Why the Great Salt Lake is drying up (and why you should care)

M. Alex Bates

Neumont College of Computer Science

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Sarah Carter

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# The Great Salt Lake is drying up, that is an immutable fact. The water level of the Great Salt Lake has dropped 22 feet since 1986 and it is continuing to decline. (*The great shrinking lake* 2022) The Great Salt Lake hosts 2 foundational species for the local food chain, brine shrimp and brine flies. The diminishing Great Sale Lake is struggling to support these brine populations which in turn impacts the 10 million migratory birds who make a pit stop at the Great Salt Lake to feed every year. The Great Salt Lake is fed by three major rivers: the Jordan river, the Weber River, and the Bear River. These rivers fill the Great Salt Lake with not only water, but also heavy metals that settle at the lakebed. If the Great Salt Lake dries up it will become a toxic dust bowl and those heavy metals will be exposed to the surface and wind. This will turn the Wasatch Front into a poisonous dustbowl with arsenic and other heavy metals clouding the air. There are several reasons we are at this point, and we must do something to address them or else risk ecological collapse and immensely decreased quality of life in the surrounding area. The reasons we are here are due to us diverting water from the rivers that feed the Great Salt Lake for skiing and agriculture, the Utah population skyrocketing, and climate change.

The Great Salt Lake has been used by humans for thousands of years as a source of food and water. When Mormon settlers came to Utah in 1847, they almost immediately began to irrigate and disturb with the Great Salt Lake and surrounding rivers. This was the start of our long history of tampering with the ecosystem of the lake. (Baxter & Butler, 2020) Back then, the salinity of the Great Salt Lake was much lower due to the larger water volume meaning there was a smaller concentration of salt to water, today the lake’s salinity is at a record high 17%, this means that instead of pulling water directly from the Great Salt Lake we divert the flow from the rivers that feed the Great Salt Lake before the water ever reaches it (Siegler, 2023). According to a breakdown of diverted water usage published in 2012, 82% of diverted water goes to agriculture, 9% goes to residential housing needs, 4% goes to non-community commercial use, with the final 5% going to non-residential public community systems, and domestic wells (*How Utah Water Works,* 2012). The diversion of all this river water is the closest thing to a direct cause that we have, while the diversion of water on for each category is a contributing cause. The most effective way to bring water back to the Great Salt Lake would be to lessen our agricultural water use. Our State Governor, Spencer Cox, is unfortunately resistant to the idea of restricting agricultural water use, due to the fact he owns large amounts of alfalfa farmland. Incidentally 45% of agricultural water usage goes to growing alfalfa. (Ciaramella, 2023)

Another cause that you’ve probably heard talked about in relation to other topics is climate change. The record temperature highs have been a contributing cause to the drying up of the Great Salt Lake. A study published in 2020 found that the current drought happening in the southwestern North America is “comparable to the worst SWNA megadroughts since 800 CE”, they even go on to call it a megadrought (Williams et al., 2020). Climate change is a contributing factor to the situation of the Great Salt Lake, and while that status may make it seems less significant a problem, that assumption would be wrong and climate change is something that must be addressed due to its effects reaching the entire planet. As our Great Salt Lake gets smaller and smaller the total surface area shrinks and that causes less evaporation, usually this phenomenon helps keep the water levels in balance, but we have reached a point where this effect isn’t enough. The smaller area and less evaporation actually means we get less precipitation and clouds, less rain and clouds means it gets hotter and our mountains get less snow, the hotter temperatures and our mountains getting less snow means that the Great Salt Lake gets less water.

So, what do we need to do to fix this? There is one solution that must happen, we need to divert river water back to the Great Salt Lake. “But where do we take water from?”, I hear you ask, agriculture of course! Growing plants in a desert is a difficult task that requires a lot of water, water that we don’t sustainably have. If we cut into alfalfa water usage among other agricultural use, we can contribute a significant amount back to the Great Salt Lake. Although we shouldn’t put all of our proverbial eggs in one basket by only targeting agriculture use, we should try to cut back water usage everywhere. Our grassy lawns are an example of major water waste, 60% of residential water use in Utah is spent on our lawns (*Weekly Lawn Watering Guide - Conserve Water Utah,* 2022). While many join the effort to “slow the flow” (PREV CITATION) many others are essentially forced to water their lawns or face fines by their local Homeowners Association (Flavelle & Tarnowski, 2022).

In conclusion there are a few causes to the current drying up of the Great Salt Lake. Us diverting more and more water every year being the direct cause, with climate change and some other underlying and remote causes making the problem worse. Right now, the future looks bleak, the threat of poisonous dust clouds and ecological collapse scary, but not all hope is lost, for we have not passed the point of no return. Biologist David Herbst and Biology Professor Bonnie Baxter state that the ecosystem should be able to rebound and bounce back if we can resolve this crisis quickly. (https://www.sltrib.com/news/environment/2022/11/08/great-salt-lakes-ecological/) If we can get water restricting legislature passed as quickly as possible and do our part in minimizing water use we can turn this around. Contact your local legislature here <https://le.utah.gov/GIS/findDistrict.jsp>!

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