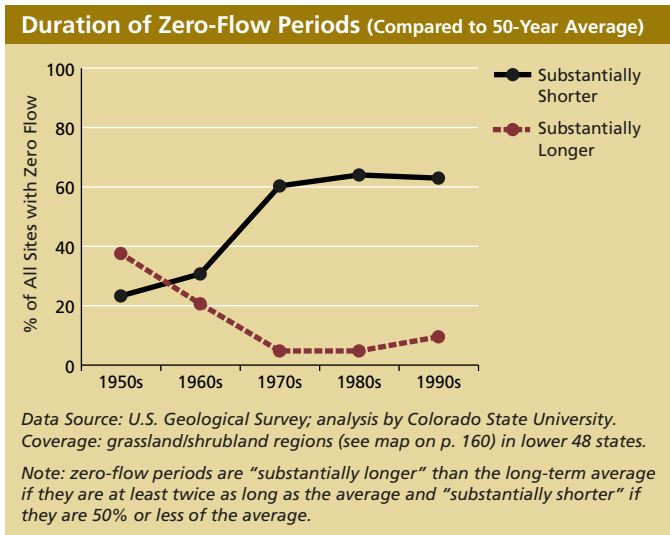
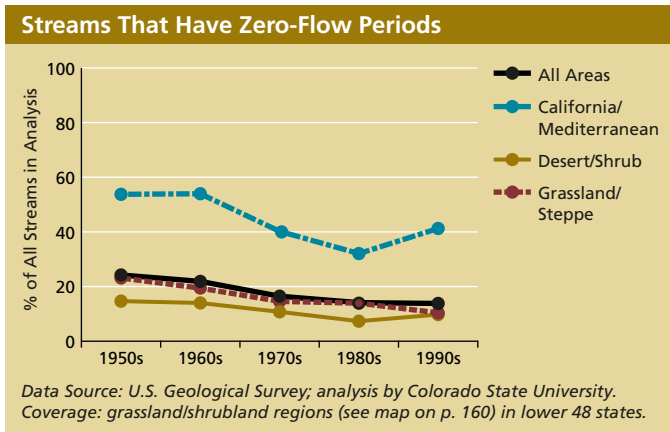




SYSTEM DIMENSIONS	CHEMICAL AND PHYSICAL	BIOLOGICAL COMPONENTS	HUMAN USES
Extent Pattern	Nutrients, Carbon, Oxygen Contaminants <b>Physical</b>	Plants and Animals Communities Ecological Productivity	Food, Fiber, and Water Recreation and Other Services

## ● Number and Duration of Dry Periods in Grassland/ Shrubland Streams and Rivers



**What Is This Indicator, and Why Is It Important?** The indicator tracks the frequency and duration of zero-flow conditions for streams and rivers in grassland/shrubland regions. It reports the percentage of streams and rivers that have at least one no-flow day per year, and the percentage where the duration of zero-flow periods for a given period is substantially longer or shorter than the long-term average.

Stream flow is the lifeblood of uncountable plant and animal species, as well as a major source of water for agricultural, municipal, and other uses. Changes in stream flow can affect plants and animals accustomed to particular levels of flow. No-flow periods may lead to a loss of fish and aquatic animals (although some will survive short periods of zero flow in pools). Depending on the length of the no-flow period, streamside vegetation and the wildlife habitat it provides will gradually be lost. In other cases, the absence of a no-flow period (as in regulated flow below a dam) may also lead to shifts in the animals and plants living in and around streams and rivers.

Some no-flow periods occur naturally. Others occur because of increased water use for domestic, irrigation, or other purposes, or because of changes in land use (e.g., grazing or development) or vegetation that modify the flow of surface water and the recharge of groundwater (e.g., expansion of deep-rooted vegetation such as piñon-juniper woodlands can draw down surface aquifers). No-flow periods may also be due to changing

weather or climate, such as the longer periods of drought in recent decades (e.g., mid-1970s), while return of year-round flows may coincide with wet periods (e.g., mid-1980s).

**What Do The Data Show?** The percentage of streams with no-flow periods has decreased in all grassland/shrubland regions of the West. The 1950s and 1960s showed similar percentages of no-flow, while the 1970s, 1980s, and 1990s recorded noticeably lower percentages. During the relatively wet 1980s, both the California/Mountain and the Desert/Shrub ecoregions had a noticeably lower percentage of streams and rivers with no-flow periods, although the California/Mountain region consistently has the highest percentage of no-flow streams.

The number of streams and rivers with longer than average zero-flow periods decreased in the 1970s, 1980s, and 1990s, compared to the 1950s and 1960s.

The technical note for this indicator is on page 259.