The Science of Ancient Egypt

DR. DAVE'S SCIENCE

The Nile River (Free Sample)

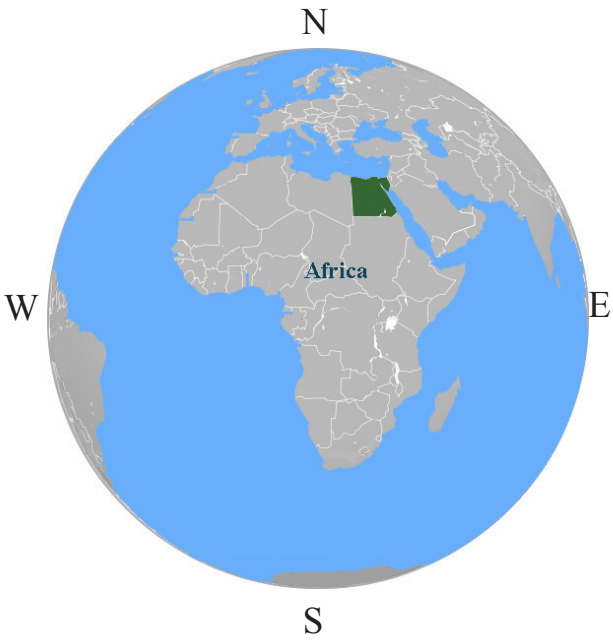
The Nile River

Chapter Overview

The Geography of Egypt

Find the country of Egypt on the map of the Earth. Notice how Egypt is located on the northeastern part of the continent of Africa. It was here, many centuries ago, that a great Egyptian civilization existed. Get ready to learn about mummies, copper, and one of the most important rivers in the world!

Its hard for our modern culture, which really hasn't been around for all that long, to imagine how long the Egyptian culture existed. Most scientists think the Egyptians existed for just over 3000 yrs. "Wow, that is a very long time", you could be saying to yourself—and you are right, that is a very, very long time.



Egypt lies directly South of the Mediterranean Sea

The Sahara Desert is one of the driest places on Earth. This kind of climate, which is very dry and hot, is called arid.

• Look at this old map of Egypt. One of the first things to understand is that Egypt is in the middle of a desert. A desert is a large area of land that receives very little rain. Since there is no rain, hardly any plants can live there. The name of the desert that Egypt is located in is the ***Sahara Desert***.

Can you imagine living in a place where it is hot and it rarely rains?

Arid: a climate that is very hot and dry. In the summer, the temperature in the Sahara Desert can easily reach over 100°F. The winters are mild, although the temperature can drop to 32° F (0°C) at night. There is an occassional light rain during the winter.

The Climate of Egypt

The arid climate of Egypt means that it is hot and dry. Egypt receives a little bit of rain in the winter, but it hardly ever rains in the summer. Look at the pyramids below, and observe how dry the land is. There are no plants at all growing in this environment. How could one of the world's greatest civilization have existed in the middle of this desert?

The answer is: the Nile River!

The Nile River

The amazing Egyptian civilization could have never existed without the Nile River. Their culture and people relied on it completely. The importance of having a reliable source of fresh water for any large group of people cannot be overstated. The Egyptians could depend on the river for not only their fresh water, but also for water to grow crops on the sides of the river. In fact, the entire Egyptian culture was built around the Nile River. The Greeks, another ancient civilization, actually called Egypt and their entire civilization: "the Gift of the Nile".

Map of the Nile

The photo above is a modern picture of Egypt and the Nile River taken from a satellite in space. Although the river may look small in this image, remember that the picture was taken from space. What you are really seeing is hundreds of miles of the river—and this is only part of the Nile. The Nile River in total is thousands of miles long.

~The Nile River is the longest river in the world~

• Another feature of the Nile River is that it flows in a south to north direction (from bottom to top). You may not think this is so unusual, but most rivers flow in the opposite direction. Look at the map to the left and use your eyes to follow the flow of water as the fresh water of the Nile River pours into the salty waters of the Mediterranean sea.

