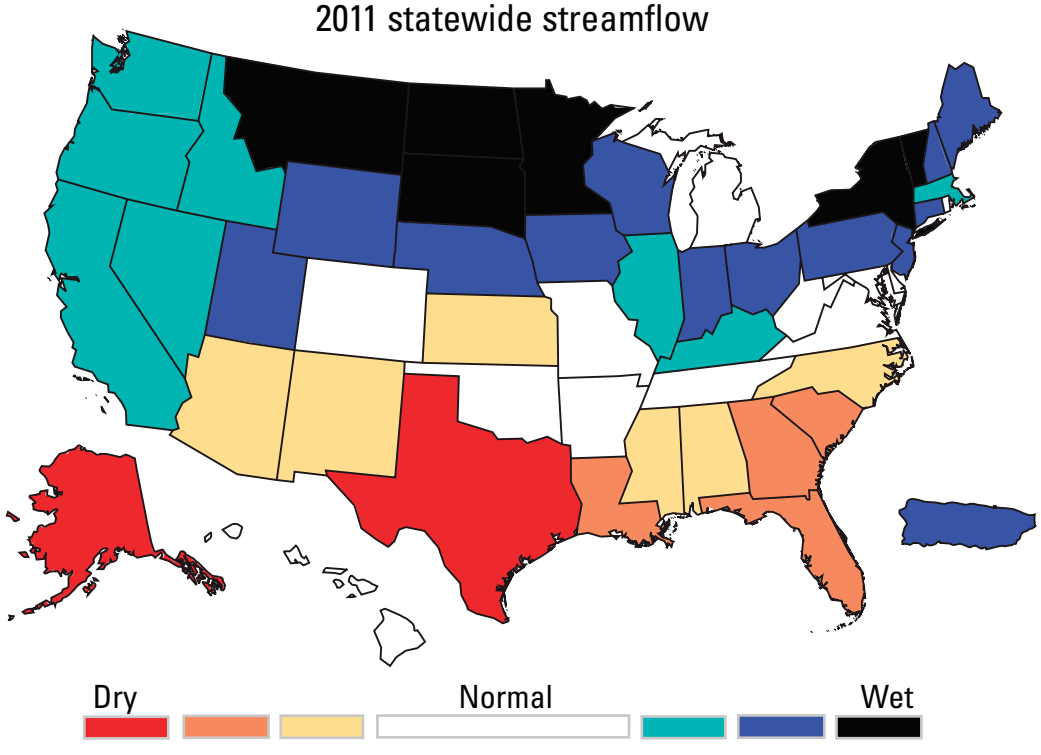
Streamflow of 2011—Water Year Summary

U.S. Geological Survey
Reston, Virginia

January 2012



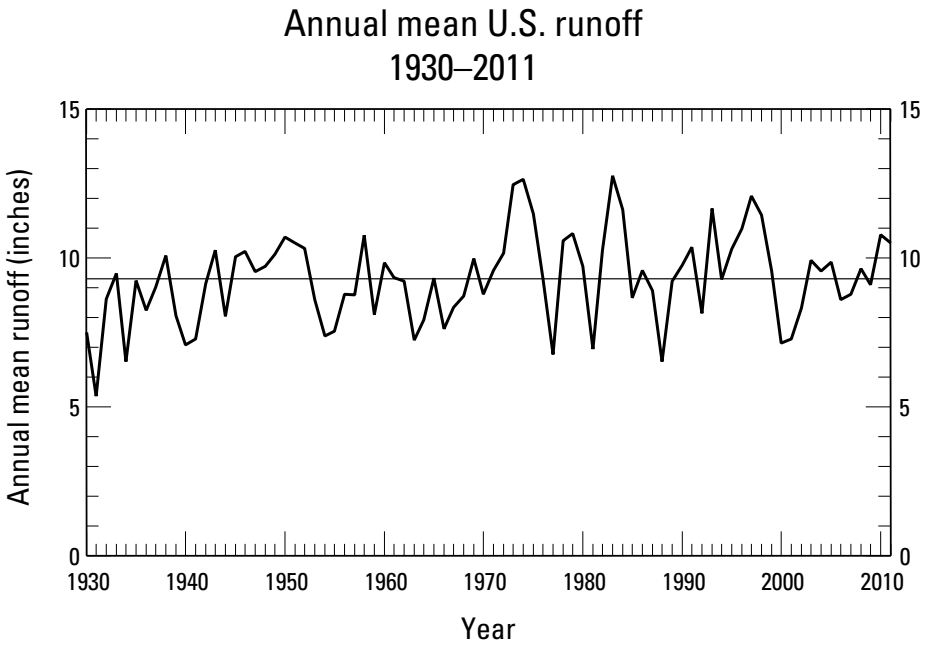
Introduction

The maps and graphs in this summary describe streamflow conditions for water year 2011 (October 1, 2010, to September 30, 2011) in the context of the 82-year period from 1930 through 2011, unless otherwise noted. The illustrations are based on observed data from the U.S. Geological Survey's (USGS) National Streamflow Information Program (*http://water.usgs.gov/nsip/*). The period 1930–2011 was used because, prior to 1930, the number of streamgages was too small to provide representative data for computing statistics for most regions of the country.

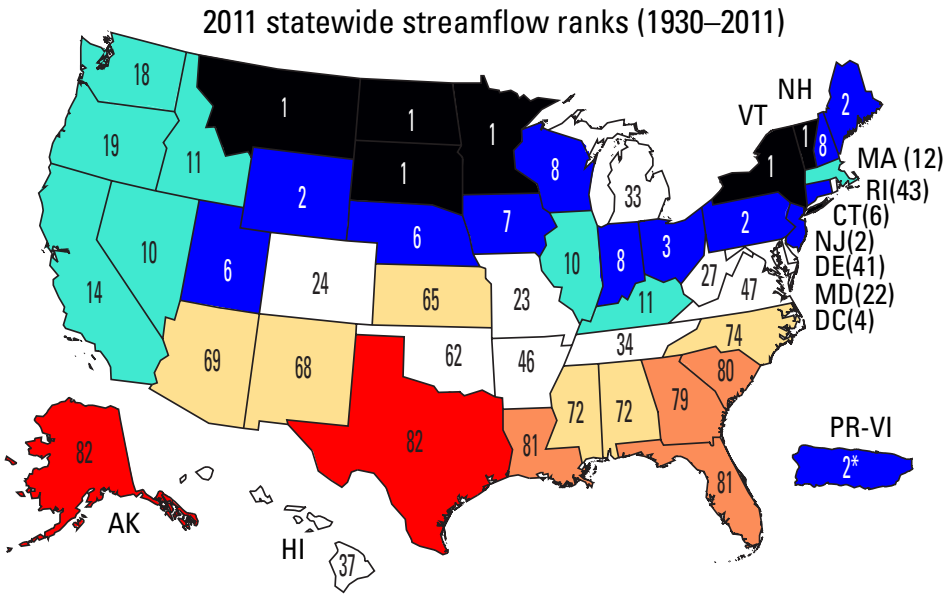
In the summary, reference is made to the term "runoff," which is the depth to which a river basin, State, or other geographic area would be covered with water if all the streamflow within the area during a single year was uniformly distributed upon it. Runoff quantifies the magnitude of water flowing through the Nation's rivers and streams in measurement units that can be compared from one area to another.

Each of the maps and graphs below can be expanded to a larger view by clicking on the image. In all the graphics, a rank of 1 indicates the highest flow of all years analyzed.

National Overview



Mean runoff in the Nation's rivers and streams during 2011 (10.50 inches) was higher than the long-term annual mean for the United States (9.31 inches). Nationwide, 2011 streamflow ranked 16th out of the 82 years in period 1930–2011. Note that in previous water year summaries the median runoff, not the mean runoff, was compared among time periods.

