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"Remote Sensing for the Detection, Monitoring
and Mitigation of Natural Disasters"
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OPERATIONAL USE OF ENVIRONMENTAL SATELLITE DATA FOR HAZARDS APPLICATIONS

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ABSTRACT

NOAA relies on Earth observing satellite data to carry out its operational mission to monitor, predict, and assess changes in the Earth's atmosphere, land, and oceans. In NOAA's National Environmental Satellite, Data, and Information Service (NESDIS), satellite data are used to help lessen the impacts of natural and man-made disasters due to tropical cyclones, flash floods, heavy snowstorms, volcanic ash clouds (for aviation safety), sea ice (for shipping safety), and harmful algal blooms along U.S. coastlines.

While NOAA's National Weather Service is responsible for predicting tropical cyclones affecting the U.S. mainland, NESDIS is continuously watching the tropics in all areas of the world, relaying satellite interpretations of tropical system strength and position to users throughout the world. NESDIS scientists send text messages every 6 hours for tropical cyclones in the Western Pacific, South Pacific, and Indian Oceans.

To support the monitoring, prediction, and assessment of flash floods and winter storms, NESDIS sends out text messages alerting U.S. weather forecast offices whenever NOAA satellite imagery indicates the occurrence of heavy rain or snow. NESDIS also produces a 24-hour rainfall composite graphic image covering those areas affected by heavy precipitation.

The International Civil Aviation Organization (ICAO) and other aviation concerns recognized the need to keep aviators informed of volcanic hazards. To that end, nine Volcanic Ash Advisory Centers (VAACs) were created to monitor volcanic ash plumes within their assigned airspace. NESDIS hosts one of the VAACs. Although the NESDIS' VAAC primary responsibility is the continental U.S., Caribbean, and adjacent oceans, it also tracks volcanic eruptions throughout the world. Text messages are produced along with graphic interpretations.

Environmental satellites also help to ensure safe navigation of ships through sea ice by measuring the extent, thickness, and age of ice over the polar regions of the globe, coastal areas, and inland waterways. Finally, environmental satellites help NESDIS to monitor U.S. coastal areas for dangerous algal blooms or other toxic effects to fish and sea mammals.