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**Key International and Political Developments**

**Advancements and Progress in NEO Discovery**

**NEO Characterization Results**

**Deflection and Disruption Models & Testing**

**Mission & Campaign Designs**

**Impact Consequences**

**Disaster Response**

**Decision to Act**

**Public Education & Communication**

**U.S. Department of Commerce/National Oceanic and Atmospheric Administration (NOAA) Support to Planetary Defense and Associated Responsibilities to Prepare for, Warn, and Mitigate Effects of Potential Asteroid or Comet Impacts with Earth**

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**ABSTRACT**

Since the beginning of the recent Planetary Defense efforts, the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA) has supported the White House Office of Science Technology and Policy (OSTP) Planetary Defense multi-agency working groups with the National Aeronautics and Space Administration (NASA), Department of Homeland Security/Federal Emergency Management Agency (FEMA), Department of Defense, and more than half a dozen other Federal Offices. This resulted in the U.S. National Near-Earth Object Preparedness Strategy and Action Plan (June 2018), and the more recent Report on Near-Earth Object Impact Threat Emergency Protocols (January 2021).

The missions of NOAA span the Ocean, Land, Atmosphere, and Space. NOAA routinely develops and provides Tsunami and atmospheric modeling and warnings to other agencies and to the general public. These products and services support natural disaster preparation and event warning notifications and will be used to support emergency management activities in the event of a predicted asteroid impact with regional or global effects. NOAA has operational space environmental missions in Earth’s orbit looking at the atmosphere, land, and oceans, and a deep-space mission to Lagrange Point 1 (L1), a million miles away between the Earth and the Sun, with Geomagnetic-storm warning observations and NASA sensors looking back at the Earth. In its operational space weather role, NOAA helped guide development of the National Space Weather Strategy and Action Plan that was used as a template for the Near-Earth Object Preparedness Strategy and Action Plan. NOAA has a spacecraft sensor, the Geostationary Lightning Mapper (GLM), on the Geostationary Operational Environmental Satellite (GOES) that support observations of the high-energy atmospheric bolide events in Earth’s atmosphere. NOAA provides public safety hazards forecasts and warnings from the National Weather Service (NWS)/National Centers for Environmental Prediction (NCEP) and Tsunami and atmospheric modeling from the NOAA Office of Oceanic and Atmospheric Research (OAR).

This paper will explore these existing support areas and look forward to other potential additional primary and tertiary areas of collaboration in operational environmental and public alert safety support to NASA, FEMA, FAA, DoD, and other agencies in defense of the planet from the effects of impact of near-Earth objects.