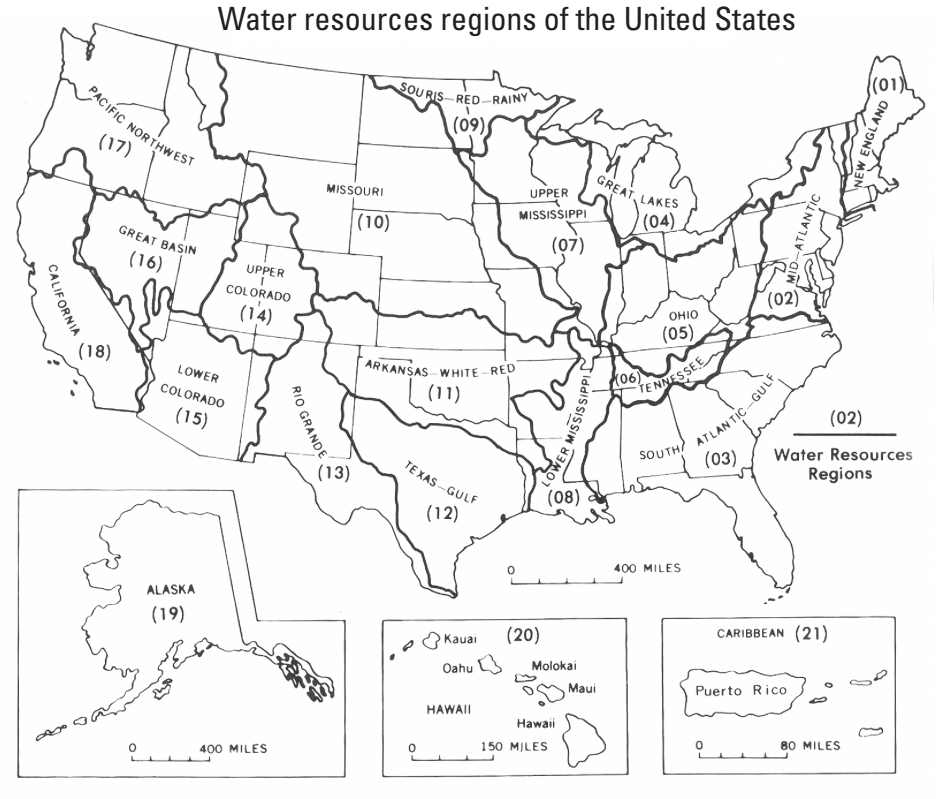


Explanation - Rank						
82	75–81	63–74	21–62	9–20	2–8	1
Lowest	Much below normal	Below normal	Normal	Above normal	Much above normal	Highest

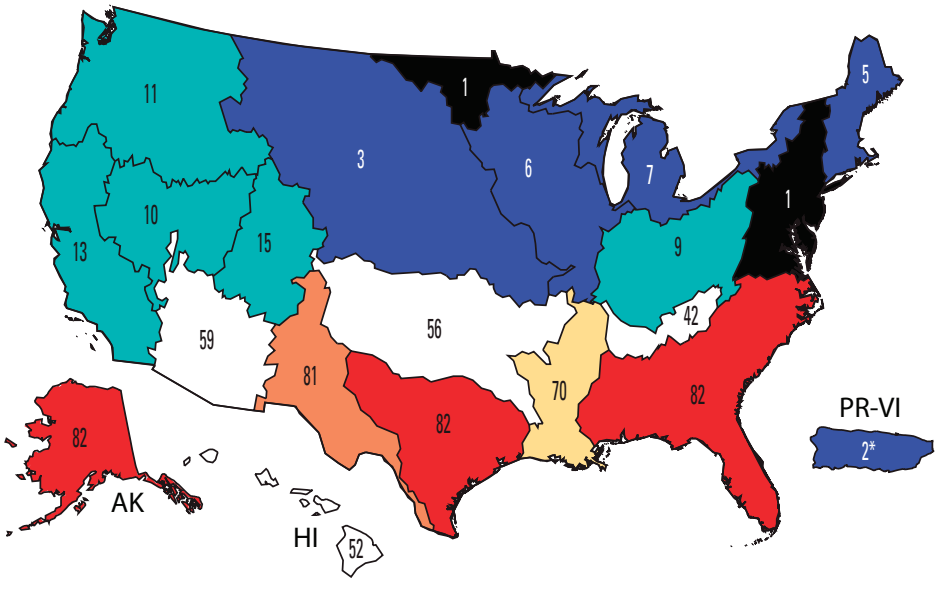
Streamflow was at record high levels (ranking first in 82 years) in the States of Montana, North Dakota, South Dakota, Minnesota, New York, and Vermont. Above-normal and much-above-normal streamflow characterized the remaining States in the Northeast, North, West, and Puerto Rico. In contrast, streamflow was at record low levels (ranking 82d in 82 years) in Texas and Alaska. Below-normal and much-below-normal streamflow was prevalent cross the Southeast and South. Only 11 States had streamflow in the normal range.

