

One Day in the Desert Part 1

Introduction to the Chihuahuan Desert and Evaporation Experiment

Asombro Institute for Science Education

In this video, we'll explore how plants, animals and other parts of the environment interact to change and influence each other by learning about the Chihuahuan Desert ecosystem, how it has changed over time, and conduct an evaporation experiment.

Hello everybody! It's Mr. Ryan from the Asombro Institute for Science Education and I'd like to introduce you to the Chihuahuan Desert! If you're lucky enough to live in southern New Mexico this is your backyard, but if you're joining us from somewhere else we're happy to share the cool parts of our desert with you. It's the largest desert in North America and one of the most diverse deserts in the entire world. The Chihuahuan Desert extends from Mexico City, Mexico all the way north to Albuquerque, New Mexico. Most of the Chihuahuan Desert is found in the nation of Mexico but a large part of it is found in New Mexico, where we are today.

Thank you for joining me at the Chihuahuan Desert Nature Park! This is Asombro's outdoor classroom located just north of Las Cruces. It is here that we're going to help you virtually discover many of the wonderful things that make our desert home so unique. But first what makes a desert a desert?

Many people think it's about the temperature, and yes, many deserts are the hottest places on Earth, but they can also be some of the coldest places on Earth. Whether hot or cold, all deserts are arid, dry environments that typically receive less than 10 inches of precipitation each year. Or, a place where potential evaporation far exceeds the precipitation.

To start our exploration of the Chihuahuan Desert we're going to read this book, [One Day in the Desert](#) written by Anna Keener and illustrated by Christina Wald. It's about a young girl named Mariana from Las Cruces, New Mexico. She and her classmates go on a field trip to the Chihuahuan Desert Nature Park to explore the different types of plants and animals that live there along with their teacher and help from a desert scientist named Dr. Garza.

To give you some background, Mariana and her class are involved in an Eco Pen Pal postcard exchange with kids just like them from different ecosystems. Mariana's pen pals are Kupe from a volcanic island in French Polynesia and Ellie from a pine forest in Washington State. Here's what they have to say about their ecosystems:

>>Kupe: Mariana, Guess what? I went fishing with my dad last night and the water filled with colorful bubbles all around our boat. I collected some in a jar. An elder told me that they are the young corals released by their parents into the ocean. It only happens once a year. I was so lucky to have seen it happen. The little polyps grow into larvae which can swim. I put the larvae back in the ocean so that

they can grow into new coral. I'm looking forward to hearing about your adventures. I've never seen a desert. I bet it's amazing. Kupe

>>Ellie: Mariana, I hope you're doing well. My forest is dry right now. We haven't had much rain and the edges of the leaves are getting crispy and brown. I guess you know what that's like! Yesterday, I saw a northern pygmy owl land on a branch of a nearby tree. It was mid-afternoon in the full sun. They are a kind of owl that doesn't mind being out during the day. What is the desert like? What animals do you see there? Ellie

>>Mr. Ryan: Mariana will have to write back to her pen pals after her field trip to the desert, so let's get started, shall we?

Mariana poured over her two Eco Pen Pal postcards that had just arrived in the school mail. She and her new friends, Kupe and Ellie shared their adventures in their different ecosystems through a postcard exchange. Kupe lived on Moorea, a volcanic island in French Polynesia ringed by coral reefs. Ellie lived in a pine forest of Washington State. Mariana was amazed by these places. Soon it would be her turn to write back to her pen pals. They wanted to know about the place where she lived. She worried they would be disappointed by the desert. How could it be as beautiful or as full of life as the places where they lived?

Mariana's teacher told the class about their upcoming field trip to the Chihuahuan Desert Nature Park. Mrs. Locke was always an animated talker, but today she merrily flung her arms over the projected photos from last year's trip. There were no houses or buildings in any of the photos-- only the lonesome desert plains and mountains.

>>Dr. H: Can you think of something you find interesting about the desert that Mariana could write about to her friends?

Mrs. Locke told them, "We will go on a nature walk through the Chihuahuan Desert, all the way to the top of an extinct volcano. We'll see the plant and animal life that is special to this desert."

>>Mr. Ryan: The field trip to the desert didn't sound as exciting as a coral reef or a pine forest, but Mrs. Locke's enthusiasm gave Mariana hope. Maybe she would have something interesting to share when she wrote to her friends.

That night at dinner, Mariana explained that she was going on a field trip to the Chihuahuan Desert Nature Park. Her father said, "I think the park is close to our old ranch. It's a beautiful place." Grandpa pulled an old photo off the shelf and said, "When we had our ranch we used to take picnics up into the foothills. From there we could see the whole valley, our ranch, and the city growing up along the river. You will be able to see the land where we used to live."

Mariana studied the picture.

>>Mariana: "The flowers are beautiful. It looks like grandma and grandpa are standing on a golden rug." Grandma replied, saying, "Those are lemon scent flowers. I remember how green it was."

The grass was thick, the cattle had plenty to eat, and the desert smelled of lemon. We had so much rain that year. We don't get wet years like that very much anymore."

>>Mr. Ryan: Mariana imagined what it would be like to grow up on her grandparent's ranch and raise cattle the way her father had. When Spanish explorers arrived in the valleys of southern New Mexico in the 1500s, they described the grasses as tall enough to tickle the belly of their horses. European settlers who originally stayed in the area, raised sheep on these grasslands. It wasn't until after the civil war in the that ranchers introduced cattle in large numbers to the region. New laws encouraging settlement in the west, a growing demand for beef, and technologies like the railroad and windmills allowed ranchers to increase livestock numbers. But large herds caused over-grazing and livestock ate the grass faster than it could grow back. Loss of grass cover harmed the soil making grasses slow to recover. Droughts that happened naturally in the desert reduced the grass cover even further. Ranchers were forced to sell many of their cattle before they starved, and many could not afford to ranch after that. Today ranchers own fewer cattle and raise their animals on a mix of land they own and public lands. Although they have a better understanding of good rangeland management than ranchers did in the 1800s, ranching still proves to be a risky business that depends on favorable weather and good grazing land. We'll stop here for today, but I think we should do an investigation at home to learn a little bit more about this ecosystem we live in. Do you remember the definition of a desert that we talked about earlier?

>>Dr. H: That's right, deserts can lose more water through evapotranspiration than they gain in precipitation. Water moves from the soil to the atmosphere through a process called evaporation. Water also moves from plants to the atmosphere in a process called transpiration. Together these two pathways add up to evapotranspiration.

Let's look at evaporation. Here's what you'll need. You'll need a sponge or an old paint brush, a bucket or a cup to carry water in, like this yogurt container, a hard surface like sidewalk or driveway, one area in the sun and one area in the shade, and you'll need something to measure time.

Here's what you're going to do: Use the sponge or paint brush to write your name on the hard surface-- one name in the sun and one name in the shade. Time how long it takes for your name to evaporate. Record the time for each location.

Which name disappeared the fastest? in the sun or in the shade? Why do you think?

Let's make a prediction: Sun versus Shade. I think the name in the _____ (blank) will evaporate the fastest because _____.

Can you think of other experiments you'd like to try?

You're on a mission! After you've completed the evaporation experiment in the sun and in the shade, find a third location, then repeat the evaporation experiment, and record your results.

>>Mr. Ryan: All right, now you're ready to investigate. Before you head outside with an adult, make sure you grab the supplies that we discussed earlier. You'll also need a piece of paper and a pencil to write down your results.

And be sure to join us again for part two of One Day in the Desert to learn some more cool desert science and see what adventures Mariana and her class get to have once they arrive at the Chihuahuan Desert Nature Park. Until next time, bye everybody!