

Committee: Arab League (AL)

Issue: Tackling the Issue of Water Scarcity in the Middle East

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Position: Deputy President

PERSONAL INTRODUCTION

Dear Delegates,

My name is Hao Jin and I am an IB1 student at Campion School of Athens. In this year's conference, it is my utmost honor to be serving as one of your Deputy Presidents of the Arab League.

It was MUN that gave me the opportunity to face and overcome my fear and anxiety of speaking. Looking back to 2019 when I first entered middle school, I was a timid and bashful child, who barely ever raised her hand in class, let alone speaking in public. When I first saw my peers giving passionate speeches, voicing their opinion and debating in MUN, I was envious of their self-confidence. Nonetheless, through the constant encouragement, care and guidance of the chairs and the cordial atmosphere of the MUN, I successfully became part of the people I used to "look up to", which is something I have benefited from MUN that I account more than knowledge.

Not only has MUN shaped my personality, it has also broadened my perspectives. Participating in MUN conferences has allowed me to deepen my understanding of these issues while developing my communication, research, and leadership skills. In this conference, I will guide you through the topic of "Tackling the Issue of Water Scarcity in the Middle East", where relative information can be found in this study guide, so as to aid you come up with various solutions, arguments and eventually, to draft a resolution. However, it is not advised to fully rely on this guide, as it only includes the minimum knowledge expected from a delegate. Hence, further research from your represented country's viewpoint is strongly recommended.

In this 3-day conference, I will endeavor my best to make the experience valuable and indelible. Should you have any queries, please do not hesitate to contact me at any time via email.

Best wishes,

Hao Jin

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TOPIC INTRODUCTION

According to 2018 data, 14 out of the 17 most water-stressed countries are located in the Middle East and North Africa (MENA)¹ and nearly 90% of the children in MENA live in high water-stressed regions, according to UNICEF². What they have been facing is food insecurities, lack of basic sanitation, leading to the transmission of diseases, undernourishment and infections. Moreover, there have been numerous reports on water conflicts in the Middle East, such as the Sudanese Civil War.

One of the main causes of the issue is its arid climate. Due to its geographical location, the MENA region gets high temperatures all year round, with rain being a rare occurrence in the region. Therefore, not only do they not get enough rainfall for support, the water also evaporates quickly, which deteriorates the situation.

In addition to the unfavorable location on the map, the poor government management has further worsened the situation. For instance, the agricultural activities in Middle East are super unsustainable and inefficient, as only irrigation itself uses 85% of the water of the region³. Furthermore, the rapid population growth has made water more scarce.

With global warming and climate crisis, the circumstances in the Middle East are only expected to aggravate. According to the World Bank, water scarcity may cause up to 14% of GDP loss in the next 30 years⁴. Although many strategies have been implemented to mitigate the severity, such as desalination and cloud seeding, there are a handful of disadvantages to the proposals and the issue still remains unsolved. Hence, delegates are expected to come up with resolutions to fight against.

DEFINITION OF KEY TERMS

¹ "Water Scarcity and Climate Change Enabling Environment Analysis for WASH." *UNICEF Middle East and North Africa*, 1 Mar. 2023, www.unicef.org/mena/reports/water-scarcity-and-climate-change-enabling-environment-analysis-wash.

² "Running Dry": *Unprecedented Scale and Impact of Water Scarcity in the Middle East and North Africa*. www.unicef.org/mena/press-releases/running-dry-unprecedented-scale-and-impact-water-scarcity-middle-east-and-north#_ftn1.

³ "Water in Crisis - Spotlight Middle East." *The Water Project*, <https://thewaterproject.org/water-crisis/water-in-crisis-middle-east>.

⁴ "How Can the Middle East and North Africa Manage the Region's Water Crisis?" *World Economic Forum*, 6 Jan. 2023, www.weforum.org/agenda/2023/01/middle-east-north-africa-mena-water-crisis-industry-leaders-solutions.

Water scarcity

“Water scarcity is described as a condition where water demand exceeds over available water supply⁵.”

Water stress

“Water stress occurs when the demand for water exceeds the available amount during a certain period or when poor quality restricts its use. Water stress causes deterioration of fresh water resources in terms of quantity (aquifer overexploitation, dry rivers, etc.) and quality (eutrophication, organic matter pollution, saline intrusion, etc.)⁶.”

