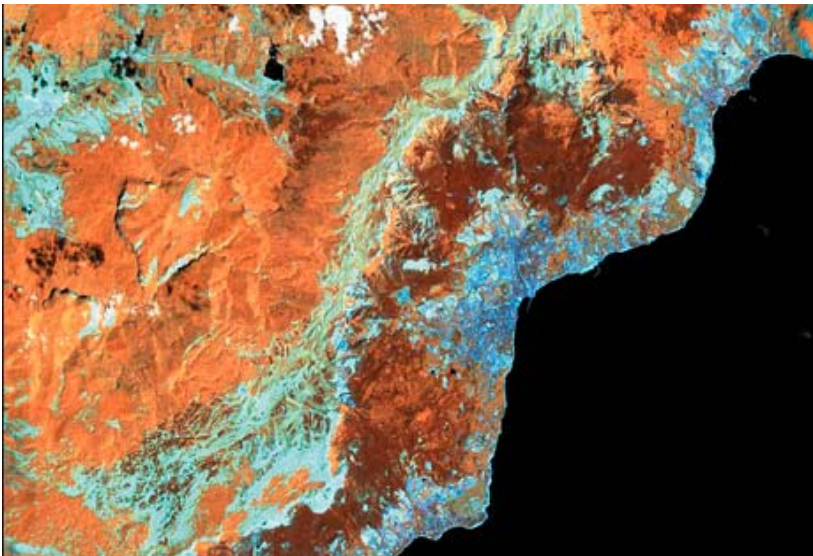


## LANDSAT data reception resumed in Russia

The U.S. Geological Survey (USGS) – the LANDSAT remote sensing program operator – completed the certification of two Russian ground stations for the LANDSAT-5 satellite data reception. LANDSAT project, managed by NASA and the USGS, is applied for global survey of the Earth surface at middle resolution under the international Mid-Decadal Global Land Survey (MDGLS) Project. The program objective is updating of the global Earth map of land cover and land use change to support the assessment of the climate change impacts and of human activities on the planet, based on comparative analysis of the image, collected within 34-year history of the American civil LANDSAT program. An international network of 14 stations has been executing a coordinated data reception campaign from the LANDSAT-5 satellite. For the first time, two Russian small-size stations, located in Moscow and Irkutsk, have joined the network.

Along with the relatively “new” Landsat-7 satellite, its predecessor - LANDSAT-5 – is being currently used. The LANDSAT-5 satellite was launched in 1984 and, despite a record lifetime of 22 years for this type of satellite, is still operating effectively (original expected satellite lifespan – 3 years). The long-liver satellite was reactivated after LANDSAT-7 satellite began experiencing problems. Despite its age, Landsat-5 keeps on delivering images of good quality. The principal imaging sensor on-board is the Thematic Mapper (TM) – an optical mechanical scanner, providing imagery with a swath width of 185KM at a spatial resolution of 30 meters in 6 spectral bands of the visible, near and middle infra-red bands and 120 meters in a single thermal band.



Yalta surroundings, Landsat-5 view

Landsat-5 satellite is to be operated on until December 2007 or until the onboard equipment fails. During this period it is anticipated to take images of the entire planet surface, including the Russian territory with the help of the Russian ground receiving stations. Our country has been imaged with Landsat satellites in the past.

For example, during the “cold war” the USA used the Landsat images for more accurate estimations of the crop yield in former USSR and other countries. This system data was acquired by foreign stations only and was available to the Russian users with a great delay. For example, on September 20, 2002 Landsat-7 took images of the Kolka glacier on the Caucasus Mountains just 8 hours prior to the Karmadon glacier catastrophe. However, these images were sent to the Spitsbergen station and became available only several months later: Moscow State University scientists made their September 20, 2002 reports public at the International Conference in 2005.



Now the Landsat-5 images can be acquired in Russia and will be processed with minimum time delay. Russian specialists from the ScanEx R&D Center, which stations are receiving satellite data, has worked out the software enabling to do geometric corrections of images due to an old age of the space vehicle.

**Batumi, June 1, 2006, Landsat-5**

Landsat data became a worldwide quality standard among the middle resolution images: a great number of spectral bands (including the thermal one), high geometric and radiometric parameters, wide swath, high efficiency, accurate calibration, a comprehensive and easy-to-access archive. Very few space systems of other countries can still replenish the data gap due to the Landsat-7 failure.

The destiny of Landsat program was unclear for a couple of years. Following several unsuccessful attempts to find investors and to privatize the system, the US president administration issued a memo dated December 23, 2005 instructing NASA to purchase a special satellite to replace the Landsat-7 and to continue data collection. The new satellite can be launched in 2010-2011.



**Logging dynamics in Ust-Ilimsk District of Irkutsk Region for the 10-year period (logging areas are in light brown) per LANDSAT-5 (1992) and LANDSAT-7 (2002) images.**

LANDSAT is still a state-budget and interdepartmental program with USGS as its operator, performing image processing, archiving and distribution.

Despite an increasing demand for submeter resolution images nowadays, the middle resolution data is still required to resolve certain socio-economic tasks, pertaining to the assessment of events covering large territories so typical for Russia.

Data operational efficiency becomes a critical parameter giving impetus to the creation of a network of universal ground receiving stations worldwide for direct remote sensing data reception as well as multi-satellite systems with the imager instruments. Russia's ingress into the international cooperation for remote sensing data collection will enable to saturate the Russian market with geospatial data and to develop new processing techniques and find new applications.

Sources: USGS ([www.usgs.gov](http://www.usgs.gov)) and ScanEx sites ([www.scanex.ru](http://www.scanex.ru))