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THE POLITICS AND PROCESS OF PLANETARY DEFENSE

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ABSTRACT

The potentially severe consequences of an impact by a Near Earth Object (NEO) require proactive planning for action. Significant events are indeed far between, which has led to a perceived lack of immediate urgency. Although a damaging event tomorrow morning is unlikely, should one occur, it would change life locally, regionally, and beyond. Both likelihood and magnitude determine the risk. As such, deciding how to respond depends on the physical and temporal parameters of the scenario, as well as the state of preparedness maintained locally and globally at the time. Therefore, a decision process that begins well in advance of a hypothetical event will greatly assist and inform real time decisions. The likelihood of impact, the impact corridor, how extensive the damage could be, the mitigation capacity in place, the resources needed for developing such capacity, the size of the mitigation campaign, the global coordination necessary, and what information civil response organizations need to fulfill their respective tasks, are all aspects of the situation a decision maker will need to know at the onset of a threat.

This paper addresses some of these questions and describes a dialog between the decision maker and the technologist for the 2017 International Academy of Astronautics (IAA) Planetary Defense Conference hypothetical asteroid impact scenario. Specifically, the existence of deflection systems at the onset of a crisis versus the lack thereof as two possible states of readiness. Equally important is the debate on whether to launch deflectors early, when the impact uncertainty is high, or to wait for more information at the risk of losing some mitigation options, including the option of sending reconnaissance spacecraft to survey the object before, during and after its deflection. This study produces insights and recommendations concerning the NEO decision process and timing aimed at reducing the NEO threat. Preventing inadvertent shift of risk to other locations, and minimizing risk to life and property, are the goals of the mitigation process. The immediate ability to respond to an evolving threat reduces required resources, and significantly lowers the risk of impact as well as ground damage in the event that complete deflection or destruction of the NEO is impossible. This study recommends that, since proactive decisions regarding mitigation capability development have the capacity to considerably reduce the NEO hazard, such steps are absolutely necessary to assure international safety.
