Distr.: Limited
23 July 1999

Original: English

THIRD UNITED NATIONS CONFERENCE ON THE EXPLORATION AND PEACEFUL USES OF OUTER SPACE

Vienna
19-30 July 1999
Committee II
Agenda item 8
Status and applications of space science and technology

Technical Forum

Conclusions and proposals of the Workshop on Remote Sensing for the Detection, Monitoring and Mitigation of Natural Disasters, organized by the International Society for Photogrammetry and Remote Sensing and the European Association of Remote Sensing Laboratories

1. The conclusions and proposals below concern paragraphs 34, 41, 42, 44, 69, 74, 75, 79, 80, 82, 86, 90, 91, 94-99, 102, 106-119, 127, 136-139, 301, 302 and 339 of the draft report of the Third United Nations Conference on the Peaceful Uses of Outer Space (UNISPACE III) (A/CONF.184/3 and Corr.1 and 2).

2. Remote sensing provides scientists with the data needed for predictive modelling of natural disasters, for appraisal of the damage caused and for mitigation of the deleterious effects that precede or accompany the disaster. Remote sensing is also recognized as an essential source of information in the initial detection and near real-time observation of the effects of search, rescue and assistance efforts. Many international cooperative activities are now being developed through the efforts of organizations such as the Committee on Earth Observation Satellites and through international bilateral arrangements. The Workshop on Remote Sensing for the Detection, Monitoring and Mitigation of Natural Disasters reviewed the status of those international efforts and offered the following conclusions:

(a) In order to use remotely sensed data effectively in relation to natural disasters, crisis management systems must be in place. That would allow for planning and collaboration between relevant agencies and rapid response to emergencies;

(b) Considerable international cooperative efforts are needed to use remote sensing data and other information to develop indicators of disaster-prone areas and mitigation strategies and scenarios;

(c) Space-imaging, communication and positioning systems can be effective tools for the management of earthquake hazards. Space-borne imaging systems can provide indicators, maps and measurements of quake-prone areas that can be used for evacuation routing, urban planning and vulnerability statistics;

(d) More research is needed on the potential advantages of new Earth observing remote sensing systems with higher resolution, more spectral bands or active sensors (interferometric synthetic aperture radar and light radar (lidar);

(e) Space-borne synthetic aperture radars have demonstrated their effectiveness in producing all-weather remote sensing imagery of oil pollution effects, especially for the detection of oil pollutants, in measuring extent, direction and growth and in identifying pollutant sources in international waters;

(f) Many remote sensing methods have been developed to assess the potential of geological hazards and to appraise the damage caused. They include methods for the integration of multi-sensor data to improve lithological mapping in tropical environments, landslide mapping and analysis of volcanic and associated hazards;

(g) Satellite remote sensing has been shown to be beneficial in identifying environmental indicators to produce risk maps of desertification, soil erosion and desalinization, deforestation, overgrazing and overdevelopment;

(h) Early warning systems rely on satellite imaging systems for the detection of early stages of flooding, forest fires, volcanic eruptions and the effects of certain pollutants;

(i) The detection and characterization of hazardous waste sites require high spatial and spectral resolution remote sensing from visible, infra-red and radar satellite images.

3. Satellite data are used operationally to lessen the impact of natural disasters such as tropical cyclones, flash floods, heavy snowstorms, volcanic ash clouds, sea ice, toxic effects on coastal waters and harmful algal blooms.

4. In conclusion it can be stated that many techniques using Earth observation data are being used effectively to manage natural disasters, but more effort is needed to make disaster prediction a reality and to plan responses. More research is needed to integrate new data sources and to exploit them effectively.