* For Puerto Rico, 68 years of available data were used.

Regional Patterns



The United States (including Puerto Rico) is divided into 21 large drainages, or water resources regions. These hydrologic areas are based on surface topography and contain either the drainage area of a major river, such as the Columbia, the combined drainage areas of a series of rivers, such as the Texas-Gulf region, which includes a number of rivers draining into the Gulf of Mexico, or the area of an island or island group. Water resources regions provide a coherent, watershed-based framework for depicting streamflow variations.



Streamflow was at record high levels (ranking first in 82 years) in the water resource regions in the Souris-Red-Rainy and Mid-Atlantic regions. Above-normal and much-above-normal streamflow occurred in all northeastern, northern, and western regions, and in the Caribbean. In contrast, streamflow was at record low levels (ranking 82d in 82 years) in the South Atlantic-Gulf, Texas-Gulf, and Alaska regions, respectively. Below-normal and much-below-normal streamflows were reported in the Lower Mississippi, and Rio Grande regions.

Explanation - Rank						
82	75–81	63–74	21–62	9–20	2–8	1
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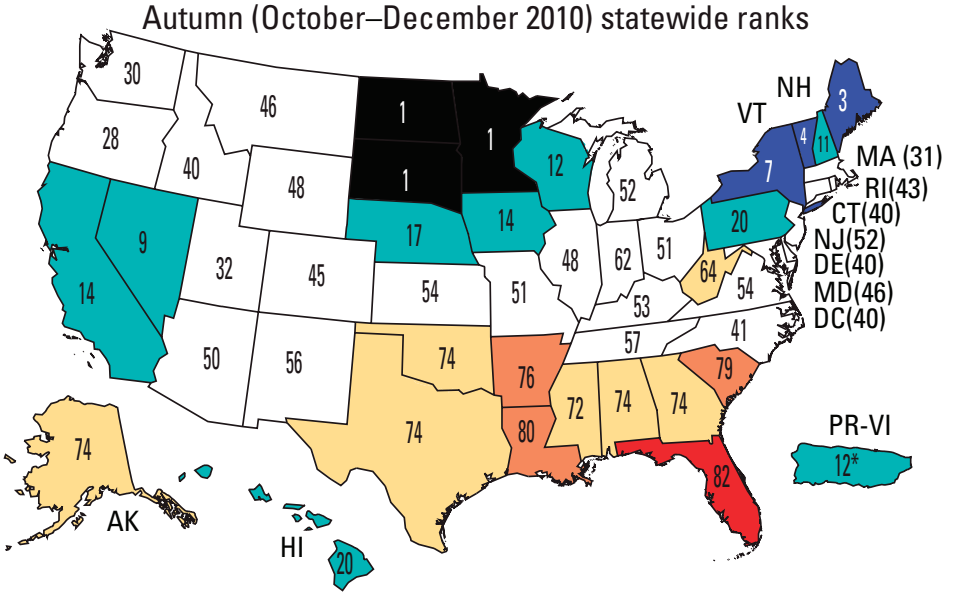
Seasonal Characteristics



Autumn season (October–December) streamflow was at records high levels (ranking first in 82 years) in the States of North Dakota, South Dakota, and Minnesota. Above- and much-above-normal flows were reported in northeastern, northern, and southwestern States. Florida had record low flow (ranking 82d in 82 years). Most of the other southeastern and southern States, as well as Alaska, had below- and much-below-normal streamflows. Nationwide, autumn season streamflow ranked 44th out of 82 years.

