VÉDELEM TUDOMÁNY
KATASZTRÓFAVÉDELMI ONLINE TUDOMÁNYOS FOLYÓIRAT

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THE CORRELATION OF CLIMATE CHANGE AND THE DISASTERS DUE TO PRECIPITATION IN HUNGARY

Abstract

Today, disaster management organizations, beside their traditional duties in fire prevention, civil protection and disaster management have to face serious challenges with special regard to the security and disaster management questions posed by climate change. As a segment of adaptation to the effects of climate change everyone has a role, a right and a responsibility, from citizens, to professional disaster management bodies, to those involved in home security. There is a tendency for the extremity of precipitation to increase. Precipitation is either too much or too little, which can cause both inland water and drought in the same area, in the same year. According to domestic climate change experts, in parallel with the decrease in precipitation, it will be typical that the extremity of precipitation will continue to increase, so the frequency of floods, lightning floods, inland waters and droughts is also expected to increase.

Keywords: climate change, extreme rainfall, hydrological disasters

ÖSSZEFÜGGÉSEK AZ ÉGHAJLATVÁLTOZÁS ÉS A CSAPADÉK HATÁSÁRA KIALAKULÓ KATASZTRÓFÁK KÖZÖTT

Absztrakt

A hivatásos katasztrófavédelmi szerveknek napjainkban – a hagyományos tűzvédelmi, polgári védelmi és iparbiztonsági feladataikon túl – nagyon komoly kihívásokkal kell szembenézniük az éghajlatváltozás biztonsági és katasztrófavédelmi vonatkozásaival összefüggésben. Az éghajlatváltozás hatásaihoz való alkalmazkodás részeként, a katasztrófák megelőzése és az ellenük való védekezés mindenkinek joga és kötelezettsége az állampolgároktól a hivatásos

katasztrófavédelmi szerveken át, a nemzeti védekezésben résztvevő szereplőkig. Egyre inkább általánossá váló jellemző hazánkban a csapadékhullás szélsőségessége. A túl sok és a túl kevés csapadék is egyaránt káreseményekhez vezethet. Előfordul, hogy ugyanazon a területen, ugyanabban az évben előfordul belvíz és aszály is. (Pl: 2018.). Az éghajlatváltozással összefüggésbe hozható csapadékcsökkenés ellenére jellemző a csapadékhullás szélsőségessége (hirtelen lezúduló nagy mennyiségű csapadék), így az árvizek, belvizek, villámárvizek, települési elöntések és az aszályok gyakorisága és intenzitása is növekszik.

Kulcsszavak: éghajlatváltozás, extrém csapadékhullás, hidrológiai katasztrófák

1. INTRODUCTION

Unusual and extreme natural phenomena and weather anomalies have become more frequent. They effect the whole of society, therefore we have to start adapting to them in all social and economic fields.The nature wishes to signal to us that it is unfortunate to strengthen the effects of climate change with the pollution of the environment and our way of living, which does not respect nature and is wasteful, because the environment will answer with drastic weather anomalies and natural disasters.Based on the experiences of the past years, it can be concluded that extreme, immoderate weather events – which can be associated with the global climate change – have become more and more frequent, intensive and bear ever more striking features, such as the fall of sudden, torrential precipitation in great volumes or the appearance of a form of precipitation previously not charachteristic for the season (such of snowfall in March 2013., or the deluge rainfall in May 2017. Budapest) [1]

It is a fact, that the events occurring due to these extremities place extra duties on today's disaster management organizations, and put coping strategies in a different light with regard to prevention, response and recovery as well.

2. DISASTERS DUE TO EXCESS RAINFALL

In my view, a clear and close correlation can be revealed based on the experiences gained from the past years and decades between the changes in these features of precipitation and the increased risk of the occurrence of disasters if hydrological origin. [2]

In Hungary the precipitation fall immensely various quantity year by year, and it's distribution in the year is immensely various too.[2]

The water shortage and the excess water might be problem in social level, if there isn't effecient response for the resulting extreme situations, for example flash floods, inland water, drought, or shortage of drinking water)

In May and June 2018, and in 2019 too, at the national level, occured lots of damage wich was correlate extreme rainfall as good as week in week out. (For example flash floods, water flooded part of villages, dilapidations and glissade of flood protection build- ups.) And after these events, from July to November in 2018. there was so lack of rainfall, that the water level of Danube was record law. [1]

Resulting the extreme rainfall, the most- singificant damages are in the built environment.

The intense rainstorm usually occure with ice falling, and high wind. The reconstruction after this events is intensified challange for the whole society in our days.

The extreme weather situations in public events, like open- air festivals can cause mass panic, and in this case grow the chance of personal injurys.