Climate Change

“Climate change refers to long-term shifts in temperatures and weather patterns⁷.”

Desalination

“Desalination is defined as the removing of salt and minerals from sea water to make it suitable for human consumption & industrial use⁸.”

Water Governance

“Water governance refers to the political, social, economic, and administrative systems that influence the use and management of water⁹.”

Tropic of Cancer

“Latitude approximately 23°27' N of the terrestrial Equator. This latitude corresponds to the northernmost declination of the Sun's ecliptic to the celestial equator¹⁰.”

Subtropical High Pressure Belt

⁵ Figueroa, Anjali Jain, and Mikhail Smilovic. “Groundwater Irrigation and Implication in the Nile River Basin.” *Elsevier eBooks*, 2021, pp. 81–95. <https://doi.org/10.1016/b978-0-12-818172-0.00007-4>.

⁶ “Water Stress.” *European Environment Agency*, www.eea.europa.eu/help/glossary/eea-glossary/water-stress.

⁷ ---. “What Is Climate Change? | United Nations.” *United Nations*, www.un.org/en/climatechange/what-is-climate-change

⁸ “What Is Desalination Definition and Meaning.” *Pure Aqua. Inc.*, pureaqua.com/blog/what-is-desalination-definition-meaning.

⁹ SIWI. “Water Governance | SIWI - Leading Expert in Water Governance.” SIWI - Leading Expert in Water Governance, 26 Jan. 2023, www.siwi.org/why-water/water-governance.

¹⁰ ---. “Tropic of Cancer | Definition and Facts.” *Encyclopedia Britannica*, 20 July 1998, www.britannica.com/place/Tropic-of-Cancer.

“One of several regions of semipermanent high atmospheric pressure located over the oceans between 20° and 40° of latitude in both the Northern and Southern hemispheres of the Earth¹¹.”

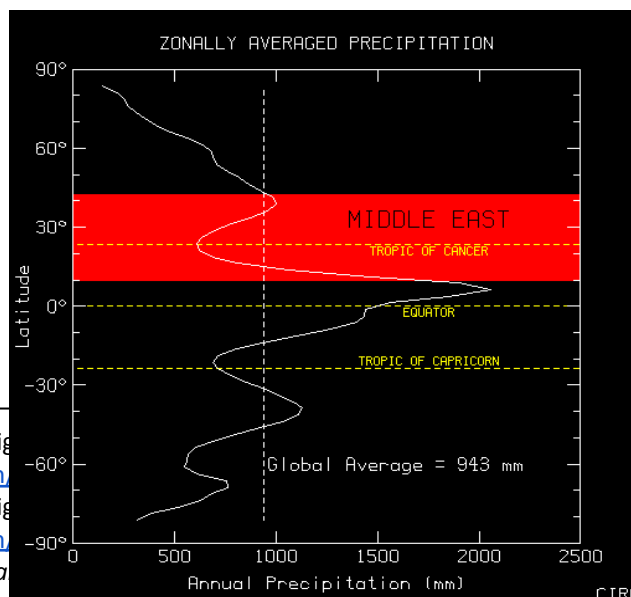
BACKGROUND INFORMATION

Causes

The causes of water scarcity in the Middle East can be divided into two main categories: Natural Causes & Human Causes.

Natural Causes

The Middle East locates itself on the subtropical high pressure belt and on the Tropic of Cancer region, which creates its arid climate, for the majority of countries. Being close to the Tropic of Cancer and the equator, the Middle East is situated in areas where the sun's rays are more direct, leading to high temperatures. These high temperatures cause increased evaporation of water, making the region dry and reducing the amount of rainfall it receives. As a result, there is a limited natural supply of freshwater. As the air descends, it undergoes compression and temperature inversion, which decreases precipitation and prevents cloud formation¹². At last, as more than 80% of the Middle East region is desert¹³, it further arides the region, as extreme high temperature result in a higher rate of water evaporation, thus further challenges the perseverance of water. From the figure we can infer that due to middle east’s location on the subtropical high pressure region (30°) and tropic of cancer, it does not receive enough precipitation, due to the direct sunlight.



