

INFORMATION SYSTEM OF DISTANT MONITORING OF THE FEDERAL AGENCY OF FORESTRY «ICDM – ROSLESKHOZ»

Kotelnikov R.V.
«Avialesookhrana», Russia

Introduction

The creation of the Information system of distant monitoring (ICDM) started in 2001 by the whole crew of specialists according to the order and direct participation of the Central base of aviation forest protection – Avialesookhrana. The main performer is the Institute of space investigation of the Academy of Science of Russia.

Structure of ICDM – ROSLESKHOZ

Incoming information (data from the subjects of Russian Federation, metrological information, data of thunderstorm direction finder and partly Д 33) is moving into the managing server of ICDM – ROSLESKHOZ (Pushkino city, «Avialesookhrana») in which the main thematic treatment and management of all the distant junctions take place.

For provision of safety and stability of system there is a full functioning reserve managing server physically located in Moscow. Besides, all the processed thematic information (with the exception of imagery) web-servers, located in every center of ICDM – ROSLESKHOZ.

The operative distribution of space photographs of middle quality in the territory of Russian Federation is provided of the expense of functioning the centers of ICDM – ROSLESKHOZ (Krasnyarsk, Habarowsk, Irkutsk, Hanti-Mansiisk, Novosibirsk) and their functions includes the preliminary processing of imagery.

All information (including processed imagery, coming to centers of ICDM – ROSLESKHOZ) is structured, catalogues and archived into archives in the data bank and it is accessible from geoinformation system integrated into web-interface.

Out coming products in the form of table accounts or geographically affected composed pictures in GPS format with attributive information are accessible for the registered users in any point of the Russian Federation through Internet.

Possibilities of System

- prognosis and monitoring of fire danger
- detection and monitoring forest fires in action
- estimation of forest fire area
- preliminary estimation of damage of forest stands from fires (including exposure of destroyed stands)
- comparison of data of ground aviation and space observations, including back connection with regions
- Interaction in one GIS-interface of complex information (top bases, Д 33 and attribute data with the aim of supporting managing decisions in the field of monitoring of forest fire situation, control for the given to the subjects authorities and estimation of effectiveness of subvention use.
- Formation of data on the dynamic of changing forest fund not connected with forest fires for using them as initial data for systems monitoring of forest use and sanitary state of forests.

Technical characteristics

- detection of burnings on urea's from 0,1 to 50 ha (depending from weather conditions and intensively of burning)
- efficiency of burning registration from 4 to 12 hours (dependant from frequency of satellite flight in different regions)

- precision of coordinates determination from 250 to 500 meters (depending from the width of burning point)
- estimation of burning area from 100 to 1000 ha – with accuracy to 30% - if over 1000 ha with accuracy to 5%

Shortcomings

- there are mistakes in detection of fires on the territories of forest fund because of absence of data about precise borders of forest lands
- low preciseness of prognoses of forest fire behavior as well as complications of adequate estimation of effectiveness of fire suppression due to absence of forest inventory information

Perspectives of ICDM – ROSLESKHOZ

Integration with ICDM of the forest inventory information will allow to do in the operative way:

- prognostication behavior of forest fires
- prognostication the possible damage (for taking decision about fire suppression)
- estimation of real damage from forest fires and other negative consequences
- automation of process of bringing in changes in calculation of forest fund
- increasing the quality of distant control for the authorities given to subjects of Russian Federation in the field of forest relations and estimation of effectiveness of subvention.