GROUP ON
EARTH OBSERVATIONS

PRESS RELEASE

GEO announces free and unrestricted access to full Landsat archive

Universal availability of cost-free satellite data and images will revolutionize the use of Earth observations for decision-making

Bucharest, 20 November 2008 – In a breakthrough announced here today by the Group on Earth Observations (GEO), scientists and decision-makers around the world will soon have unrestricted access at no charge to the Landsat archive, the world's most extensive collection of continuously-acquired remotely-sensed satellite imagery.

"Remote-sensing satellites are impartial and essential recorders of the fast-moving story of the Earth's changing surface," said José Achache, Director of the GEO Secretariat. "Landsat's nearly four decades of accumulated Earth imagery data will provide an historical record that, combined with continuous updates, will make it possible to interpret and anticipate changes to the Earth's surface with far greater certainty than ever before."

Although satellites have been observing the Earth for several decades, access to the collected data has been limited. Free and open access to Earth observation data, however, is of critical importance to science-based decision-making about the global environment and the management of natural resources. GEO is therefore working to build an international consensus on a set of Data Sharing Principles that can be adopted at a GEO Ministerial Summit in 2010.

"GEO's announcement last year that the China-Brazil Earth Resources Satellites (CBERS) would distribute its images free-of-charge was an essential first step. Today's announcement means that the unique and invaluable Landsat archive – already used by perhaps a few thousand scientists and experts – will now be accessed by millions of users. The European Union has also recently announced a free data policy for the Sentinel satellites that it will soon launch. These measures will boost global efforts to tackle climate change, deforestation, natural disasters, disease epidemics, resource depletion and other challenges. We are entering a new era in environmental monitoring," said Mr. Achache.

Beginning with the launch of Landsat I in 1972, the Landsat satellites have produced an impressive archive of 2 million space-based, moderate-resolution images. From 400 miles above the Earth, the scale of Landsat imagery makes it particularly useful for analyzing and addressing natural and human-induced changes to the planet's surface. By the end of this year, the full collection will, for the first time, be readily available on-line to users around the globe.

Among its many applications, Landsat data have helped to map the aftermath of the devastating 2004 tsunami in Southeast Asia, examine the potential links between deforestation and environmental problems in Romania, study the impacts of rapid urban growth in China, develop policies to safeguard fragile ecosystems in South Africa, and identify the threats of post-hurricane flooding and wildfires in the US.

Landsat was developed by the US Geological Survey and the National Aeronautics and Space Administration (NASA), which work closely with the European Space Agency and a network of ground stations in 13 countries. This international Landsat partnership ensures virtual coverage of the global land mass. Like most Earth observation satellites, Landsat uses sensors to measure solar light reflected off the Earth's surface. The ground stations around the world receive these measurements as data. The data are then converted into digital images.

Some examples of the important services that the Landsat archive and other remotely sensed imagery can provide include:

- **Evaluating climate change impacts.** One of the fastest growing areas in Romania is a section of the northern part of Bucharest where continued development is putting pressure on forests and other natural cover. Because land cover change affects climate at the local and regional levels, a time series of Landsat data is being used to monitor and evaluate the link between land cover change over a 20-year period and its impact on climate. The data is being entered into models as a basis for planning strategically for future urban growth.

- **Monitoring ecosystems.** Aside from the world's tropical ecosystems, South Africa's Cape Floristic region has the greatest concentration of plant species in the world. The dominant type of vegetation is the fynbos, a shrubland comprising hard-leafed evergreen, fire-adapted shrubs. Landsat coverage over the decades shows how large tracts of fynbos have been cleared for agricultural use and urban expansion. Scientists monitoring ecosystem changes use the Landsat imagery acquired over time to develop policy guidelines to protect and preserve fragile ecosystems. Based on Landsat data, managers may limit access to the most endangered species and restrict the conversion of shrublands to agricultural use.

- **Urban planning.** Three decades of Landsat coverage show the rapid expansion of cities in China's Shanghai region. Monitoring the growing road network between these cities helps planners anticipate regional infrastructure needs and identify areas that can accommodate further growth. Urban planners use Landsat data to measure the size and location of current roads and then match that information with the direction of growth to aid in determining where new roads are needed. The loss of cropland is evaluated and new farming areas are established, increasing the efficiency of food distribution to the growing population. Landsat's objective measurements are also valuable tools for studying the impact of growth on water supplies and coastal ecosystems, especially since growing cities have an enormous impact on ground water resources. Landsat imagery is also used for monitoring sites for new wells and drainage in fragile ecosystems. Similarly, in Las Vegas, Nevada, which is the fastest growing large city in the US, planners use Landsat data to help anticipate infrastructure such as water systems, road networks, school development and utility load.

- **Responding to natural disasters.** Comparing the Landsat coverage acquired in 2001 to the coverage acquired in the days following the 2004 tsunami made it possible to pinpoint the devastation along the northwest coast of Sumatra. Emergency response managers used the imagery to evaluate destruction along coastlines, river channels and estuaries. Because the tsunami intruded as far inland as three kilometers, Landsat imagery was used to evaluate the destruction to forests, cropland, and population centers. The data also aided the decision-makers responsible for relocating former population centers and determining emergency evacuation routes.

The Group on Earth Observations was established in 2005 after the World Summit on Sustainable Development (WSSD), the Group of Eight leading industrialized countries (G8) and three ministerial Earth Observation Summits all called for improving existing observation systems. Its membership now includes 74 countries and the European Commission; 51 "participating organizations" also contribute to its work.

GEO is coordinating the construction of the Global Earth Observation System of Systems. GEOSS addresses nine priorities of critical importance to the future of the human race. It aims to help countries to protect themselves against natural and human-induced disasters, understand the environmental sources of health hazards, manage energy resources, respond to climate change and its impacts, safeguard freshwater resources, improve weather forecasts, manage ecosystems, promote sustainable agriculture, and conserve biodiversity.

Note to journalists: For more information, see www.earthobservations.org, http://landsat.usgs.gov/, www.esa.int or www.cbers.inpe.br, or contact Michael Williams of the GEO Secretariat at +41 79 572 9628, +41 22 730 8293 (after 23 November), or mwilliams@geosec.org.