

CLIMATE CHANGE AND EXTREME EVENTS

V. Cuculeanu¹, M. Pavelescu²

Abstract. *The characteristics of extreme weather events- heat waves and heavy precipitations and their potential relation with the climate change process due to the antropogenic greenhouse effect are assessed. For this purpose the observational data and climate model predictions for extreme events existing in international and national scientific publications are examined*

Keywords: climate change, extreme events, heat wave, heavy

1.Introduction

In this paper the potential impact of climate change on extreme weather events is discussed. There is increasing concern that extreme events may be changing in frequency and intensity as a result of human influences on climate. Climate change may be perceived most through the impacts of extremes, although these are to a large degree dependent on the system under consideration, including its vulnerability and capacity for adaptation and mitigation. An extreme weather event becomes a disaster when society and/or ecosystems are unable to cope with it effectively. The existing scientific literature shows that observational meteorological data as well as the climate model predictions for the future society development scenarios make evident an increasing frequency of occurrence of the extreme weather events with the temperature increase of the Earth due to antropogenic greenhouse gases. The trend in the global numbers of great natural catastrophes since 1950 shows a significant increase in the largest weather-related disasters - from about 1 event in the 1950s to about 5 in recent decades while geophysically caused disasters (earthquakes, tsunamis, volcano eruptions) have increased from 1 to less than 2 in the same time [1]. Weather related disasters therefore are the major contributor to increasing losses due to natural disasters.

Aspects of extreme weather events including *heat waves, heavy precipitation* are examined in this paper. Section 2 presents the glossary of specific terms. Theoretical considerations regarding the occurrence probability of the extreme events are discussed in the Section 3. Section 4 deals with the observational data regarding the extreme weather events whose frequency and intensity were modified by the warming of climate. Section 5 presents the state of the extreme events as is predicted by the climate change models for emission scenarios of greenhouse gases. Conclusions are given in the Section 6.

¹ Academy of Romanian Scientists – Corresponding Member, 54 Splaiul Independentei, Bucharest 050094, Romania

² Academy of Romanian Scientists – Full Member, 54 Splaiul Independentei, Bucharest 050094, Romania