

The Use of Earth Observation Satellites for Disaster Management: CEOS Disaster Management Support Project

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The world community could better mitigate the human and economic losses caused by disasters if data from current and planned Earth Observation (EO) satellites were used more effectively in disaster management support. Today, meteorological satellites are widely used to detect and track severe storms and to support other weather-driven events. However, operational application of data from these and other EO satellites to support management of other types of disasters (e.g., oil spills, harmful algae blooms, earthquakes, forest fires) is significantly less common. And although there have been a great many research and operational demonstrations, which illustrate the potential usefulness of EO satellite data for other hazards, a thorough understanding of the requirements of the diverse range of users is needed as a first step toward planning for operational support services derived from EO satellite data.

The Disaster Management Support Project of the Committee on Earth Observation Satellites (CEOS) is working with emergency management authorities and other users and data providers to develop and refine a set of requirements profiles for this important application area. The project's objective is to support natural and technological disaster management on a worldwide basis by fostering improved utilisation of existing and planned Earth observation satellite data. The strong enthusiasm, interest, and support for the project are reflected in the participation of nearly 200 individuals representing over 90 organisations. Project meetings held in 1997-98 surveyed extensive work that demonstrated the use of Earth observation data for a wide variety of disaster types and phases. Hazard teams, including both satellite agencies and user organisations, were developed in seven areas: drought, earthquake, fire, flooding, oil spill, tropical cyclone, and volcanic ash. A March 1998 workshop provided an opportunity for experts to assess the extent to which satellite data could be expected to satisfy the needs of organisations responsible for the management of disaster support in these areas. Participants identified specific user requirements, where possible, and developed preliminary recommendations for improving the ability of current and planned systems to meet these requirements. Subsequently, the seven hazard teams refined these findings and produced an interim report for each area.

The teams were charged to accomplish the following tasks for each hazard addressed:

- review existing documentation and current practices in different geographical regions
- compile a concise set of user information requirements for management of the hazard at different phases (mitigation, preparedness/warning, relief/response/recovery)
- identify the user level (international, regional, national, state, local, other)
- characterise the type of use (research, demonstration, operational)
- specify existing practices in using satellite data in the management of the hazard;

- assess the potential of existing or planned satellite data to satisfy the user information requirements;
- analyse shortcomings and gaps; and
- make recommendations for improvements.

Concurrent with the work of the hazard teams, prototype tools are being developed to demonstrate timely access to satellite-derived data and information products to support various facets of disaster management. The U.S. National Oceanic and Atmospheric Administration (NOAA) hosts a project information server (<http://disaster.ceos.org>), which has separate pages for selected disaster types, providing background and bibliographic information, and links to disaster specific Internet sites that provide data and products. A project "Progress Report," including overarching conclusions and interim recommendations from the hazard teams, is available through this server.

While strong support from CEOS agencies, user agencies, and other organisations has been visibly evident, the project seeks yet broader participation from users and providers of data and services, both government and private sector, to participate in overall project planning, the hazard teams, the development of the disaster information server and support for rapid access to relevant data and information products.

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