



## REMOTE SENSING APPLICATION IN OIL AND GAS INDUSTRY

Oleg Sizov, Alexander Aloltsov, and Natalia Rubtsova  
JSC SOVZOND, Russian Federation (kabanin@yandex.ru)

The main environmental problems of the Khanty-Mansi Autonomous Okrug (a federal subject of Russia) related to the activities of oil and gas industry (82 active companies which hold 77,000 oil wells). As on the 1st of January 2013 the subject produces more than 50% of all oil in Russia. The principle of environmental responsibility makes it necessary to minimize human impact and ecological impact.

One of the most effective tools for environmental monitoring is remote sensing. The main advantages of such approach are: wide coverage of areas of interest, high temporal resolution, precise location, automatic processing, large set of extracted parameters, etc. Authorities of KhMAO are interested in regular detection of the impact on the environment by processing satellite data and plan to increase the coverage from 434.9 to 659.9 square kilometers with resolution not less than 10 m/pixel.

Years of experience of our company shows the significant potential to expand the use of such remote sensing data in the solution of environmental problems. The main directions are: monitoring of rational use of associated petroleum gas (detection of all gas flares and volumes of burned gas), monitoring of soil pollution (detection of areas of oil pollution, assess of the extent of pollution, planning of reclamation activities and assessment of their efficiency, detection of potential areas of pipelines corrosion), monitoring of status of sludge pits (inventory of all sludge pits, assessment of their liquidation), monitoring of technogenic impact (detection of changes), upgrading of a geospatial database (topographic map of not less than 1:50000 scale).

Implementation of modeling, extrapolation and remote analysis techniques based on satellite images will help to reduce unnecessary costs for instrumental methods.

Thus, the introduction of effective remote monitoring technology to the activity of oil and gas companies promotes environmental responsibility of these companies.