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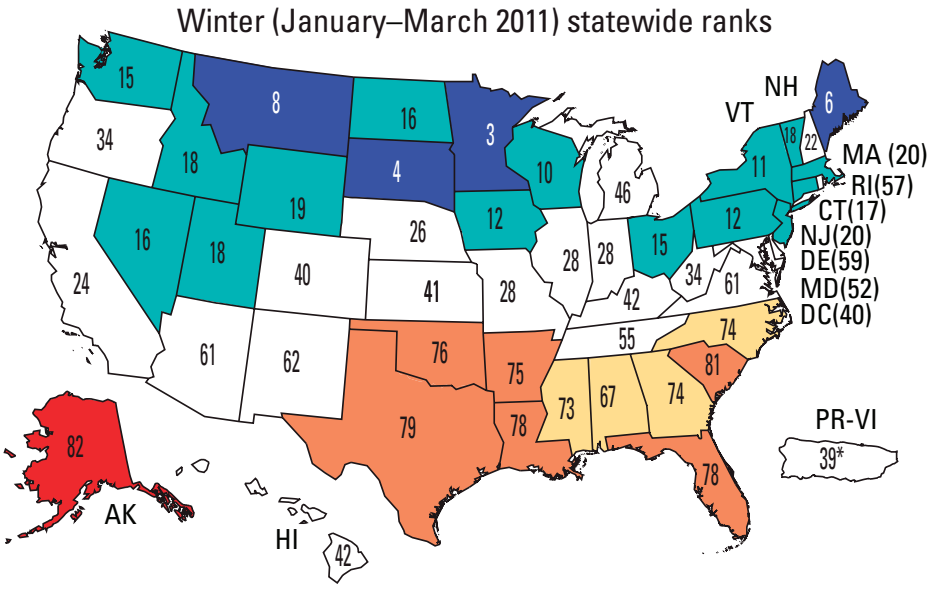

Winter season (January–March) streamflow was above to much above-normal in many northern and northeastern States. Record low flow (ranking 82d in 82 years) occurred in Alaska. Below-normal and much-below-normal streamflow occurred in the most southern and southeastern States. Nationwide, winter season streamflow ranked 31st out of 82 years.

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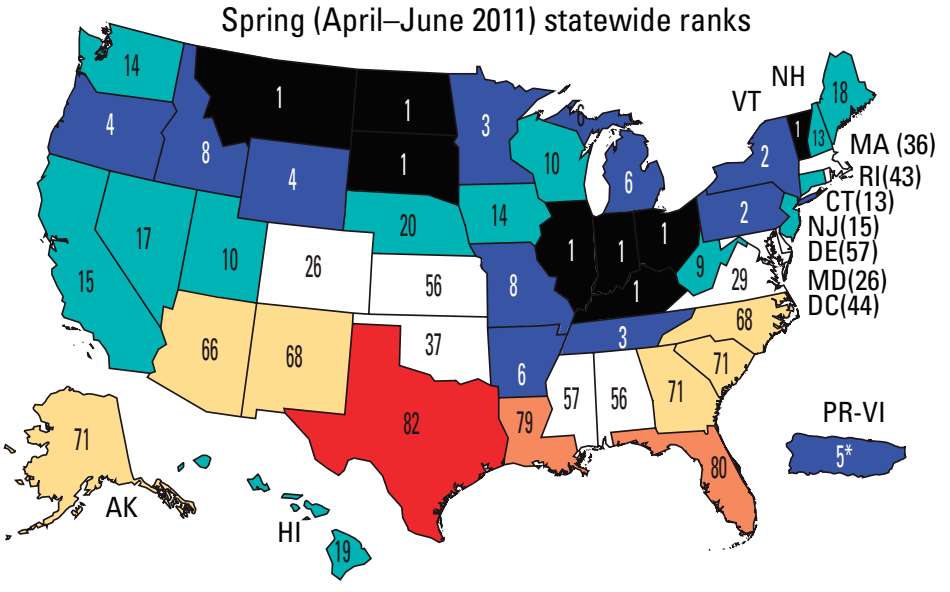

Spring season (April–June) streamflow was at record high levels (ranking 1st in 82 years) in the States of Montana, South Dakota, North Dakota, Illinois, Indiana, Ohio, Kentucky, and Vermont. Streamflow was above or much above normal in the northern and western States, Missouri, Arkansas, Tennessee, Hawaii, and Puerto Rico. In contrast, southeastern and southern States reported below- or much-below-normal flows; streamflow in Texas was at record low levels. On a nationwide basis, spring season streamflow was much above normal, ranking fifth in 82 years.

