

## Disaster Management Supported by Unmanned Aerial Systems

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**Abstract :** Introduction: This paper describes many initiatives and shows also practical examples which happened recently using Unmanned Aerial Systems (UAS) to support disaster management. Since the operation of manned aircraft at disasters is usually not only expensive but often impossible to use as well, in many cases managers fail to use the aerial activity. UAS can be an alternative moreover cost-effective solution for supporting disaster management. Methods: This article uses thematic division of UAS applications; it is based on two key elements, one of them is the time flow of managing disasters, other is its tactical requirements. Logically UAS can be used like pre-disaster activity, activity immediately after the occurrence of a disaster and the activity after the primary disaster elimination. Paper faces different disasters, like dangerous material releases, floods, earthquakes, forest fires and human-induced disasters. Research used function analysis, practical experiments, mathematical formulas, economic analysis and also expert estimation. Author gathered international examples and used own experiences in this field as well. Results and discussion: An earthquake is a rapid escalating disaster, where, many times, there is no other way for a rapid damage assessment than aerial reconnaissance. For special rescue teams, the UAS application can help much in a rapid location selection, where enough place remained to survive for victims. Floods are typical for a slow onset disaster. In contrast, managing floods is a very complex and difficult task. It requires continuous monitoring of dykes, flooded and threatened areas. UAS can help managers largely keeping an area under observation. Forest fires are disasters, where the tactical application of UAS is already well developed. It can be used for fire detection, intervention monitoring and also for post-fire monitoring. In case of nuclear accident or hazardous material leakage, UAS is also a very effective or can be the only one tool for supporting disaster management. Paper shows some efforts using UAS to avoid human-induced disasters in low-income countries as part of health cooperation.

**Keywords :** disaster management, floods, forest fires, Unmanned Aerial Systems

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