



What is Drought?

Drought is a normal, recurrent feature of climate, although many erroneously consider it a rare and random event. It occurs in virtually all areas, whatever their normal climate may be, and the characteristics of a drought may be very different from one region to another. Technically, drought is a “temporary” condition, even though it may last for long periods of time.

Drought is an insidious hazard of nature. Unlike many disasters which are sudden, droughts result when there is less than normal precipitation over an extended period of time, usually a season or more. The decreased water input results in a water shortage for some activity, group, or environmental sector. Drought can also occur when the temperature is higher than normal for a sustained period of time; this causes more water to be drawn off by evaporation. Other possible causes are delays in the start of the rainy season or timing of rains in relation to principal crop growth stages (rain at the “wrong” time). High winds and low relative humidity can make matters much worse.

Drought is not a disaster for nature itself, the disaster occurs when we consider the demand people place on their water supply. Human beings often increase the impact of drought because of high use of water which cannot be supported when the natural supply decreases. Droughts occur in both developing and developed countries and can result in economic and environmental impacts and personal hardships. All societies are vulnerable to this “natural” hazard.

Operational Definitions of Drought

Drought is difficult to define precisely, but operational definitions often help define the onset, severity, and end of droughts. No single operational definition of drought works in all circumstances, and this is a big part of why policy makers, resource planners and others have more trouble recognizing and planning for drought than for other natural disasters. In fact, most drought planners now rely on mathematic indices to decide when to start implementing water conservation or measures in response to drought.

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Research by Donald A. Wilhite, director of the National Drought Mitigation Center, and Michael H. Glantz, of the National Center for Atmospheric Research, in the early 1980s uncovered more than 150 published definitions of drought. The definitions reflect differences in regions, needs and disciplinary approaches. Wilhite and Glantz categorized their collection of definitions into four basic approaches to measuring drought: meteorological, hydrological, agricultural and socioeconomic. The first three approaches deal with ways to measure drought as a physical phenomenon. The last deals with drought in terms of supply and demand, tracking the effects of water shortfall as it ripples through socioeconomic systems.

Meteorological Drought

Meteorological drought is usually measured by how far from normal the precipitation has been over some period of time. These definitions are usually region-specific, and presumably based on a thorough understanding of regional climates. The following examples of “meteorologic droughts” from different countries at different times show why it is a poor idea to apply a definition of drought developed in one part of the world to another:

- United States (1942): less than one tenth inch of rainfall in 48 hours
- Great Britain (1936): fifteen consecutive days with daily precipitation totals of less than one hundredth of an inch
- Libya (1964): when annual rainfall is less than 7 inches
- India (1960): actual seasonal rainfall is deficient by more than twice the mean deviation
- Bali (1964): a period of six days without rain.

Under any circumstances, meteorological measurements are the first indicators of drought.

Agricultural Drought

Agricultural drought occurs when there isn't enough soil moisture to meet the needs of a particular crop at a particular time. Agricultural drought happens after meteorological drought but before hydrological drought. Agriculture is usually the first economic sector to be affected by drought.

Hydrological Drought

Hydrological drought refers to deficiencies in surface and subsurface water supplies. It is measured as streamflow, and as lake, reservoir and ground water levels. There is a time lag between lack of rain and less water in streams, rivers, lakes and reservoirs, so hydrological measurements are not the earliest indicators of drought. When precipitation is reduced or deficient over an extended period of time, this shortage will be reflected in declining surface and subsurface water levels.

Socioeconomic Drought

Socioeconomic drought is what happens when physical water shortage starts to affect people, individually and collectively. Or, in more abstract terms, most socioeconomic definitions of drought associate it with the supply and demand of an economic good.