¹¹ ---. “Subtropical High

www.britannica.com

¹² ---. “Subtropical High

www.britannica.com

¹³ *Physical and Human*

www.everyculture.com/Africa/Middle-East/introduction-to-the-middle-east-Physical-and-Human-Geography.html#:~:text=In%20the%20Middle%20East%2C%20the,centimeters%20of%20rainfall%20a%20year.

Fig.1: Zonally averaged annual precipitable water (mm) from the NVAP data set.¹⁴

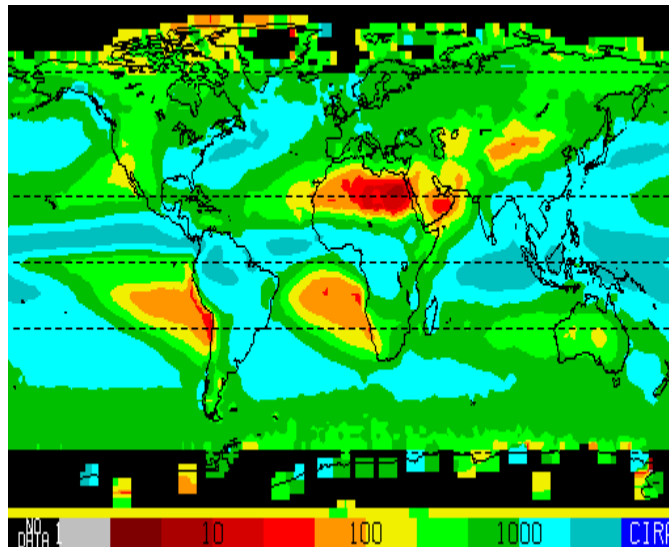


Fig.2: Mean annual precipitation (mm) from the GPCP data sets.¹⁵

Human Causes

Although the scarcity of water in the Middle East is mainly due to the limitation caused by its geographical location, human activities also play a role. The two main human activities leading to water scarcity is the overexploitation of groundwater resources and the inefficient irrigation practices.

Groundwater is a vital source in the Middle East as it is the main source of freshwater. When it is extracted more than it is naturally replenished, it leads to scarcity of water and depletion of aquifers. Over time, this will limit water availability and may result in dried-up wells. In addition, as underground water reserves become scarcer, it poses a long-term challenge for sustainable water management.

¹⁴ Israel Science and Technology Directory, www.science.co.il/weather/middle-east-climate/. Accessed 05 Sept. 2023.

¹⁵ Israel Science and Technology Directory, www.science.co.il/weather/middle-east-climate/. Accessed 05 Sept. 2023.

On the other hand, due to outdated infrastructure, limited access to modern technologies and poor management practises, irrigation uses about 85% of water in the region¹⁶. Furthermore, the ongoing conflicts and political instability have further impeded the investment in water infrastructure and conservation efforts.

Effects

The main social effect caused by water scarcity is food insecurity. As farmers do not have enough water to grow crops and the lands are arid due to desertification, it hinders the food production. Therefore, governments will have to import food from other countries. As there is food insecurity and governments have to spend additional money on importing food, food prices will have to rise, so the government can cover the expense gap. This will heavily impact the economy and social stability, as most citizens will not be able to afford necessities.

Furthermore, water scarcity may harm the ecosystem. It reduces river flows and damages lakes and wetlands. This may threaten biodiversity and aqua life. Moreover, limited water resources will create tension and conflict between communities and nations, thus provoking war. In addition, lack of water for hygiene purposes can lead to the spread of diseases, particularly in densely populated areas. At last, water scarcity affects hydropower generation, which may impact electricity supply and stability.

Challenges & Obstacles while tackling Water Scarcity

Increasing Water Demand

The underlying factors that have a considerable influence on the dynamics of water demand across a variety of sectors, including agriculture, industry, and home use, are population increase, urbanization, and economic development. The effects on water resources grow more obvious as each of these elements continues to have an impact, necessitating careful attention and sustainable management techniques. The demand for water is growing due in large part to population expansion. As the population of people increases, so does the need for water to meet necessities like drinking, sanitation, and hygiene. There is an increase in water consumption as a result of the strain on areas to provide populations with access to clean and dependable water sources due to the growing global population.

