

Methodological Aspects of Information Resources Integration in Space-Based Facilities for Emergency Monitoring and Forecasting

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Abstract. The article reviews the methodology of integrating space information resources for short-term forecasting of natural and anthropogenic emergencies. The purpose of such integrating is to increase the success rate, accuracy and timeliness of emergency forecasts with limited expenses connected with the improvement of the monitoring system for emergency forecasting. The target of the research is a system for monitoring and forecasting of natural and man-caused emergencies. The scope of the research covers integration types of information resources in a system that are determined by integration of data, knowledge and the stages of monitoring information processing. Particularities of each integration type are illustrated with Petri nets. A selection mechanism is suggested for possible multiple variants of resources integration, determined by the integration types, the number of system elements and the number of estimated parameters. The logic of the mechanism is reflective of development possibilities of the system and of the realization of its integrated variants. It is emphasized that the integration of information resources of the emergency monitoring and forecasting system should be started with integration of data and knowledge on the previous processing stages. Potential result is a monitoring and forecasting system with few branches that includes all stages of processing of the monitoring information.

Keywords: data integration, knowledge integration, integration stages of information processing, Petri nets