ome 61 percent of the U.S. is currently experiencing abnormally dry or drought conditions, leading many experts to label it as the third worst in history since the 1930’s Dust Bowl and the 1950’s drought event.

Unlike previous droughts, however, conditions are no longer limited to regional areas. Today’s drought stretches from Georgia to Arizona and across the north through Wisconsin, Montana, Minnesota, and the Dakotas.

All of this dry, parched land naturally leads to a decrease in water supplies. “Many of our water supplies—rivers, lakes, and aquifers—are drawn down quite a bit. In general, they have been drawn way down so they’re tenuous, and every month that the drought goes on, that continues to be the trend downward,” says Mark Svoboda, a climatologist for the National Drought Mitigation Center (NDMC) at the University of Nebraska at Lincoln.

“We’ve been drawn down for a long time, so every drop is very, very precious. Most of the reservoirs in Wyoming, Texas, and Oklahoma are also down. In the Southwest, the smaller ones rebounded nicely after the bumper winter of 2004/05, but last winter was very dry. I don’t know the exact number today, but they are still at or below half of capacity.”

By Natalie Eddy
NESC Contributing Writer
Recharging these water supplies doesn’t happen overnight, Svoboda added. “Hydrological drought takes awhile to build up. There’s a lag; but when you see the impact, you know you’re in a fix. You usually can’t just snap your fingers and jump out of it, hydrologically speaking,” he added.

Additionally, severe drought can be seen in 29 percent of the country, which usually carries only a 12 to 15 percent rate.

“That’s pretty significant,” said Svoboda. “We’re roughly double on the severe side that you would perhaps expect to see. In the mid-section of the country—the Dakotas, Nebraska, Kansas—this drought has been lingering around since the fall of 1999.”

Dwindling snowfall totals in the middle Rockies have contributed to the shrinking water supplies. The river valleys in those areas are significantly down, according to Svoboda.

**Comparisons**

Although conditions in the 1930s measure far worse in terms of temperature, rainfall, and soil moisture, when you look at need—the growing demand for water and the increasing population—many authorities believe today’s conditions rival the Dust Bowl.

There are, however, some distinct differences. Svoboda said the Dust Bowl was a very long event with excessive heat. “The 1930s were marked by persistent high temperatures year in, year out. That would be the biggest offsetting difference between this one and the Dust Bowl,” said Svoboda. “The other factor would be the upper plains over the Pacific Northwest; that area was impacted more then.”

He added that a more appropriate comparison to today’s drought would be to the 1950’s event, in terms of both its temporal length and its severity.

“The thing is, it’s hard to rank this drought because it’s not over,” he said. “If this drought goes on another two or three years, then that cumulative impact will keep occurring and compounding over the years. Then, I think you could start looking at how this drought compares to the Dust Bowl.”

Another factor that hinders comparisons is the difference in the storage capacity today. The first national conservation movement in the U.S. occurred in 1933 with the establishment of the Soil Erosion Service (SES). As the Dust Bowl swept across the Great Plains, dust storms rendered much of the land useless and accentuated the need for conserving water.

“You didn’t have the soil and water measure conservation efforts in place. I think people are much better stewards of the land, so it’s able to absorb more in some ways. On the other hand, demographics have changed. There’s been a mass population movement to the arid, semi-arid regions of the country,” said Svoboda.

“It’s pretty much a finite water supply, but yet the growth keeps going up. So the demand on the finite water supply is increasing. I would argue that our risks, our vulnerability to drought have changed. You don’t need a drought of the 1930s or 1950s to have major impacts.”

Between 1990 and 2000, the average U.S. population growth was approximately 13 percent, according to U.S. Census statistics. Over that same 10-year period, in Arizona, it was 40 percent; in Nevada, 66 percent; and New Mexico and Colorado, both more than 30 percent.

“Today you’ve got droughts that don’t need to be as long, as severe, or as intense as the droughts of the 1950s or 1930s. You’re going to have some major impacts due to the precarious balancing act we’re doing between supply and demand. We’re more vulnerable to droughts as I think we are to most hazards now.”

**Impacts**

The most obvious impact of droughts can be seen in the agricultural field. Dying crops means dwindling feed for livestock, which, in turn, means more decline, ultimately leading to higher prices in the grocery stores and meat markets. Ranchers are forced to sell their herds, and acres of land become ripe kindling for fires.