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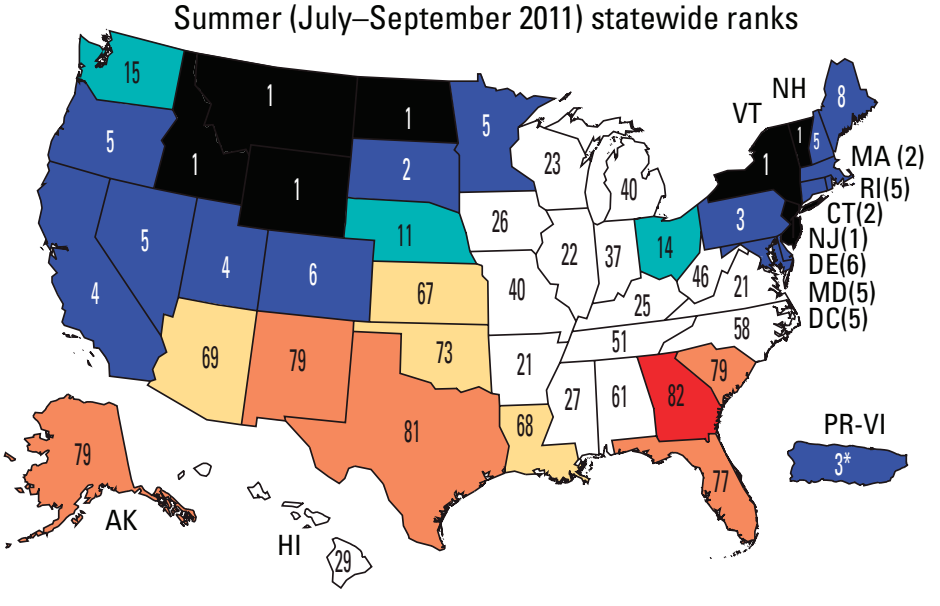

Summer season (July–September) streamflow was at record high levels (ranking 1st in 82 years) in the States of Montana, North Dakota, Wyoming, Idaho, New Jersey, New York, and Vermont. This was the third season out of four that North Dakota experienced record high levels. Streamflow was above or much above normal in the northeastern, northern, northwestern and western States, and Puerto Rico. In contrast, southeastern and southern States and Alaska reported below- or much-below-normal flows. Streamflow in Georgia was at record low levels. On a nationwide basis, summer season streamflow was much above normal, ranking 13th in 82 years.