Climate Change

Extreme weather events and changing weather patterns have a big impact on water supplies and can make the already severe water shortage problems that

¹⁶ “---.” *The Water Project*, www.thewaterproject.org/water-crisis/water-in-crisis-middle-east.

communities and ecosystems confront across the world even worse. These occurrences are becoming more frequent and serious as our climate continues to change, necessitating rapid attention and careful planning for water management and conservation. The interruption of water supply is one of the most worrying effects of shifting weather patterns. Long-lasting droughts have grown increasingly frequent, leading to a decrease in groundwater levels, the depletion of reservoirs, and the reduction of water supplies. This puts stress on communities, agriculture, and businesses that significantly rely on reliable water supplies by affecting the supply of clean, drinkable water for human consumption, agricultural irrigation, and industrial operations.

Inefficient Water Use

Ineffective water management methods significantly and negatively affect our limited supply of water, aggravating the world's water crisis and endangering both the sustainability of ecosystems and human lifestyles. Our already finite water supplies are being unnecessarily depleted as a result of the interaction of several causes, including inefficient agricultural irrigation methods and widespread water leakages in water distribution systems. The agriculture industry, which accounts for a sizable amount of global water usage, is one of the main perpetrators in water waste. Old-fashioned and ineffective irrigation techniques, such as flood irrigation and unrestricted sprinkler systems, result in water use that is excessive compared to crop demands. This reduces agricultural output over time by wasting valuable freshwater as well as causing soil deterioration and salinization.

Overexploitation of Groundwater

Pumping groundwater in excess or beyond acceptable limits has negative effects that go well beyond immediate water demands. Constant groundwater exploitation depletes priceless aquifers, which causes a constant decrease in water supply and greatly aids in the creation of long-term water shortage problems. It is urgently necessary to pay immediate attention to this worrying trend since it poses a serious threat to both human populations and ecosystems.

Water Pollution

The supply of safe and clean water for a variety of important uses is greatly harmed by the pollution of water sources by industrial discharges, agricultural runoff, and untreated wastewater. This widespread issue poses serious risks to both human health and the environment, necessitating immediate attention and feasible solutions.

Financial Constraints

As the urgency of ensuring access to sufficient and clean water grows, implementing sustainable water management projects and infrastructure improvements is a vital effort. But there are several obstacles in the way of this admirable effort, notably in terms of funding. Such initiatives frequently need substantial financial investments, which can provide considerable challenges, especially for nations with limited financial resources.

Conflicts caused by Water Scarcity

The Sudanese Civil War

Sudan is ecologically divided into a fertile and lightly populated South, and a densely populated, but less fertile North. The North's population expansion and the need for more resources have led to conflicts with the South, which has adequate rainfall and fertile land. One notable source of conflict is the Jonglei Canal project which began in 1978, whose purpose was to drain the swamps and for additional farmland. Nonetheless, the project has threatened the tribes in the South who depended on the swamps for survival. Additionally, encroachment of mechanized farming from the North has caused tension and violence in the South. Conflicts have also arisen over the construction of the Kajbar Dam, which would have forced the relocation of the last remaining Nubian tribes. Many Sudanese people, particularly the Nubians, have protested against this dam project.

The Grand Ethiopian Renaissance Dam (GERD)

The construction of the GERD began in 2011 with the aim of providing Ethiopia with a significant source of electricity and enhancing the country's energy independence, by building a hydropower dam at Blue Nile River, one of the two main tributaries of Nile. However, the project is only 90% completed. As it is hydro powered, it is expected to consume a large amount of freshwater from the River Nile. However, except from Ethiopia, Sudan and Egypt also neighbor River Nile. Hence, there has been controversies and tensions on the future operation of the GERD as Sudan and Egypt heavily rely on the Nile River for their freshwater supply. Any reduction in water flow due to the GERD's operation could exacerbate water scarcity in these downstream countries, affecting their agricultural activities, drinking water supply, and overall water security.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

Saudi Arabia

Water scarcity is a pressing issue in Saudi Arabia due to its arid climate, limited freshwater sources, and high water demand. Rapid population growth, urbanization, and industrial development have further exacerbated the problem. The country heavily relies on groundwater, leading to the depletion of aquifers. Moreover, more than 82% of the wastewater have not reached the purification level for reuse¹⁷.

United Arab Emirates (UAE)

The UAE is another arid country facing water scarcity. Rapid urbanization, industrialization, and agricultural activities contribute to high water demand, putting pressure on its limited freshwater resources. This has negatively impacted UAE's economy as desalination and investment in water technologies require a lot of funding. Furthermore, water scarcity has limited irrigation, resulting in reduced crop yields.

