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(U) **Overhearing Support**

to Humanitarian Relief and
Environmental Research¹

BY (b)(3) 10 USC 424, (b)(6) DDM5/OAEG/PAD

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Since 1969, National Reconnaissance Office (NRO) satellites have provided critical, timely support to humanitarian relief efforts and environmental research. Although NRO sensors cannot always provide early warning of impending disasters, they can

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information critical to decision

makers and relief workers.

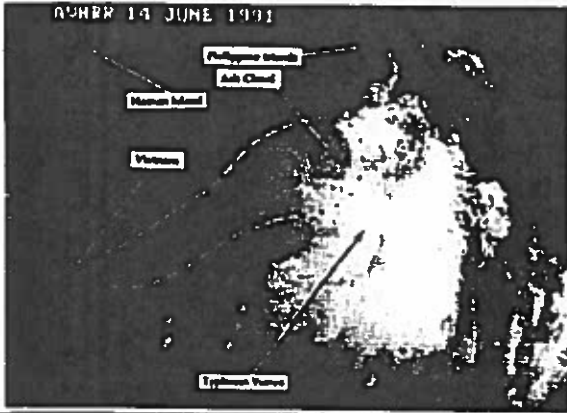
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(Figure 1. Photo is UNCLASSIFIED.)



(U) Figure 1: An image of Mt. Pinatubo plume amidst ongoing Typhoon Yunya, from the National Oceanic and Atmospheric Administration (NOAA)-11 Advanced Very High Resolution Radiometer on June 14, 1991, after the June 12, 1991 volcanic eruption.

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Figure 2. (b)(1)1.4c, (b)(1)1.4e, (b)(1)1.4g, (b)(3) 10 U.S.C. 424

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(U) Hurricanes, tornadoes, earthquakes, wildfires, and floods take hundreds of lives, dislocate thousands of persons, and cause billions of dollars in property damage every year. Between June 2006 and November 2007, an NRO mission partner, the National Geospatial-Intelligence Agency (NGA), supported relief operations during 15 natural disasters within the United States. (b)(3) 10 U.S.C. 424

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and civil agencies provide timely information to first responders engaged in saving lives and immediate disaster relief. Before and after disasters strike, the (b)(3) 10 U.S.C. 424 civil agencies produce and maintain surveys of U.S. infrastructure — emergency services, energy, transportation, Hazardous Materials (HAZMAT) sites, and shelters — to assist federal, state, and local authorities in helping victims recover.

(b)(1)1.4c The NRO's civil support activities during hurricanes Katrina and Rita in 2005 are well known. An equally dramatic illustration of the ability of NRO systems to save lives during a natural disaster was the events surrounding the massive eruptions on June 12-15, 1991, of the Mount Pinatubo volcano in the Philippines. (b)(1)1.4c, (b)(1)1.4e, (b)(1)1.4g, (b)(3) 10 U.S.C. 424

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Even so, the eruption killed 800 people and inundated more than 80,000 homes and 2,000 square kilometers of farmland under a massive mix of volcanic ash and water flows. (b)(1)1.4c, (b)(1)1.4e, (b)(1)1.4g, (b)(3) 10 U.S.C. 424

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especially those in proximity to population centers like [redacted] and map the paths and extent of volcanic ash clouds that pose significant threats to aircraft, humans, and the environment.

