

OPINION

# Drought: A Creeping Disaster

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FLOODS, tornadoes, earthquakes, tsunamis and other extreme weather have left a trail of destruction during the first half of 2011. But this could be just the start to a remarkable year of bad weather. Next up: drought. In the South, 14 states are now baking in blast-furnace conditions — from Arizona, which is battling the largest wildfire in its history, to Florida, where fires have burned some 200,000 acres so far. Worse, drought, unlike earthquakes, hurricanes and other rapid-moving weather, could become a permanent condition in some regions.



Bob Pennell/Mail Tribune, via Associated Press

An unmanned balloon that seeds clouds in an effort to make rain at a demonstration in 2010.



Daniel Borris for The New York Times.

A drought-ravaged portion of the Guadalupe River near Texas's Canyon Lake in July.

Climatologists call drought a “creeping disaster” because its effects are not felt at once. Others compare drought to a python, which slowly and inexorably squeezes its prey to death.

The great aridification of 2011 began last fall; now temperatures in many states have spiked to more than 100 degrees for days at a stretch. A high pressure system has stalled over the middle of the country, blocking cool air from the north. Texas and New Mexico are drier than in any year on record.

The deadly heat led to 138 deaths last year, more than hurricanes, tornadoes or floods, and it turns brush to tinder that is vulnerable to lightning strikes and human carelessness. Already this year, some 40,000 wildfires have torched over 5.8 million acres nationwide — and the deep heat of August is likely to make conditions worse before they get better.

Climatologists disagree about what caused this remarkable dry-out. But there is little disagreement about the severity of the drought — or its long-term implications. When I asked Richard Seagar, who analyzed historical records and climate model projections for the Southwest for the Lamont-Doherty

Earth Observatory at Columbia University, if a perpetual drought was possible there, he replied: “You can’t really call it a drought because that implies a temporary change. The models show a progressive aridification. You don’t say, ‘The Sahara is in drought.’ It’s a desert. If the models are right, then the Southwest will face a permanent drying out.”

Growing population has increased the burden on our water supply. There are more people on earth than ever, and in many places we are using water at unsustainable rates. Cultural shifts contribute to subtle, far-reaching effects on water supplies. In 2008, for the first time, more people lived in cities than in rural communities worldwide, and water is becoming urbanized. Yet some of the world’s biggest cities — Melbourne, Australia; Barcelona, Spain; and Mexico City — have already suffered drought emergencies. Further drying could lead to new kinds of disasters. Consider Perth, Australia: its population has surpassed 1.7 million while precipitation has decreased. City planners worry that unless drastic action is taken, Perth could become the world’s first “ghost city” — a modern metropolis abandoned for lack of water.

Similar fates may await America’s booming desert cities: Las Vegas, Phoenix or Los Angeles.

Our traditional response to desiccation has been to build hydro-infrastructure — dams, pipelines, aqueducts, levees. Many advocate building even bigger dams and ambitious plumbing projects including one that calls for “flipping the Mississippi,” a scheme to capture Mississippi floodwater and pipe it to the parched West. But it is now widely believed that large water diversion projects are expensive, inefficient and environmentally destructive.

The Holy Grail of water managers is to find a drought-proof water source. Weather modification (“weather mod”), or cloud seeding, is a particularly appealing ideal. When American chemists discovered that dry ice dropped into clouds produced snow, and that clouds seeded with silver iodide produced rain, they rhapsodized about ending drought. Under perfect conditions, weather mod can increase precipitation by 10 to 15 percent. Ski areas, including Vail, Colo., hire companies to seed snow-producing clouds. And China claims that it produced 36 billion metric tons of rain a year between 1999 and 2006.

But critics, including the National Research Council, question weather mod and its efficacy. Bottom line: though evidence suggests weather mod works to a limited extent, it is unlikely to produce a major supply of water soon.

The ocean is a more promising water source. For centuries people have dreamed of converting saltwater into a limitless supply of fresh water. In 1961 President John F. Kennedy said that “if we could ever competitively, at a cheap rate, get fresh water from saltwater” it would “dwarf any other scientific accomplishments.” By 2008 over 13,000 desalination plants around the world produced

billions of gallons of water a day. But “desal,” which is costly and environmentally controversial, has been slow to catch on the United States.

Recycled sewage offers an interesting, if aesthetically questionable, drinking source. (Supporters call recycled sewage “showers to flowers”; detractors condemn “toilet to tap” schemes.) Plans for sewage recycling, which involves extracting and purifying the water, are slowly gaining acceptance. Windhoek, Namibia — one of the driest places on earth — relies solely on treated wastewater for its drinking supply. In El Paso 40 percent of the tap water is recycled sewage. Fairfax, Va., gets 5 percent of its tap water from recycling effluent. But the “yuck factor” has led to a sharp debate about its merits.

MEANWHILE, global demand for water is expected to increase by two-thirds by 2025, and the United Nations fears a “looming water crisis.” To forestall a drought emergency, we must redefine how we think of water, value it, and use it.

Singapore provides a noteworthy model: no country uses water more sparingly. In the 1950s, it faced water rationing, but it began to build a world-class water system in the 1960s. Now 40 percent of its water comes from Malaysia, while a remarkable 25 to 30 percent is provided by desalination and the recycling of wastewater; the rest is drawn from sources that include large-scale rainwater collection. Demand is curbed by high water taxes and efficient technologies, and Singaporeans are constantly exhorted to conserve every drop. Most important, the nation’s water is managed by a sophisticated, well-financed, politically autonomous water authority. As a result, Singapore’s per-capita water use fell to 154 liters, about 41 gallons, a day in 2011, from 165 liters, about 44 gallons, in 2003.

America is a much larger and more complex nation. But Singapore’s example suggests we could do a far better job of educating our citizens about conservation. And we could take other basic steps: install smart meters to find out how much water we use, and identify leaks (which drain off more than 1 trillion gallons a year); use tiered water pricing to encourage efficiency; promote rainwater harvesting and wastewater recycling on a large scale. And like Singapore, we could streamline our Byzantine water governance system and create a new federal water office — a water czar or an interagency national water board — to manage the nation’s supply in a holistic way.

No question this will be an expensive, politically cumbersome effort. But as reports from New Mexico, Texas, Louisiana, Georgia and Florida make plain, business as usual is not a real option. The python of drought is already wrapped tightly around us, and in weeks — and years — to come it will squeeze us dangerously dry.

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