AI Could Be Draining Our Future

As an increasing number of tech companies begin to release their own AI assistants and expand their data processing technology, new data centers are popping up across the country. With nearly 4,000 data centers in the US, and hundreds more anticipated, surrounding environments are becoming increasingly stressed, as they face increased risks of drought, energy grid strain, and pollution from new fossil fuel projects needed to power these data centers. The very technology that is intended to alleviate humanity's problems now threatens our environment through its high intensity energy needs. One Google search utilizing an AI tool is reported to use 30 times the amount of energy as a normal search.

The artificial intelligence programs being utilized in these data centers require an immense amount of water to cool hot servers as well as additional water, indirectly, through the electricity required to power these facilities. Water is evaporated in data center cooling towers, leaving behind salty wastewater referred to as blowdown that must be treated by local authorities before being released. Reusing any leftover water sounds like a promising option, but reuse is limited and creates even saltier waste that must be disposed of properly, creating a new problem. According to scientists at the University of California, Riverside, each 100-word AI prompt is estimated to use roughly one bottle of water (or 519 milliliters). Imagine this as every time you use ChatGPT to write an email – pouring out a water bottle. Generating an image uses substantially more water than text, and a video uses dramatically more than an image.

Companies are aware of these issues and have pledged to restore the water that they use by 2030. "Minimizing our water use, being transparent with our water data, and restoring water in high water stress regions are key pillars of our water stewardship program," Meta said in a statement. However, these optimization processes are slow-moving and waiting 5 years to lessen their environmental impact is just too long.

Data center water usage is already harming communities, especially those in high water stress areas. A short video showing a Georgia community living next to a Meta data center highlights this fact. Their taps drizzle when fully turned on, leaving sediment pollution in their supply. Wells are failing or are being polluted by the extensive construction needed to build these unprecedented types of building. There is also evidence that these data centers could drive up electricity costs for residents. One study found that in the U.S., roughly 80 percent to 90 percent of the water consumption for data centers is coming from public water sources. These centers utilize public resources to gain private profits, with little concern for the effects of their consumption. Rising temperatures are already increasing evaporation and drought. Trendy AI tools will only compound this issue, directly manufacturing water scarcity.

Not-so-fun Facts:

- There are no legislative restrictions, both in Texas and federally, on how much water a data center can use. Texas law actually prevents local authorities from regulating or even tracking water usage by these facilities.
- Texas currently has 378 data centers, with many of these being fitted for AI processing power.
- A single data center can use 1 to 5 million gallons of water per day, as much as a small to medium size city.
- A data center requires about a 500-milliliter bottle of water to generate 10 to 50 medium-length GPT-3 responses.
- Elon Musk's planned supercomputer data center in Memphis is estimated to use 1 million gallons of water every day when operating at full capacity.
    - A family of four uses about 400 gallons of water every day.
- Approximately 80% of the water (typically freshwater) withdrawn by data centers evaporates, with the remaining water discharged to municipal wastewater facilities.
- Wastewater left over from cooling is salty and has to be treated by local utilities before being returned to any kind of reservoir.
- About 20% of data centers in the United States already rely on watersheds that are under moderate to high stress from drought and other factors.
- By 2030, Texas data center water consumption could total nearly 400 billion gallons annually, or 6.6% of Texas' total water use.

Ideas to Explore:

- Require new data centers to develop their own water resources using recycled water or, perhaps, Atmospheric Water Generation.
- Look into siting new AI data centers at mined out quarries or other areas where they might be built underground to save on energy use and water used for cooling.
- Pass legislation requiring restrictions on data center water use and requiring reporting on data center water use.
- Encourage companies to switch energy intensive large language models for smaller language models that use less energy.

RESOURCES:

Data Center Map:
https://www.datacentermap.com/usa/

https://www.bloomberg.com/graphics/2025-ai-impacts-data-centers-water-data/?srnd=undefined&sref=6VNEsPl5

News articles:

I Live 400 Yards From Mark Zuckerberg's Massive Data Center
https://www.youtube.com/watch?v=DGjj7wDYaiI

San Antonio data centers guzzled 463 million gallons of water as area faced drought
https://www.sacurrent.com/news/san-antonio-data-centers-guzzled-463-million-gallons-of-water-as-area-faced-drought-38116670

Texas AI centers guzzle 463 million gallons, now residents are asked to cut back on showers
https://economictimes.indiatimes.com/news/international/us/texas-ai-data-centers-water-usage-texas-ai-centers-guzzle-463-million-gallons-now-residents-are-asked-to-cut-back-on-showers-ai-news/articleshow/122983253.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

Algorithmically Embodied Emissions: By reinforcing high-carbon practices, algorithmic information systems contribute to climate change.
https://medium.com/datasociety-points/algorithmically-embodied-emissions-algorithmic-harm-and-climate-change-e2617eb4770d

Concern UK's AI ambitions could lead to water shortages
https://www.puiij.com/index.php/research/article/view/39

Data Centers and Water Consumption
https://www.eesi.org/articles/view/data-centers-and-water-consumption

Data centers, backbone of the digital economy, face water scarcity and climate risk
https://www.npr.org/2022/08/30/1119938708/data-centers-backbone-of-the-digital-economy-face-water-scarcity-and-climate-ris

Data centers and water use: What to consider https://freshwater.org/wp-content/uploads/2025/06/Data-Centers-and-Water-Use_Freshwater.pdf

AI Is Everywhere Now—and It's Sucking Up a Lot of Water
https://insideclimatenews.org/news/28092024/ai-water-usage/

A million gallons a day?— Elon Musk's supercomputer plans raise questions about local water supply

https://www.actionnews5.com/2024/06/06/million-gallons-day-elon-musks-supercomputer-plans-raise-questions-about-local-water-supply/

Scientific Papers:

Making AI Less 'Thirsty': Uncovering and addressing the secret water footprint of AI models
https://dl.acm.org/doi/full/10.1145/3724499

Data Centers Around the World: A Quick Look
https://www.usitc.gov/publications/332/executive_briefings/ebot_data_centers_around_the_world.pdf

Artificial intelligence in the water domain: Opportunities for responsible use
https://www.sciencedirect.com/science/article/pii/S0048969720360903

The Environmental Impact of AI: A Case Study of Water Consumption by Chat GPT
https://www.puiij.com/index.php/research/article/view/39

The environmental footprint of data centers in the United States
https://iopscience.iop.org/article/10.1088/1748-9326/abfba1

Your Brain on ChatGPT: Accumulation of Cognitive Debt when Using an AI Assistant for Essay Writing Task
https://arxiv.org/pdf/2506.08872v1

AI and Climate Justice:

The US must balance climate justice challenges in the era of artificial intelligence
https://www.brookings.edu/articles/the-us-must-balance-climate-justice-challenges-in-the-era-of-artificial-intelligence/

America's Digital Demand Threatens Black Communities with More Pollution
https://capitalbnews.org/ai-data-centers-south-carolina-black-communities/

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