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Explanation - Rank						
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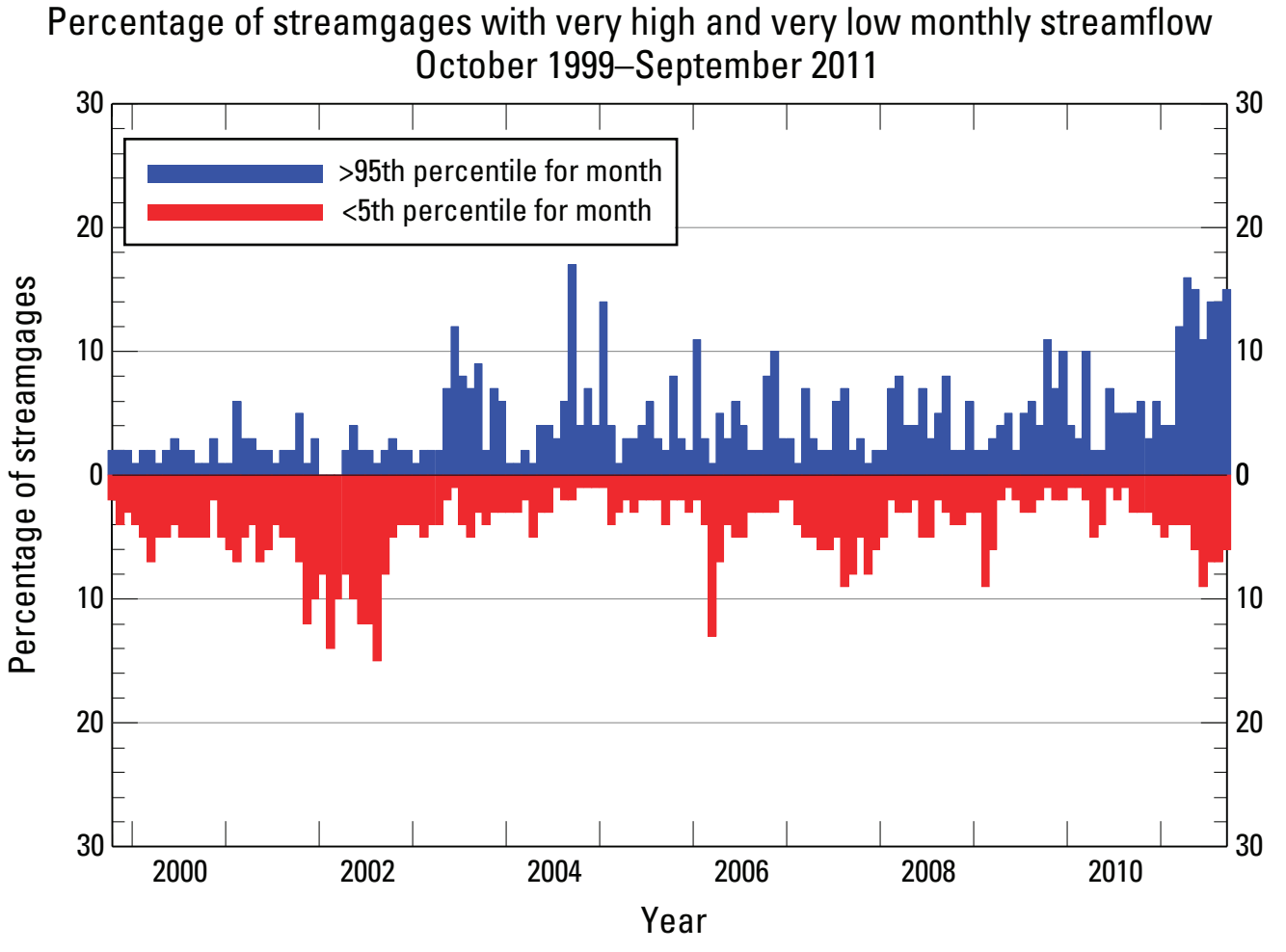
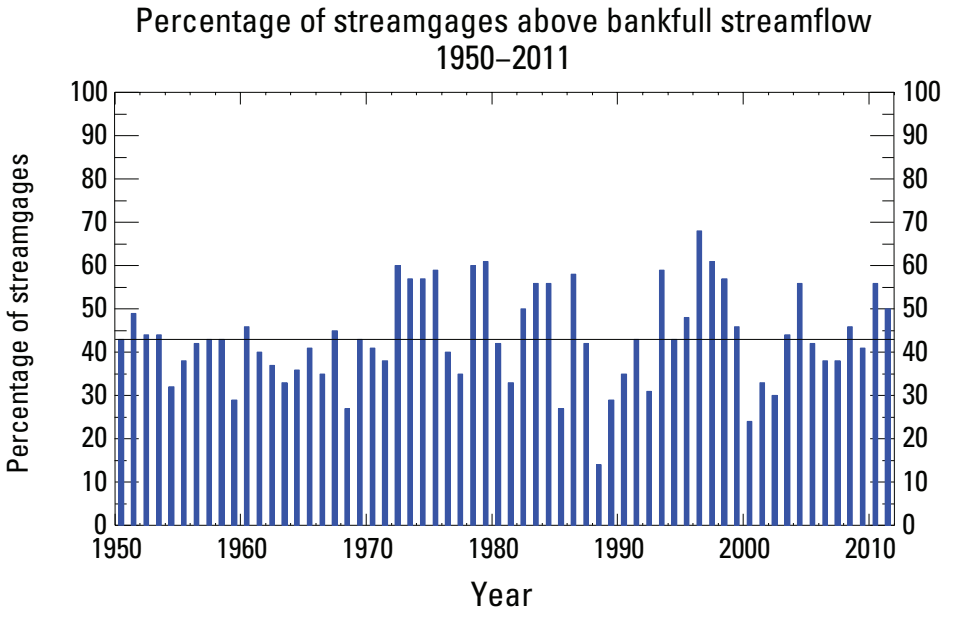
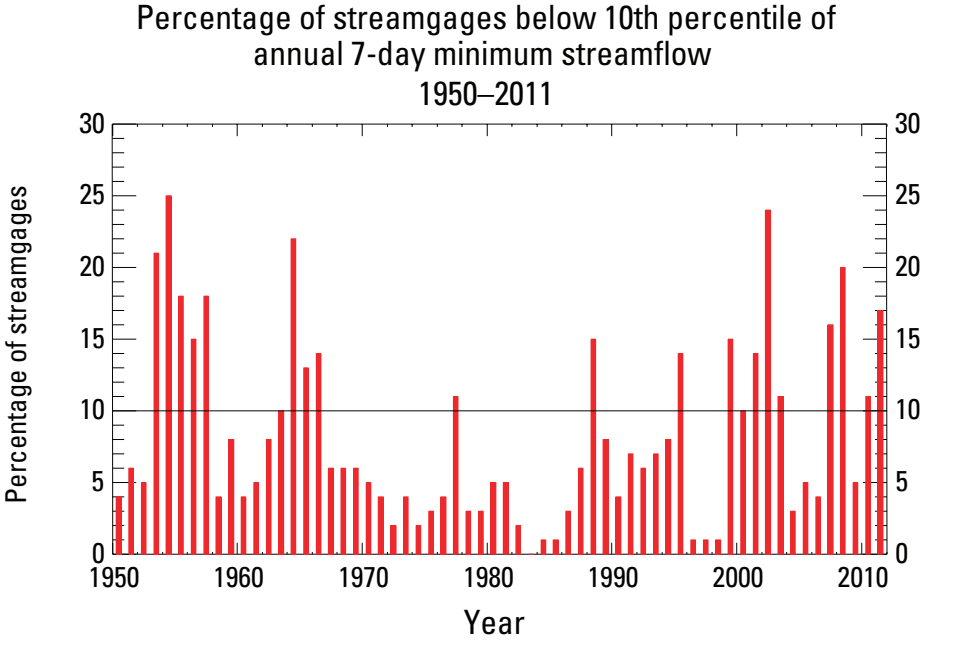
High and Low Flows



