

Micro-sats for Maxi-monitoring



A new 400-kg mini-satellite with small onboard high-resolution radar will appear on orbit in 2013, opening up new possibilities for operational detailed imagery of emergency situations. The small radar satellite has been being developed at British company SSTL since 2009, as reported by RS department head Luis Gomes at the last, 13th MDDC Meeting in February.

The conference was attended by representatives from six Disaster Monitoring Constellation (DMC) member countries (Great Britain, Nigeria, China, Algeria, Spain, Turkey), the European Space Agency, UK government departments, geo-informatics innovation companies from Japan, China, Netherlands and Russia.

The orbital fleet of DMC includes 7 small optical satellites: AlSat-1 (Algeria, 2002), NigeriaSat-1 (Nigeria, 2003), UK-DMC and UK-DMC 2 (UK, 2003 and 2009), Beijing-1 (China, 2005), BilSat-1 (Turkey, 2006) and Deimos-1 (Spain, 2009). In 2011 NigeriaSat-2 and NigeriaSat-X will be put into orbit. DMC system enables daily imaging of any spot on Earth in multispectral mode (2, 3 and 4 bands of Landsat) at the spatial resolution of 32m (1st generation satellite) and 22m (2nd generation satellites) in a swath of 600 km wide.

National operators of small satellites allocate a portion of free resources on behalf of UN and the International Charter for Space and Major Disasters for imaging emergencies, for example the Indian Ocean tsunami consequences (2004), Katrina hurricane (200), Haiti (2010) and New Zealand earthquakes (2011).

DMC Imaging International (DMCII) commercial company was established in the interests of commercial use of DMC satellite resources and contracted to undertake activities to delineate areas of felled Amazonian forests, opium poppy plantations in Afghanistan, and to evaluate productivity of agricultural regions.

The February conference summed up the results of the past decade of DMC Consortium operations and discussed the vision for the next decade of the Disaster Monitoring Constellation. Simon Wright, vice-chair of the Parliamentary Space Committee, and Dave Williams, chief executive of the UK Space Agency, opened the meeting, noting that thanks to SSTL, Great Britain had become a leader in small satellite systems. National operators of DMC satellites also took the floor, as well as space-data users and developers of geo-information technologies.

ScanEx RDC Vice-President Olga Gershenzon spoke during the DMCC13 about the Russian space technology in the field of satellite imagery. Nowadays, the technology developed at ScanEx Center has been efficiently applied for monitoring emergency consequences in near real-time mode with satellite data broadly used for timely decision-making.

Results of the multi-satellite monitoring of fire situation and Russian rivers spring floods sparked interest of the conference participants. Considering climate and natural specifics of the country, monitoring of the territory conditions and progress in hazardous natural and human-induced processes plays a strategic role in prevention and mitigation of damage.

SSTL has been specialising in the manufacture of mini and micro satellites since 1984. Out of 34 launched satellites, 25 are equipped with Earth-observation sensors. New satellites Kanopus-B №1 (Russia) and BelKA-2 (Belarus), to be launched in 2011, have also been designed based on SSTL platform. The reason for the company's success is the introduction of technology innovations parallel with reduction in project costs. SSTL company is not subsidised by the UK government; however, it won several state contracts on the basis of competition.

The DMC system will later be replenished with new satellites: a 10m-resolution radar satellite with 100km swath, and an optical 350-kg 0.7 m resolution satellite with scene size of 17km. The price of all mentioned SSTL projects is lower than that of other traditional satellites. The company has also developed EarthMapper project, aimed at regular global Earth imaging with high frequency and the resolution of 22m without placing orders in advance.

SSTL's activity demonstrates a new innovative approach to remote sensing based on the application of private capital and new forms of international cooperation, along with reduction in financial expenses.