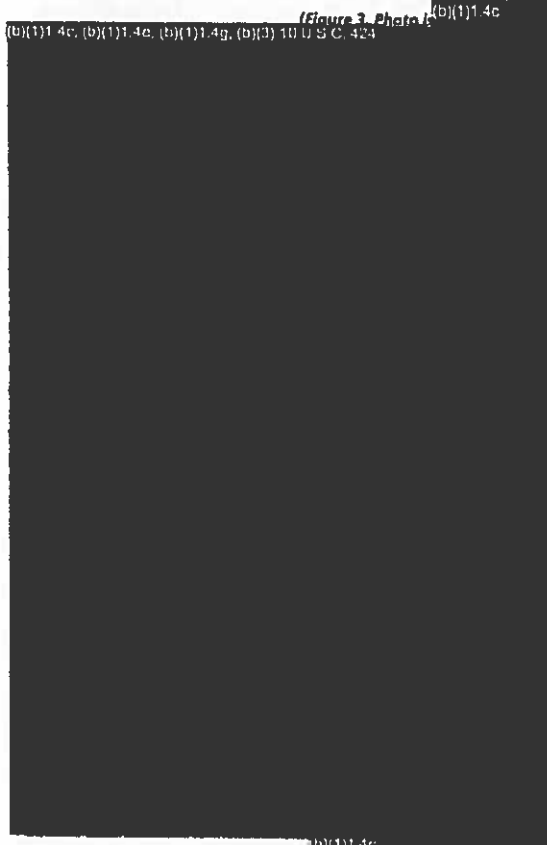
Many humanitarian support activities, such as the relief operations during the [redacted] and Non-Combatant Evacuation Operations, may be in areas experiencing active military conflict.

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(U) Weather-related disasters frequently lead to long-term environmental impacts and NRO systems can support environmental research and recovery efforts. For example, within its Global Fiducials Library, the U.S. Geological Survey (USGS) maintains an archive of classified remote sensing data for more than 500 environmentally sensitive locations. The NRO Imagery Directorate is collaborating with the National Oceanic and Atmospheric Administration in a study of the Louisiana wetlands to protect, restore, and conserve our nation's largest wetlands ecosystem. These wetlands contain some 30 percent of national refining capability, 21 percent of natural gas production, and two of four strategic petroleum reserve sites. Some two million Americans depend on these wetlands for their livelihood.

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(U) [redacted] is a Multi-Discipline Collection Analyst in the Deputy Director for Mission Support, Operational Analysis and Evaluation Group, Problem Analysis Division (DDMS/OAEG/PAD).



(Figure 3. Photo is [redacted])

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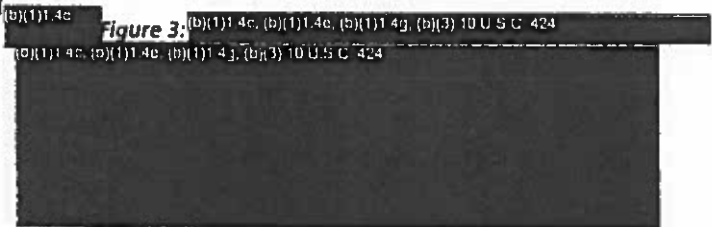


Figure 3: [redacted]

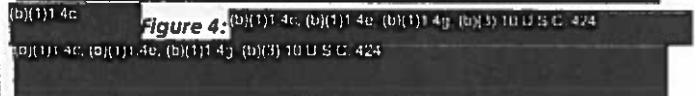
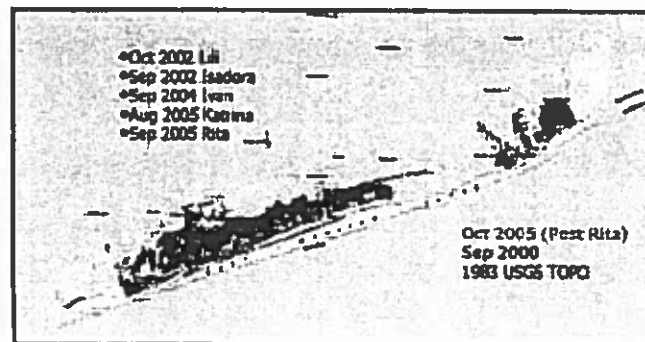


Figure 4: [redacted]

(U) Figure 5: USGS Imagery Derived Product showing the progressive erosion of East Timbalier Island, LA compared to a topographic survey of 1983. Areas in green reflect landmass remaining after Hurricanes Katrina and Rita in 2005. Hurricane Andrew divided the island in 1992.



(Figure 5. Photo is UNCLASSIFIED.)

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