The Impact of Climate Change on Water Bodies

Anuj Dasgupta and Aditya Kothari
Franklin Middle School, Chantilly, Virginia 20151
Eagle Ridge Middle School, Ashburn, Virginia 20148

ABSTRACT

The purpose of our research was to find the effects of climate change on water bodies. From this research, we learned that extreme weather, drought, flooding, and the increased severity of storms are all effects of climate change. We researched how Lake Mead has been slowly drying up over the past few decades. Hoover Dam also sits on Lake Mead and provides power to the surrounding areas. If this continues, the Hoover Dam will not be able to create a sufficient amount of hydroelectric power to power nearby towns and cities.

RESEARCH QUESTION/BACKGROUND

How has global temperature affected bodies of water?

- Significantly warmer temperatures have led to more evaporation and drastic and unsustainable changes in water levels.
- Parts of lakes have almost fully evaporated.
- In the case of Lake Mead, if the water level continues to decrease, the Hoover Dam would be nonfunctional.

VIIRS Images of Lake Mead

Figure 1: Lake Mead 17 July, 2020 (NOAA-20)

The JSTAR Mapper was used to obtain this True Color image. We used this image (Figure 1) because it shows Lake Mead in July of 2020, so we can compare it to an image from three years later in 2023.

This is a True Color image from JSTAR Mapper (Figure 2). This is from February of 2023. It shows how the top arm (in the white box) of Lake Mead has gotten much smaller since 2020. This shows how in just 3 years, a large section of the arm has evaporated.

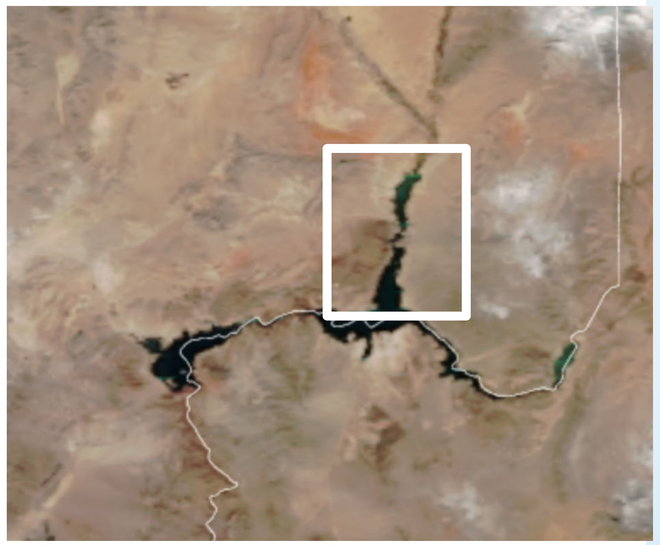


Figure 2: Lake Mead 16 February, 2023 (NOAA-20)

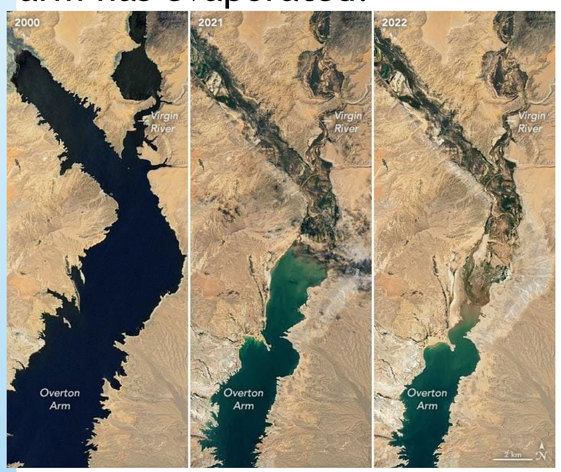
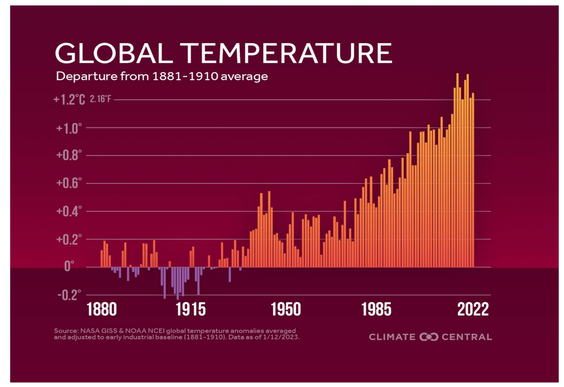


Figure 3: Lake Mead Overtop Arm in 2000, 2021, 2022

The image to the left (Figure 3) is from a Forbes article. It shows how drastically the Overtop Arm has dried up throughout the years: 2000, 2021, 2022 (Left to right order).

RESULTS and CONCLUSIONS

The VIIRS Imagery we used to show how the top arm of Lake Mead shrank over 3 years. Our first VIIRS image shows the arm of Lake Mead in 2020. The second image shows that the top arm has got smaller. The third image we used is not a VIIRS image, but it clearly shows the drastic changes from the year 2000 to 2022. The three images compared in the study show how the fork used to be full of water in the year 2000. In 2022 however, the fork is fully dried up. The graph below shows the increase in global temperature over the years. We can see that in the past few decades, the global temperature has been rising quickly. This correlates to the drying up of Lake Mead and other bodies of water around the world.



References

- JSTAR Mapper, https://www.star.nesdis.noaa.gov/jpss/
- Forbes, https://www.forbes.com/sites/marshallshepherd/2022/07/22/why-is-lake-mead-shrinking-climate-change-is-a-major-reason/?sh=6bfc885a72c0
- Climate Central, https://www.climatecentral.org/graphic/2022-in-review-global-temperature?graphicSet=Change+in+Global+Temperature&lang=en