

# Global Precipitation Measurement Mission

## Earth's Water Delivery: No Passport Required

Free of countries' borders, our planet's water goes where it wants. This seems obvious, but many of us don't give much thought to the transport of this vital resource that makes life possible. Because we do not have control over weather that brings global water deliveries, we try to manipulate water resources once they are on, or under, the ground. Problems arise when we limit our focus to our immediate needs (time), and the needs of our local area (place).

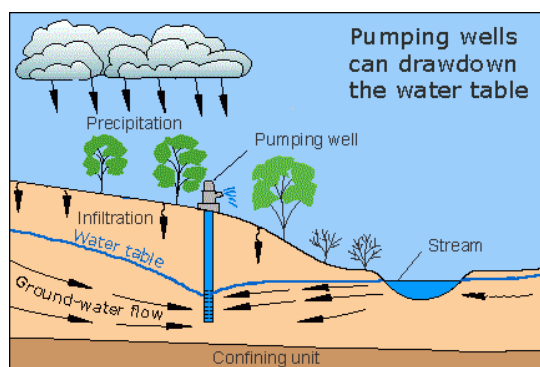


The Rio Grande River forms part of the border between Texas and Mexico. It is a primary source of fresh water for nearby communities.

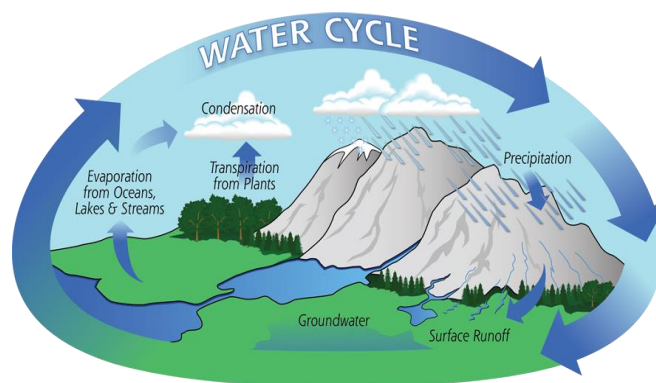
Image credit: National Park Service/Tom VandenBerg

## Aquifers—It's not only bones that are fossils.

The idea of fossil water sounds strange. Many communities—worldwide—rely on water that made its way underground, hundreds or thousands of years ago. Large ice sheets, in some places as much as a mile thick, lay on many areas during the last ice age. When these ice sheets melted, vast amounts of fresh water soaked below Earth's surface. Pumped from wells, communities through time have relied on this prehistoric stored water for their livelihoods and wellbeing. But worldwide, aquifers—the scientific name for underground waters—are being used faster than they are being refilled. Who does the water belong to? Should people today limit their water consumption to save resources for future generations?



Credit: USGS



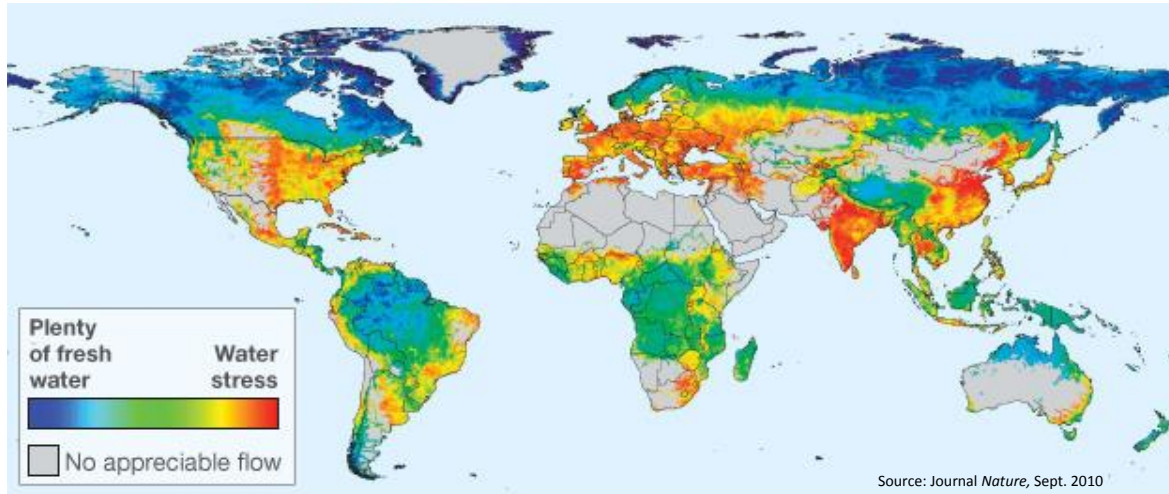
Credit: NASA's Global Precipitation Measurement Mission

Time continues to play a role in water delivery, as global climate change is predicted to alter the amount and intensity of precipitation that many places receive. For example, inland glaciers and snowfields store water in the cold months and release it in the warmer months through melting. Measurements show that a number of glaciers worldwide have shrunk in size. Changes in the amount of ice, snow and rain, and where that precipitation occurs will impact farmers, fisheries, reservoirs for cities and much more. We are continually faced with conflicting priorities concerning water.

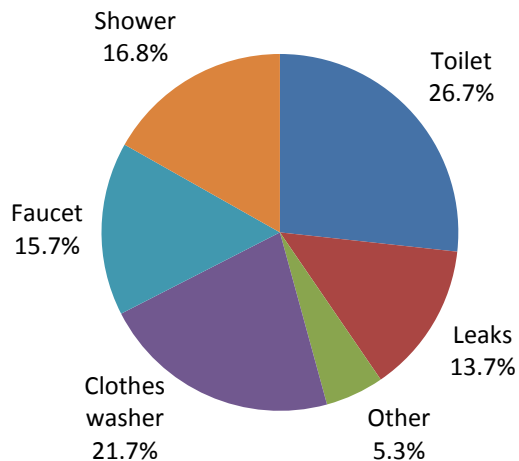
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## Rivers—Equitable is not an adjective for weather.

When it comes to global water distribution, some places have far more fresh water than their populations need, while other places are dry and are predicted to become drier. Many areas do not have enough rainfall for farming, bathing, cleaning, cooking and drinking, and people must rely on rivers that originate elsewhere for their freshwater.



## How Much Water Do We Use?



Data source: American Water Works Association Research Foundation, "Residential End Uses of Water," 1999

Here are a few questions to ponder:

- What if communities or countries don't agree on how the water should be used?
- Who owns the water?
- How can we plan to share the finite resource that is our planet's fresh water when we can't know all that future people will need?
- What are some ideas that you have for how we can conserve our freshwater resources today?
- What are some possible technologies that could increase the amount of freshwater resources in the future?

Links for more about the images used in this article:

Rio Grande River: <http://go.usa.gov/XxMm>

Water table: <http://go.usa.gov/XxMA>

Water cycle: <http://go.nasa.gov/1kexPoy>

Water stress: <http://www.bbc.co.uk/news/science-environment-11435522>

Water use data: <http://go.nasa.gov/1o9eeZs>