Iran

While Iran is not entirely in the Middle East, its western regions experience water scarcity due to decreasing precipitation and overexploitation of water resources. The drying of the Urmia Lake and the Zayanderud River are notable examples of water scarcity challenges in Iran. As Iran relies on hydropower for electricity generation, water scarcity, combined with climate change effects, such as frequent droughts, can lead to reduced hydropower production, resulting in power disruptions and blackouts that affect daily life and economic activities.

Libya

Libya's desert climate and limited water resources result in significant water scarcity. The country heavily depends on fossil water from ancient aquifers, which is non-renewable and depleting rapidly. Political instability and conflict further exacerbate the challenges in managing and distributing water resources. For instance, it causes damages to infrastructure, including water treatment facilities and pipelines, which have disrupted water supply systems and hindered access to clean water for many communities.

Egypt

Egypt is heavily reliant on the Nile River for its water supply. However, it faces increasing challenges due to a growing population, industrial expansion, and climate change impacts. Furthermore, the Egyptian economy is heavily influenced by water

¹⁷ Alexander, Lynsey. "Water Crisis in Saudi Arabia." *The Borgen Project*, July 2020, www.borgenproject.org/water-crisis-in-saudi-arabia.

availability. Water scarcity affects industries such as agriculture, manufacturing, and tourism, leading to reduced economic output, job losses, and decreased foreign exchange earnings.

Gulf Cooperation Council (GCC)

“Political and economic alliance of six Middle Eastern countries—Saudi Arabia, Kuwait, the United Arab Emirates, Qatar, Bahrain, and Oman¹⁸.” It aims to enhance security cooperation and promote economic cooperation between member states.

The Food and Agriculture Organization (FAO)

FAO works on issues related to water use in agriculture, including efficient irrigation practices and sustainable water management in the Middle East.

The World Bank

The World Bank provides financial and technical assistance to Middle Eastern countries for water-related projects, such as water infrastructure development and water conservation.

BLOCS EXPECTED

Bloc 1

All the countries that are greatly impacted from water scarcity should be in Bloc 1, for instance Saudi Arabia, Egypt and Iran. The aim is to find a solution, through the utilization of technology, and seek aid from other nations.

Bloc 2

All the countries that are not so involved or have found a way to tackle the issue should be in Bloc 2, for instance Lebanon and Qatar. The aim is to be against the technology due to nonreciprocal environmental harm effects, and suggesting solutions to the problems existing in their strategies, while not harming their own nation’s economy and political stability.

¹⁸ The Editors of Encyclopaedia Britannica. “Gulf Cooperation Council (GCC) | History, Member Countries, Purpose, and Summits.” *Encyclopedia Britannica*, 4 May 2023, www.britannica.com/topic/Gulf-Cooperation-Council.

TIMELINE OF EVENTS

Date	Description of event
1998	The World Bank launches the Middle East and North Africa Regional Water Initiative to address water management issues in the region.
2007	The United Nations Economic and Social Commission for Western Asia (ESCWA) reports that 13 out of 22 Arab countries are facing severe water scarcity.
2011	Protests in Syria begin, partly driven by water scarcity issues, as severe drought and mismanagement of water resources contribute to agricultural failures and displacement of rural populations.
2015	Yemen's water crisis intensifies as the country faces a combination of factors, including armed conflicts, mismanagement, and climate change impacts.
2017	Saudi Arabia and other GCC countries face a severe water crisis, with high water demand, limited renewable water sources, and reliance on desalination.
2019	The United Nations reports that 17 countries in the Middle East and North Africa are experiencing water scarcity, with water availability per capita less than 500 cubic meters per year.

RELEVANT RESOLUTIONS, TREATIES AND EVENTS

The UN-Water

UN-Water was established by the United Nations in 2003 to oversee and regulate water governance. UN-Water works to promote collaboration among UN agencies and international organizations to address global water challenges, including those in the Middle East. UN-Water's involvement in the Middle East includes initiatives, partnerships, and projects aimed at improving water management, enhancing water security, and promoting sustainable water use. UN-Water promotes the adoption of Integrated Water Resources Management (IWRM) approaches in the Middle East, which focus on balancing competing water uses, optimizing water use efficiency, and fostering cross-sectoral collaboration. In addition, UN-Water collaborates with regional organizations and national governments in the Middle East so as to address water scarcity challenges and promote effective water management practices.

