

APOPHIS 2029: A PLANETARY DEFENSE AWARENESS AND EDUCATION OPPORTUNITY. B. Betts¹ and C. Dreier¹, ¹The Planetary Society, 60 S. Los Robles Ave., Pasadena, CA 91101, USA, bruce.betts@planetary.org

Summary: The Apophis flyby in 2029 is the best opportunity to date to raise awareness of all aspects of planetary defense, and to educate the public and policymakers about asteroid science, the actual nature of the broader asteroid threat, what is being done to reduce the threat, and pathways for improving future detection and deflection capabilities. Putting Apophis specific resources in place far ahead of the encounter will increase awareness, raise excitement about this amazing event, and help combat the inevitable misinformation and doomsday bogusness that will arise.

Introduction: Due to the ongoing COVID-19 crisis, the public is unusually attuned to the importance of disaster preparation. The planetary defense community can leverage this current awareness to better share information and achieve positive policy outcomes in support of NEO observations, characterizations, and deflection planning. Additionally, the event-centric nature of the 2029 Apophis flyby, which is estimated to be visible to 2 billion people, will provide a single rallying focus by which to raise awareness of the asteroid threat. The close alignment of these two events provide a truly rare opportunity in the history of planetary defense to shift public and policymaker awareness of NEOs from theoretical into the experiential realm, making the threat “real,” for lack of a better term, and thus more likely to result in real, positive changes to NEO detection and deflection policy across the world.

Apophis Specific Information: Apophis specific resources can include web pages, informational videos, posters, and instructions for viewing the close approach, and interviews with experts. The Planetary Society is developing plans for all of these.

Content provided should include basic information about Apophis and about the 2029 and 2036 encounters including emphasizing it won't hit Earth, and how we know it won't hit Earth. Communications should also include the scientific and planetary defense opportunities that the Apophis encounters represent. There should be a variety of materials on Apophis available far ahead of time – including credible resources for the press, the public, and policymakers.

Preparation for the Apophis encounter should involve strong proactive media plans. When possible, these should include positioning of well-known spokespeople.

Broader communication should include a variety of influence campaigns. These can include social media

including techniques such as hashtag campaigns. Other campaigns can involve volunteers/ambassadors and other individuals directly sharing Apophis information to friends and to groups and schools to whom they are talking. For the actual encounter we will want to put out observing information and encourage observing parties.

Since the Apophis encounter and planetary defense are global in nature, multi-language translations of materials should be produced when possible, including the languages of the nations with the best viewing opportunities during the close approach.

Planetary Defense Information for the Public: A real opportunity exists to use the interest in the Apophis encounters to raise awareness of and educate the public about the broader asteroid threat. The Planetary Society has already been developing such resources as discussed below and plans to develop more. With Apophis as the attention getter, we hope to weave in the story of asteroid impact as an infrequent but real and preventable natural disaster, using the experience of the COVID-19 pandemic as a framework and example of preparation and government response. We can expand on the true nature of the threat and what is being done to prevent future impact and what still needs to be done. In this way, we can get not only a more informed public, but also a public more supportive of planetary defense and asteroid science efforts.

Planetary Defense Information for Policymakers: Similar efforts in information dissemination must be made towards global political leaders, with additional emphasis on the large gaps in the world's preparedness, ideally with a “to-do” list of widely-accepted policy prescriptions to improve NEO detection and deflection capability. The recommendations should address both advanced space-faring nations and nations without space programs. Consistent policy messaging could help achieve permanent improvements to NEO surveillance and deflection capabilities throughout the world.

Background -- Existing Planetary Society Resources: One of The Planetary Society's three core enterprises is Planetary Defense, and a key part of that is a commitment to NEO public and policymaker education. In addition to ongoing coverage of planetary defense through web, print, and radio/podcast, we have several other recent products. As a background to the Apophis discussion and to make the community aware of these resources, they are

summarized here. We hope this will be of use to others wishing to spread awareness and garner support for planetary defense and asteroid science. Links to all of the following resources can be found at: <http://planetary.org/defense>

Web Resources/FAQs:

The Planetary Society has a variety of web information about planetary defense including a well trafficked Frequently Asked Questions page on the asteroid threat. We will be adding additional Apophis information.

The Planetary Society provides unique budgetary analysis and raw data on planetary defense spending by the United States. This highlights the modest levels of investment and demonstrates that there is ample room to grow national investment without significant cost to taxpayers. This helps provide crucial context when communicating to U.S. policymakers. Efforts to expand these data to include other nations will proceed throughout the next decade.

Posters, Stickers and other Products: TPS partnered with space artist and designer Thomas Romer to create a graphic poster that illustrates the effect of past catastrophic impacts, and methods to deflect future asteroid threats. The poster as well as T-shirts, stickers, and pins went to backers of a Kickstarter and can now be purchased. Similar type products could be produced for Apophis.



Also available are the following infographic as well as an accompanying NEO threat overview infographic.



Online Class and Toolkit: We created an online Asteroid Defense 101 course that uses the Teachable interface, images, graphics, video, and humor to give information about the asteroid threat and how to be a Planetary Defender. The short course is taught by Dr. Bruce Betts. Through short video lectures, quizzes and other content it equips viewers in the general public to become actively involved in saving the planet by raising awareness of the asteroid threat.

We have a Planetary Defense toolkit that brings together online several of our resources to aid those who want to share Planetary Defense information.



Other Videos: Also available are the special Planetary Defense editions of The Planetary Society's short, educational, and humorous Random Space Fact videos. This is a set of six videos, each about 1 to 2 minutes in duration. The first episode is an introduction to the threat, and that is followed by 1 episode per step in The Planetary Society 5 step plan for asteroid defense. They use a fun theme of What if the Dinosaurs had a Space Program.



Conclusion: With Apophis 2029, the world will be figuratively and literally looking at a near Earth asteroid more than ever before. So, let's seize this opportunity not only scientifically but also to communicate, advocate, and educate.

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