In any given month, on average, it is expected that 5 percent of the streamgages will experience very high (>95th percentile) and very low (<5th percentile) average streamflow. During water year 2011, 9 months (October, December, March, April, May, June, July, August, and September) had a greater than expected percentage of streamgages reporting very high streamflow (6, 6, 12, 16, 15, 11, 14, 14, and 15 percent respectively). In contrast, there were 5 months (May, June, July, August, and September) with a greater than expected percentage of streamgages with very low flows (6, 9, 7, 7, and 6 percent, respectively).



The bankfull streamflow is defined as the highest daily mean streamflow value expected to occur, on average, once in every 2.3 years. In 2011, 50 percent of streamgages had a daily mean streamflow value above the bankfull level. This value is greater than the expected number (43 percent) to occur in any given year. Since 1950, the largest number of streamgages reporting higher than bankfull streamflow in any 1 year was 68 percent, which occurred in 1996.



The 10th percentile 7-day low flow is defined as the lowest 7-day average streamflow expected to occur, once every 10 years. In water year 2011, 17 percent of the streamgages reported a 7-day low flow less than the 10th percentile 7-day low flow. The expected number to occur in any given year is 10 percent. Since 1950, the largest percentage of streamgages reporting a 7-day low flow less than the 10th percentile 7-day low flow was 25 percent in 1954.

Additional Information

The USGS operates a network of nearly 10,000 streamgages nationwide, many in real time. Current information derived from these stations is available at http://waterwatch.usgs.gov. Tables of data that summarize historical streamflow conditions by State, beginning in 1900, can be accessed at http://waterwatch.usgs.gov/?m=statesum. These tables are updated every few months to reflect the most current streamflow data.

The streamflow information used to prepare this summary is also used for water management, monitoring floods and droughts, bridge design, and for many recreational activities. To obtain real-time and archived streamflow data and information, visit http://water.usgs.gov/nwis. Although the national streamgage network is operated primarily by the USGS, it is funded by a partnership of 850 agencies at the Federal, State, tribal, and local levels. For more information about the streamgage network, visit http://water.usgs.gov/nsip/.

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