**Climate Impacts on Water Resources**

We depend on a reliable, clean supply of drinking water to sustain our health. We also need water for agriculture, energy production, navigation, recreation, and manufacturing.

**Many of these uses put pressure on water resources, stresses that are likely to be exacerbated by climate change.** In many areas, climate change is likely to increase [water demand](http://www.epa.gov/climatechange/impacts-adaptation/water.html#watercycles) while shrinking [water supplies](http://www.epa.gov/climatechange/impacts-adaptation/water.html#watersupply). This shifting balance would challenge water managers to simultaneously meet the needs of growing communities, sensitive ecosystems, farmers, ranchers, energy producers, and manufacturers.

In some areas, water shortages will be less of a problem than increases in runoff, flooding, or sea level rise. These effects can reduce the [quality of water](http://www.epa.gov/climatechange/impacts-adaptation/water.html#waterquality) and can damage the infrastructure that we use to transport and deliver water.

**The water cycle is a delicate balance of precipitation, evaporation, and all of the steps in between.** Warmer temperatures increase the rate of evaporation of water into the atmosphere, in effect increasing the atmosphere's capacity to "hold" water.Increased evaporation may dry out some areas and fall as excess precipitation on other areas.

Changes in the amount of rain falling during storms provide evidence that the water cycle is already changing. Over the past 50 years, the amount of rain falling during the most intense 1% of storms increased by almost 20%.Warming winter temperatures cause more precipitation to fall as rain rather than snow. Furthermore, rising temperatures cause snow to begin melting earlier in the year. **This alters the timing of streamflow in rivers that have their sources in mountainous areas.**

As temperatures rise, people and animals need more water to maintain their health and thrive. Many important economic activities, like producing [energy](http://www.epa.gov/climatechange/impacts-adaptation/energy.html) at power plants, raising livestock, and growing [food crops](http://www.epa.gov/climatechange/impacts-adaptation/agriculture.html), also require water. **The amount of water available for these activities may be reduced as Earth warms, and if competition for water resources increases.**

Many areas of the United States, especially the West, currently face water supply issues. **The amount of water available in these regions is already limited, and demand will continue to rise as population grows.** The West has experienced less rain over the past 50 years, as well as increases in the severity and length of droughts; this has been especially of concern in the [Southwest](http://www.epa.gov/climatechange/impacts-adaptation/southwest.html).

In the western part of the United States, future projections for less total annual rainfall, less snowpack in the mountains, and earlier snowmelt mean that less water will likely be available during the summer months when demand is highest. **This will make it more difficult for water managers to satisfy water demands throughout the course of the year.**

Water quality could suffer in areas experiencing increases in rainfall. **For example, in the** [**Northeast**](http://www.epa.gov/climatechange/impacts-adaptation/northeast.html#impacts) **and** [**Midwest**](http://www.epa.gov/climatechange/impacts-adaptation/midwest.html#impacts) **rises in heavy precipitation events could cause problems for the water infrastructure, as sewer systems and water treatment plants are overwhelmed by the increased volumes of water.** Heavy downpours can increase the amount of runoff into rivers and lakes, washing sediment, nutrients, pollutants, trash, animal waste, and other materials into water supplies, making them unusable, unsafe, or in need of water treatment. For information about how climate change and water quality affect public health, visit the [Health Impacts & Adaptation](http://www.epa.gov/climatechange/impacts-adaptation/health.html) page.

**Freshwater resources along the coasts face risks from sea level rise.** As the sea rises, saltwater moves into freshwater areas. This may force water managers to seek other sources of fresh water, or increase the need for desalination (or removal of salt from the water) for some coastal freshwater aquifers used as drinking water supply.In addition, as more freshwater is removed from rivers for human use, saltwater will move farther upstream. Drought can cause coastal water resources to become more saline as freshwater supplies from rivers are reduced. Water infrastructure in coastal cities, including sewer systems and wastewater treatment facilities, faces risks from rising sea levels and the damaging impacts of storm surges.

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Many areas of the United States, especially the West, currently face water supply issues. **[5] [5]** **The amount of water available in these regions is already limited, and demand will continue to rise as population grows.** The West has experienced less rain over the past 50 years, as well as increases in the severity and length of droughts; this has been especially of concern in the [Southwest](http://www.epa.gov/climatechange/impacts-adaptation/southwest.html).

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**CHOOSE THE BEST SENTENCES FROPM BELOW [A–J] TO FILL EACH OF THE GAPS [1–8] IN THE TEXT *“Climate Impacts on Water Resources”.* There are TWO sentences you do not need.**

1. **The amount of water available in these regions is already limited, and demand will continue to rise as population grows.**
2. **Although more rainfall can add to fresh water resources, heavier rainfall leads to more rapid movement of water from the atmosphere back to the oceans, reducing our ability to store and use it.**
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4. **The amount of water available for these activities may be reduced as Earth warms, and if competition for water resources increases.**
5. **Many of these uses put pressure on water resources, stresses that are likely to be exacerbated by climate change.**
6. **This will make it more difficult for water managers to satisfy water demands throughout the course of the year.**
7. **However, the degree to which this will happen cannot be predicted with confidence by current models.**
8. **The water cycle is a delicate balance of precipitation, evaporation, and all of the steps in between.**
9. **Freshwater resources along the coasts face risks from sea level rise.**
10. **This alters the timing of streamflow in rivers that have their sources in mountainous areas.**

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