Other impacts are pests and disease. Pine beetles can wreak havoc on trees and forests, killing trees, which also leads to dry fuel for fires. Grasshoppers have been plaguing regions of the West, damaging plants and even eating the paint off houses.

Another impact that is often overlooked is the effect droughts have on tourism. “Tourism is huge, whether it is hiking, camping, fishing, canoeing, whitewater rafting, [and people aren’t going to be] staying in parks or national forests when they’re closed down due to low flows or fire threats,” said Svoboda.

“That’s a huge amount of money that’s not going into local economies. Typically you see it at the local level. People think droughts are these national, large-area things, but really, droughts are defined by their impacts and what occurs down at that local level with small businesses and the people who are impacted by that.”

**Preparedness**

How can states be proactive and reduce their vulnerability “The whole goal is about being prepared and addressing our vulnerability to future droughts. You can’t stop the drought from occurring, but you can take measures to lessen the impacts or buffer them to get you through the rough times,” said Svoboda.

“That’s the common sense message of sustainability of water—good conservation even when times are good. There are a lot of things states can do to buffer themselves, maybe not drought proof, but at least reduce their risk to droughts in the future. We do that through planning; we do it through early warning and monitoring; and we do it through risk and vulnerability assessment. We can determine where we’re vulnerable due to droughts.”

Svoboda recounted a success story in Nebraska. He said during the drought of 2002, Nebraska experienced a lack of precipitation that rivaled the Dust Bowl. Unfortunately, at that time, a lot of cities there had only one water supply and those wells went dry for many locations.
As a result of that experience, officials identified all of the one-source systems across the state, wrote grants, and secured funding from the Bureau of Reclamation and through some emergency drought appropriations. Those communities were able to add a second source or connect to another system, which enabled water to be rerouted to them if their first system failed.

“We had about 100 communities across our state in the 2002 drought that were severely impacted to the point where they almost had to truck water into some of the areas. They identified at-risk communities, took care of the problem, and the next time the drought got bad, only five communities were in a serious situation instead of 100,” said Svoboda.

Preparedness is the flagship of the NDMC. Its Web site, www.drought.unl.edu/mitigate/status.htm, contains a list of state drought plans. Svoboda said, in 1982, there were only three states with drought plans—Colorado, South Dakota, and New York.

Today, the site lists 38 states with drought plans. “We’re making progress, but there’s still work to do,” said Svoboda.

Drought preparedness plans are designed to reduce vulnerability and dependence on emergency assistance. The Web site states, “The process of developing a plan will identify vulnerable areas, population groups, and economic and environmental sectors. The process also seeks to identify data and informational gaps and research and institutional needs.

“Ultimately, preparedness plans will improve coordination within and between levels of government; procedures for monitoring, assessing, and responding to water shortages; information flow to primary users; and efficiency of resource allocation. The goals of these plans are to reduce water shortage impacts, personal hardships, and conflicts between water and other natural resource users. These plans should promote self-reliance by systematically addressing issues of principal concern to the region or nation in question. To be successful, drought preparedness plans must be integrated between levels of government and with other national plans or strategies, such as those to ensure food security and combat desertification.”

Drought plans contain three critical components: an early warning system, risk and impact assessment procedures, and mitigation and response strategies.

Svoboda said plans across the country vary. “States will typically ask for voluntary restrictions. As droughts progress or they discover that their groundwater levels are dropping, they begin to move into more of a mandatory stance,” said Svoboda.

**Global Warming**

Is there a relationship between global warming and droughts? Svoboda believes that what we are putting in the atmosphere is having some effect. But to what degree, he says, “the jury is still out.

“We’ve seen droughts that have been warmer and longer than today’s, so it doesn’t mean the droughts of today are attributable solely based on that,” said Svoboda.

“There’s science that says we’re getting warmer. You would think that would speed up the cycle and mean more droughts. Does that mean there will be more droughts that don’t last as long Or will there be fewer droughts that last longer That’s what we don’t know, what influence it will have on the behavior of droughts.”

Svoboda added that more data will have to be collected to define the exact effect global warming may be having on droughts. “We have to remember that droughts are part of the natural cycle, and in a lot of ways, it’s a vital part of regeneration of our environment. Droughts are a normal part of the climate cycle, and there will continue to be droughts, just like there have been. Our response to droughts is what really matters.”

For more information, contact Svoboda at msvo-boda2@unl.edu or call the NDMC at (402) 472-6707.

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**Source:** [www.cpc.ncep.noaa.gov](http://www.cpc.ncep.noaa.gov)

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