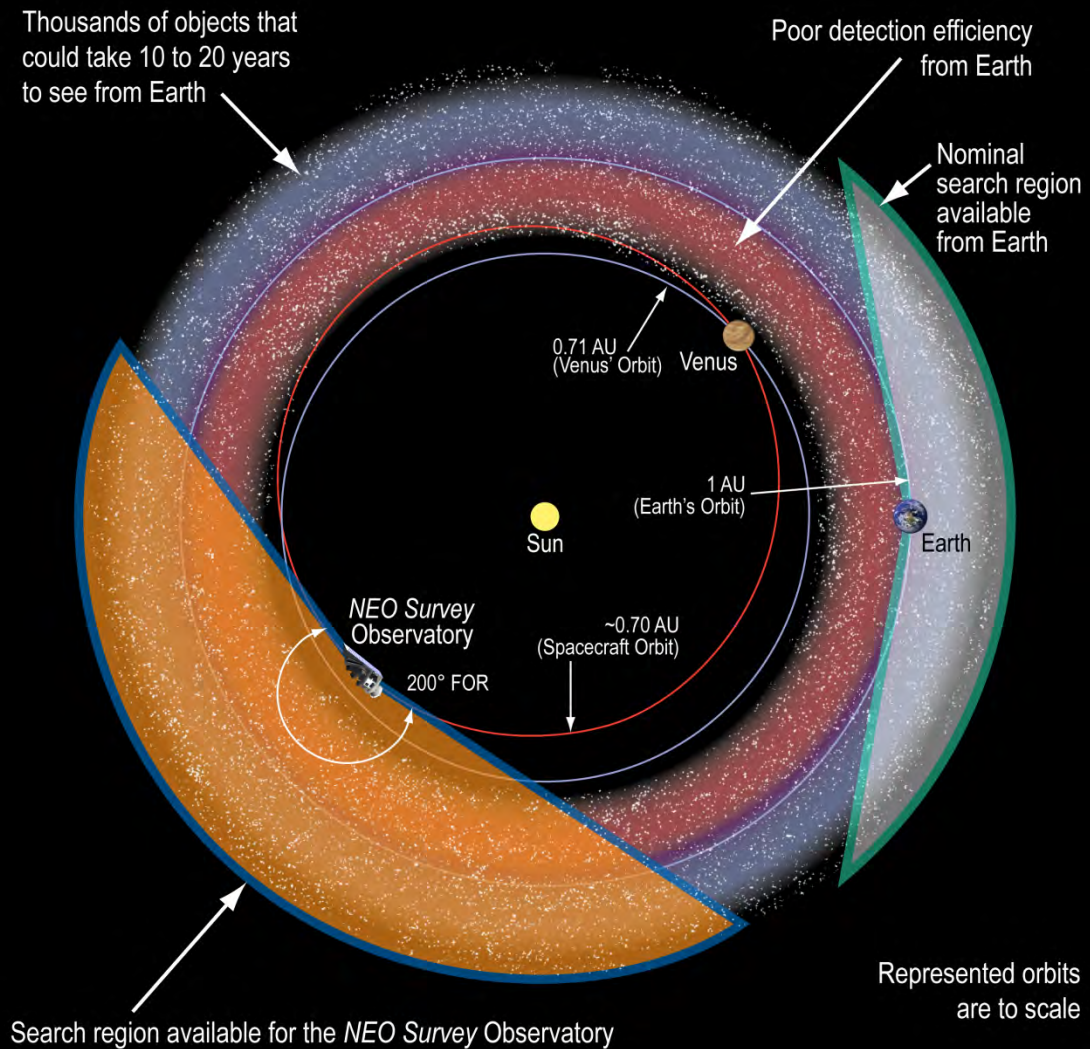
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Opportunities for Further Progress

- Agencies can organize for Planetary Defense
 - Recommendations of NASA ad hoc Task Force
 - Organize, Search, Characterize, Respond, and Lead
 - Highlights: Space-based Search Telescope
 - Last-Minute Warning for Small NEO Impacts
 - International Deflection Mission

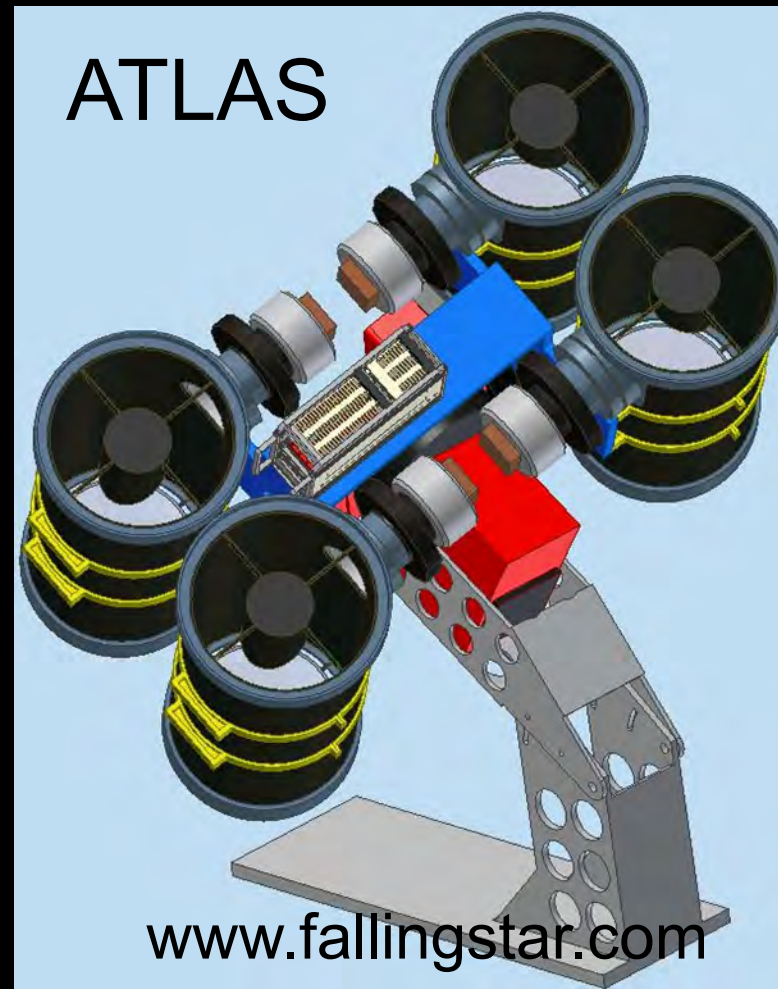


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2008 TC3



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Conclusions

- COPUOS STSC Has Come Far on NEO Hazard
- Global Nature of NEO Hazard Requires Cooperation
- COPUOS Members Should Approve, Support, and Enable the Work of NEO IAWN and MPOG
- ASE's Network of Space Explorers Will Continue to Assist, Educate, Communicate, and Encourage



Association of Space Explorers

Helping Turn the
NEO Hazard into
Opportunity

<http://www.space-explorers.org>