

# Mastering Disasters from Space

Never before in history has mankind lived with so many people, so close together, on such small pieces of land. Levels of urbanisation all over the world are extremely high; everywhere, rural populations are migrating to the metropolises and megalopolises in an attempt to snatch a few crumbs falling from the table of wealth generated by an expanding global economy. And these streams of rural people attracted to the economic shimmer of the cities grow by the day. In pre-Christian times an Egyptian pharaoh never ruled over more than a million people. Today the mayor of a moderately sized city such as Amsterdam or Copenhagen rules over the same number. But there are also many mayors who govern more than five million citizens, some ten million and a few over twenty million. These are numbers undreamed of by any pharaoh.

## Devastating

Many migrants moving from rural areas to cities have to make do with poor housing, cope with lack of potable water, breathe polluted air and are engaged in a permanent battle to fill the stomachs of their children and themselves. That is one side of the coin. The other is that indigent people living in high concentrations within confined areas and in poorly constructed dwellings are very vulnerable to both natural and manmade disaster. It is said that “disasters and poverty compound each other in a vicious cycle”. There is no doubt that the effects of the destructive forces of nature are becoming increasingly devastating, especially in developing countries. And because population growth and urbanisation goes on and on and on, the level of destruction and the number of victims whenever a hurricane, fire, earthquake or flood strikes will only increase; at least, if no countermeasures are taken.

## Stewardship

Recent years have shown many initiatives to cope with disaster. The mastering of disasters from space also features on the international agenda. Governments and international organisations increasingly recognise the value of permanent observation of the Earth from orbiting platforms as a means of disaster management. The data collected from space can be of benefit for risk reduction, damage assessment and recovery. Europe has initiated the GMES project, formally adopted in 2001 (see the article by Ulrich Boes and Daniela Stoyneva in this issue), while the US Commercial Remote Sensing Policy was authorised on 25th April 2005 by the US President. US policy provides guidance for licensing and operation of the US commercial remote-sensing space systems and the use of their products by US government and foreign institutions and organisations. The policy aims to “advance and protect national security and foreign interests by maintaining the nation’s leadership in remote sensing space activities and by sustaining and enhancing remote sensing industry.” Envisaged spin-offs of the US policy are that it will foster economic growth, contribute to environmental stewardship, and enable scientific and technological excellence.

## GMES Flagship

The European Global Monitoring for Environment and Security (GMES) aims at using remote-sensing data, especially today’s wealth of very high-resolution satellite data, to improve monitoring of the European and global environment for sustainable management of resources and security of citizens. One GMES goal is directed towards European self-provision with respect to the production of very high-resolution satellite images, so that the continent becomes independent of US commercial remote-sensing firms. The programme is considered a European flagship next to the Galileo navigation system. But somehow there is a lack of widespread awareness of the GMES initiative and many projected services have not yet got off the ground.

## Study Effectiveness

The US and European initiatives are mainly directed towards supporting the collection and dissemination of space data for support of managing disasters taking place on their own respective territory. The United Nations, on the other hand, is more globally orientated; with respect to space-borne data the organisation focuses its attention primarily on developing countries. During the UNISPACE III conference held in 1999 one recommendation flagged up the need “to implement an integrated, global system, especially through international co-operation, to manage natural disaster mitigation, relief and prevention efforts, especially of an international nature, through Earth observation, communications and other space-based services, making maximum use of existing capabilities and filling gaps in worldwide satellite coverage”. During its 59th session the UN General Assembly approved a study to examine the possibility of establishing an international entity to provide co-ordination and the means for optimising the effectiveness of space-based services for use in disaster management.

Although the above initiatives are still mainly languishing at policy, research and study level, they do offer good hope that somewhere in future Earth observation from space may contribute to a significantly safer world. A world in which disasters can be managed in such a way that loss of lives and demolition of economies can be minimised. In the meantime, the Japan Aerospace Exploration Agency has recently launched “on 24th January 2006 to be precise” the Advanced Land Observing Satellite Daichi, one of the aims of which is to carry out earth observation for sustainable development and global disaster monitoring.

Somehow it seems that the United States puts all its efforts into maintaining world leadership, Europe and the United Nations carry on talking, while only Asia acts.