The forecast of the extreme intensity and quantity precipitation is real limited. The type, the quantity, and the roughly place of rainfall is predictable, but the intensity of rainfall not.

Now this parameter causes the most significant problems, because the limited capacities of the zanjons. It's not just the same, that as many precipitation fall dawn in one hour or one day.

If the zanjons can't lead away the extreme intensity rain, the water will deluge the deeper areas, for example garages, cellars, or underpasses.

3. DISASTERS DUE TO LACK OF RAINFALL

As a result of climate change, in the context of global warming, declining rainfall has been predicted for decades by researchers. Unfortunately, the process has already begun, and today the global problem is the declining quantity and deterioration of the quality of available water resources.

Extremely hot periods with higher temperatures, summer heat waves and declining rainfall, such as increasing the length of dry periods, are projected to increase the likelihood of droughts due to the effects of climate change.

As a result of climate change, summer is characterized by extremely high temperatures and extremely little rainfall, and as a secondary effect, drought is associated with drought.

Drought due to water scarcity and desertification are less of a “spectacular” disaster than damage caused by excess water. They are slow-moving, however, they can cause significant damage and affect the functioning of society in many areas.

In addition to crop production and agriculture, the effects of drought negatively affect all living organisms, from flora, fauna to humans. Through drought affects, the damage caused the natural environment directly and also society and the economy indirectly.

The adverse effects of drought on agriculture are the most significant of the economic sectors, as they are directly affected by drought damage in this area. By examining the relationship between crops and climatic and hydrological factors, the severity of drought and the extent of specific damage can be determined. The raw materials needed to produce food come from agriculture, and as a result, the detrimental consequences for agriculture also affect the food industry. Trade can respond to rising prices to compensate for losses in agricultural crops, food processing, trade and energy use.[3]

Forests play a very important role in the global ecosystem, so the damage caused by drought in forestry is also dangerous. A prolonged drought period can cause severe damage to the forest ecosystem. The leaves of trees may fall prematurely, their canopies may deform, their yields may decrease, and pests and infections may multiply in the trees. The risk of wildfires

increases during dry, droughty periods. These fires cause enormous ecological and economic damage.[3]

Livestock is directly and indirectly affected by drought. Prolonged drought and water shortages put a strain on the animals, but the extent of this depends on the species, breeds and housing conditions involved. In addition to the direct effect, among the indirect effects.[3]

4. OPPORTUNITIES TO PREPARE THIS EVENTS

In order to develop a high level of social values related to water, it is essential to inform the citizens and to raise the necessary public, educational and public information awareness.

I believe that the basis of the efficiency, quality and performance of all professions, including the defense sector, is high-quality, up-to-date education. In my opinion, it is extremely important to include the dissemination of knowledge on climate change, including the problem of drought and the disasters due to extreme rainfall, in the training of disaster management (and other professionals in the defense sector), as this will give them the knowledge that highlights the causal links between natural disasters and climate change and the effectiveness of preparedness and response. [4]

The other hand the hungarian Disaster Risk Interpretation includes the impacts of climate change, and with this in mind determines the hungarian disaster risk.

Every County Disaster Management Directorate make terminally an emergency prognosis in virtue of the experiences of predecessor year. This prognosis forecast the potential situations and in this context prepare the human and technical device both.

5. CONCLUSION

Climate change has been a much debated subject for many years now. According to some opinions, there is no causal link between the changes in the climate and the frequently occurring

natural phenomena that are becoming more extreme and unusual. These voices suggest that it has to be accepted that unprecedented *blizzards, floods, storms and other natural disasters* can occur any time.

Today, the mitigation of the harmful effects of climate change and the compliance with these effects have to be regarded as a global goal.

The past few years have brought the recognition of the importance of this problem in Hungary, and the realization that it is not enough to talk about it, actions are needed.

Unusual and extreme natural phenomena and weather anomalies have become more frequent. *They effect the whole of society*, therefore we have to start applying to them in all social and economic fields.

It is particularly important in the field of disaster management to prepare for the challenges posed by the weather extremities caused by climate change becoming more frequent and intense. It is a fact, that the events occurring due to these extremities shift extra duties to the disaster management organizations of today, and put coping strategies in a different light with regard to prevention, response and recovery as well.[4]

Today, the presumption that disaster management organizations, beside their traditional duties in fire prevention, civil defense and disaster management have to face serious challenges with special regard to the *security and disaster management questions* posed by climate change, has become relevant. I focused on the management of disasters of hydrologic origin, in particular on the *prevention of floods, inland excess water, local damages caused by water, flash floods and droughts*.

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