

Chapter 1

The Enigma of Drought

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INTRODUCTION

Drought is the most complex and least understood of all natural hazards, affecting more people than any other hazard (Hagman, 1984). For the past several decades, we have been reminded again and again of the ravages of drought and the inability of most societies to effectively mitigate impacts in the short term and reduce vulnerability in the longer term. In fact, most scientists would agree that vulnerability to drought is increasing for a number of reasons, the most important of which may be the increasing pressure of an expanding population base on limited water and other natural resources.

The purpose of this chapter is to lay the foundation for an understanding of the concept of drought. The primary emphasis of the chapter will be on understanding the concept of drought and why, according to Hagman (1984), the phenomenon is not better understood by scientists and policy makers. Drought is a normal part of climate and its recurrence, like other extreme climatic events, is inevitable. Through a better understanding and awareness of the characteristics of drought and its differences from other natural hazards, both scientists and policy makers will be better equipped to establish much-needed policies and plans whereby vulnerability can be reduced or stabilized for future generations.

DROUGHT: AN OVERVIEW

Drought differs from other natural hazards (e.g., floods, tropical cyclones, and earthquakes) in several ways. First, since the effects of drought often accumulate slowly over a considerable period of time and may linger for years after the termination of the event, a drought's onset and end are difficult to determine. Because of this, drought is often referred to as a "creeping phenomenon" (Tannehill, 1947). Second, the absence of a precise and universally accepted definition of drought adds to the confusion about whether or not a drought exists and, if it does, its degree of severity. Realistically, definitions of drought must be region and application (or impact) specific. This is one explanation for the scores of definitions that have been developed. Unfortunately, many of these definitions have not adequately defined drought in meaningful terms for

scientists and policy makers. This is the result, at least in part, of misunderstandings of the concept by those formulating definitions. Third, drought impacts are less obvious and are spread over a larger geographical area than are damages that result from other natural hazards. Drought seldom results in structural damage. For these reasons, the quantification of impacts and the provision of disaster relief are far more difficult tasks for drought than they are for other natural hazards. These characteristics have hindered the development of accurate, reliable, and timely estimates of drought severity and impacts and, ultimately, the formulation of drought contingency plans by most governments.

Drought is a normal part of climate for virtually all climatic regimes. It occurs in high as well as low rainfall areas. Drought differs from aridity in that the latter is restricted to low rainfall regions and is a permanent feature of the climate. Many people associate the occurrence of drought with the Great Plains of North America, east Africa, west African Sahel, India, or Australia; they may have difficulty visualizing drought in Southeast Asia, Brazil, western Europe, or the eastern United States, regions perceived by many to have a surplus of water. For example, residents of many humid regions often refer to “green droughts” (i.e., droughts associated with apparent ample rainfall but reduced agricultural productivity because of poor timing of rains or ineffective precipitation). Thus, the character of drought is distinctly regional, reflecting unique meteorological, hydrological, agricultural, and socioeconomic characteristics.

Drought is the consequence of a natural reduction in the amount of precipitation received over an extended period of time, usually a season or more in length, although other climatic factors (such as high temperatures, high winds, and low relative humidity) are often associated with it in many regions of the world and can significantly aggravate the severity of the event. Drought is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness of the rains (i.e., rainfall intensity, number of rainfall events).

Drought severity is dependent not only on the duration, intensity, and geographical extent of a specific drought episode, but also on the demands made by human activities and vegetation on a region’s water supplies. The characteristics of drought, along with its far-reaching impacts, make its effects on society, economy, and environment difficult, though not impossible, to identify and quantify. The significance of drought should not be divorced from its societal context. The impact of a drought depends largely on societal vulnerability at that particular moment. Subsequent droughts in the same region will have different effects, even if they are identical in intensity, duration, and spatial characteristics.