The Millennium Development Goals (MDGs)

The MDGs are a set of eight global development goals established by the United Nations (UN) in the year 2000. The goals were aimed at addressing various social, economic, and environmental challenges faced by developing countries and improving the living conditions of people around the world. The MDGs had a target deadline of 2015. One of those eight goals was “*Ensure Environmental Sustainability*”, which aimed to promote environmental conservation and ensure access to safe drinking water.

International Decade for Action “Water for Life”

In 2005, the UN launched the International Decade for Action 'Water for Life', a ten-year project (2005-2015) with the primary objective of promoting efforts to fulfill international commitments related to water and water-related issues by 2015¹⁹.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

The Qatrah Program

In 2019, the Saudi Arabian government introduced a national water program called Qatrah, which operates under the Ministry of Environment, Water, and Agriculture. The primary objective of Qatrah is to achieve a 43% reduction in water consumption by 2030, targeting a per capita usage of 150 liters per day. To achieve this, the program focuses on raising awareness and encouraging behavioral changes among individuals regarding water usage. It also seeks to address the substantial

¹⁹ *About | International Decade for Action “Water for Life” 2005-2015.*
www.un.org/waterforlifedecade/background.shtml.

water consumption in the agricultural sector, which accounts for the majority of water usage in Saudi Arabia.

The Qatar National Vision Program (QNV)

Similarly, in 2008, Qatar launched its National Vision (QNV) with the aim of balancing economic development while considering human and natural resources. As part of the QNV 2030, the country has committed to rationalizing water consumption and promoting the utilization of non-conventional water resources²⁰.

POSSIBLE SOLUTIONS

Rainwater Harvesting

Rainwater harvesting is the practice of collecting and storing rainwater for various uses. It can be an effective strategy for tackling water scarcity and improving water availability in regions with limited water resources. It is a sustainable and eco-friendly approach to water management, as it reduces the strain on groundwater and surface water sources, leading to less depletion of natural water reserves. Moreover, rainwater is freely available, so rainwater harvesting can lead to cost savings on water bills for individuals and communities, especially in areas where piped water supply is expensive.

Water Recycling Programs

The program aims to treat and reuse wastewater, stormwater, or other sources of used water to supplement traditional freshwater supplies. Water recycling promotes sustainable water management practices, ensuring that water resources are used efficiently and responsibly. Furthermore, during periods of drought or water scarcity, water recycling programs can provide a reliable alternative water source, helping communities maintain water availability.

Cloud Seeding

Cloud seeding typically involves the introduction of certain substances, such as silver iodide or sodium chloride (common table salt), into clouds and provides a surface for water vapor to condense and form cloud droplets, which produces more

²⁰ Jameel, Abdul Latif. "Solving Middle East Water Crisis | Abdul Latif Jameel®." Abdul Latif Jameel, 12 Sept. 2022, www.alj.com/en/perspective/thirst-for-investment-solving-the-middle-east-s-water-challenges.

precipitation²¹. However, it may not always result in significant precipitation, and the outcomes can be unpredictable. Furthermore, There are concerns about the impact of introducing foreign substances into the atmosphere and water systems, potentially affecting ecosystems and human health.

Desalination

Desalination is a process that converts seawater or brackish water into freshwater, so as to increase the water availability. Unlike traditional freshwater sources like rivers and lakes, desalination is not dependent on rainfall or snowmelt, making it a viable option in regions with irregular or scarce rainfall. Moreover, Advances in desalination technologies have improved energy efficiency and reduced environmental impacts, making it a more sustainable solution compared to older methods. Nonetheless, desalination often requires large amounts of electricity or fossil fuels. This high energy demand can lead to increased greenhouse gas emissions and contribute to climate change. In addition, desalination is generally more expensive than other water supply options, such as surface water or groundwater sources.

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²¹ Desert Research Institute. “What Is Cloud Seeding? - DRI.” DRI, 19 Sept. 2022, www.dri.edu/cloud-seeding-program/what-is-cloud-seeding/#:~:text=Cloud%20seeding%20is%20a%20weather,certain%20types%20of%20subfreezing%20clouds.

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