

3.2. SPACE MEANS OF THE EARTH MONITORING

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Space means provide a unique opportunity for diagnostics and monitoring of terrestrial objects in the global scale.

In the Earth remote sensing (ERS) from space the physical, chemical, biological, geometrical characteristics of observation objects are determined with using a functional dependence between them and measured parameters.

As diagnostics means, the spacecrafts (SCs) are used, which are equipped with on-board measuring devices functioning in all accessible (for ERS) radio-frequency ranges (UV, VIS, IR, NIR, TIR, MW) with the resolution on terrain from tens cm up to units kms. Here, both passive and active sensing techniques are applied.

From the system approach viewpoint, ERS can be productively explicated by functioning of some information space system solving a particular target task.

The efficiency of ERS space means (SCs) is achieved due to properties determined by a vector of information, dynamical, and system parameters of a system.

In structurizing the ERS target tasks one can distinguish basic directions, which present the hydrometeorology and monitoring of the Earth. The later one includes: monitoring of natural resources, ecological systems, emergency situations and dangerous natural phenomena.

Space means are called to play exclusive part in diagnostics of emergency and critical situations caused by the anthropogenous activity and natural phenomena.

One should relate to these phenomena and situations the following ones:

ANTHROPOGENOUS AVTIVITY

MILITARY CONFLICTS
TERRORISM
ACCIDENTS ON TRANSPORT
ACCIDENTS IN PIPELINES,
ON TRADES
NARCOTIC BUSINESS
FIRES
ACCIDENTS ON DANGEROUS
OBJECTS

NATURAL PROCESSES

EARTHQUAKES
TSUNAMI
TROPICAL CYCLONES
FLOODS
DROUGHTS
NATURAL FIRES
ACTIVITY OF VOLCANOS

The efficiency of ERS space means is demonstrated on three of aforementioned processes:

- early diagnostics of forest fires and estimation of their consequences;
- diagnostics of the narcobusiness base – the plantations of vegetation of narcotic-containing plants;
- monitoring of tropical cyclones.