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LOCAL REMOTE SENSING IN EMERGENCY SITUATIONS

Abstract

Remote sensing is one of the key tasks for artificial Earth satellites. In simplified form a remote sensing consists of next phases: defining coordinates of required territory, compiling an application for remote sensing, transmitting the application to a satellite, remote sensing and transmitting obtained photos to ground-based station. Remote sensing could be divided on a planned mode and a rapid response mode (in a case of emergency situations). A planned remote sensing is used when duration of respond is not critical. This mode is appropriated for agriculture, forestry, cartography, hydrology, geology and meteorology. For such kind of monitoring it is enough one satellite and one ground-based station for transmitting/receiving information. Duration of receiving asked information is no more than 2 days. Remote sensing with rapid response is necessary in cases of man-made or natural disasters, in cases when time of receiving appropriated information is very important. The realization of this mode could be considered for two variant: global and local remote sensing. Global remote sensing is aimed for monitoring big areas of Earth. It can use two ways for solving this purpose: installing a network of ground stations with one main control center or the use of satellite communication systems. Local remote sensing. In this case, a task emergency monitoring for a required location is posed initially. The ground-based station is set up in a place where a satellite can see it and required location in the same time. In a moment of direct visibility satellite receives a command for remote sensing, then does a remote sensing during current revolution (if it is possible) or next one and transmits information to the ground-based station. This work considers advantages and difficulties of local remote sensing territory in emergency situations. Will be offered: a method for determination of optimal orbital parameters of remote sensing satellite and ground based station location for more effective survey of required territory; criterias for designing satellites' constellation for faster reaction on an emergency request.