

## GEOINFORMATION MONITORING IN SIBERIAN FEDERAL DISTRICT

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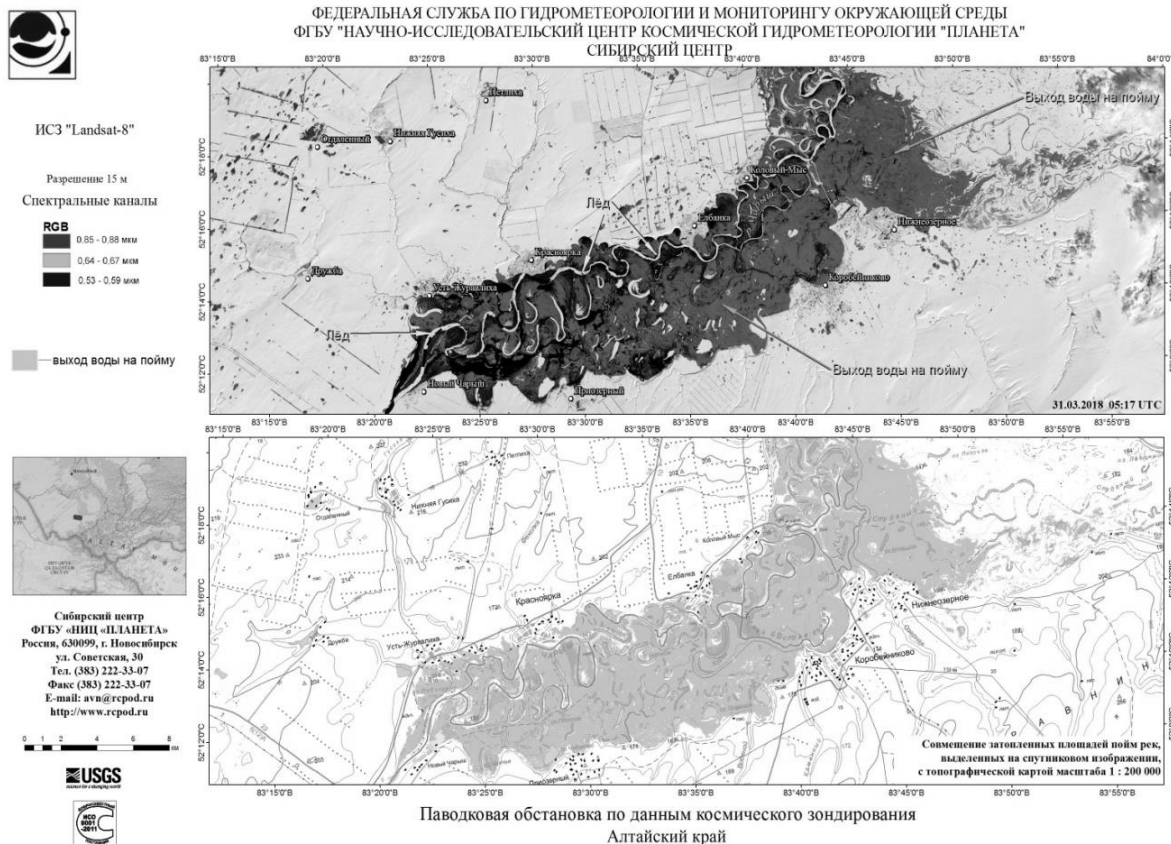
**Abstract.** The article reviews the main types of information products provided by Siberian Center «SRC «Planeta» for satellite environmental monitoring within the territory of Siberian Federal District.

**Key words:** satellite data, geoinformation technologies, regional monitoring

The Siberian center of fsbi "SIC" Planeta " carries out operational reception and processing of various types of information of both Russian and foreign spacecraft. As a result of the received satellite data thematic processing within the territory of Siberian Federal District different kinds of information products are delivered in the following areas: meteorological and aerological information, ice and snow cover conditions, flood and fire hazard situation, environmental pollution by industrial facilities and the grain crops status, etc. [3]

Exceedingly important tasks are the operational monitoring of hazardous events such as floods and fires that need permanent control [1; 2]. A priceless advantage of satellite data is the large spatial coverage of the explored territory and the diversity of spatial resolution of received satellite information allows to create any thematic products on different detail levels. Earth remote sensing data allows to monitor the vast territories of our region on a daily basis without a direct observer presence in the study area. The obtaining of reliable and up-to-date information is carried out without threatening the life and health of the observer, unlike with the terrestrial methods of information collection. Prepared themed products are transferred to the regional services of the Ministry of Emergency Situations and used as an additional source of information for situation assessment, for the decision-making to prevent negative process development or for the catastrophes consequences elimination. Tens of thousands of forest fires occur annually on the territory of the Russian Federation, spreading over an area of up to 2 million hectares. In addition to the destruction of the country's forest fund in a fire hazardous season, residents of nearby settlements are also at risk. Using remote sensing data allows to determine the area and the coordinates of fires, the distance of fires from human settlements, smoke zone, direction and speed of fire spread, etc. Geoinformation analysis of remote sensing data in the process of flood situation monitoring provides information on the state of water bodies (see figure 1), the flooded area, the speed of flood wave attack, etc. The accumulation of the time series of statistical information makes it possible to identify the areas of the territory most frequently flooded as a result of high water.





**Figure 1.** Flood Monitoring on the territory of Altai Region [3]

Besides the use of satellite information while operational monitoring of hazardous phenomena, remote sensing data can also be used as additional information to provide tourism activities, environmental observations, agricultural production, retrospective data analysis for temporal change detection. Based on the analysis of long-term series of remote sensing data, it is possible to estimate native objects changes that have occurred under the influence of anthropogenic or natural factors as: forest areas changes, the development of neglected areas, the expansion of urban areas, the evaluation of riverbed deformation, dehydration or reservoirs storage, etc.

## References

- [1] Antonov V N and Novgorodceva O G 2015, Flood situation monitoring and mapping in the Siberian Federal District, *The collection of writings in 2 volumes of the International scientific conference "Remote Sensing and Photogrammetry, Environmental Monitoring, Geoecology", The XI International Exhibition and Scientific Congress "Interexpo GEO-Siberia 2018"*, April 13–25, 2015, **vol. 2**, pp. 104-110. Novosibirsk, Russia
- [2] Zav'jalova D Yu 2015, Fire hazardous situation operational monitoring in the Siberian Federal District, *All-Russian Conf. Proc. "Spatial data processing in natural and anthropogenic processes monitoring tasks"*, Ust-Sema village, August 24-28, 2015, pp. 209-213. Altai Republic, Russia
- [3] The official site of Siberian Center FGBU "SRC "Planeta" 2018, URL: <http://www.rcpod.ru> (Accessed 28 April 2018).(in Rus)

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