Deltas

Many rivers end in a structure that is called a ***delta***. The end of the Nile River is a very a good example of a delta. A delta forms when the fast moving water of a large river suddenly slows when it flows into the ocean. When the water slows, all the dirt and silt in the water immediately sink. Over many years this material all builds up, and eventually a shallow structure called a delta is formed. A delta is usually shaped like a triangle. The delta of the Nile River that you see to the right actually spreads over a hundred miles.

The delta region of the Nile River is filled with swamps and marshes.

Delta is also the 4th letter of the Greek alphabet

Fresh Water

Fresh water is a basic human need—we cannot live without drinking water. It was no accident that all of the ancient cultures lived near rivers. In addition to the Egyptians, other cultures such as the Chinese and Hindus also lived near rivers. The fresh water that the rivers provided meant that people could settle down and build homes near the river. Sometimes our modern culture forgets the importance of having a local source of clean, fresh water. You can be sure the Egyptians didn't forget this!

Fresh H_2O

The Watercyle in Egypt

The watercycle in Egypt was very simple, since there was very little rain. This also means that there weren't that many clouds in the sky, especially in the summer. During the winter, it might occassionally frost in Egypt, but snow was a rare event. For thousands of years, the fresh water of the Nile River simply flowed into Egypt and then poured into the salty water of the Mediterranean Sea.

The Egyptians believed in cleanliness, and they took many baths to keep their bodies clean. They knew that keeping clean was part of good health.

Ecosystems in Egypt

The Nile River runs through a desert, so the Egyptians only lived near a narrow strip of land that followed the Nile River. It was only in this area where humans could live. Outside of the green area was the ***desolate*** Sahara Desert, where few living things could exist. This satellite image really gives you a sense of the importance of fresh water for life. Withing the green zone are plants: trees, shrubs, vines, wildflowers, and grasses that can only grow where the fresh water of the Nile River is available. Since there was very little water and food in the desert, the Egyptians had to live near the river.

The Nile River from satellite

All life on our planet depends on water

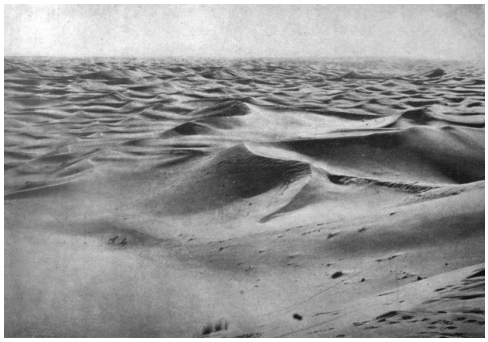
On the Banks of the Nile River

• The natural environment around the Nile River included plants that liked to grow in the hot, dry climate. The palm trees that you see to the left only grow in extremely warm climates. In the US, palm trees are only found in the extreme South of the country. This is because cold temperatures of winter will kill these plants. If it snows where you live, it is unlikely that you will see palm trees!

Marshes

• Because of all the fresh water provided by the Nile River, there were plenty of wetlands. Freshwater wetlands are ***ecosystems*** that are rich in biology. The typical marsh is full of plants and animals: many of which provided the Egyptians with an incredible amount of food and other resources. The marshes were full of frogs, fish, birds, and important plants.

An estuary is a wetland where the freshwater of a river meets the salty water of the ocean



A photo taken in 1908

The Sahara Desert

• The opposite of a wetland rich in life is a desert devoid of life. Look at this old black and white photo of the Sahara Desert. It is very difficult for anything to live here. The animals that are able to survive usually only come out at night.

Why would animals that live in the desert only come out at night?

Floods

Most ancient cultures were affected by floods. ***Floods*** usually happen when it rains alot—a real lot. The water rises above the sides of a river and covers the land that would normally be dry. In our culture, floods are always bad, as they cause damage to homes and other buildings. In Egypt however, the floods were a good thing and they were welcomed by the Egyptians! The Egyptians didn't complain about the floods. Instead, they rejoiced in them!

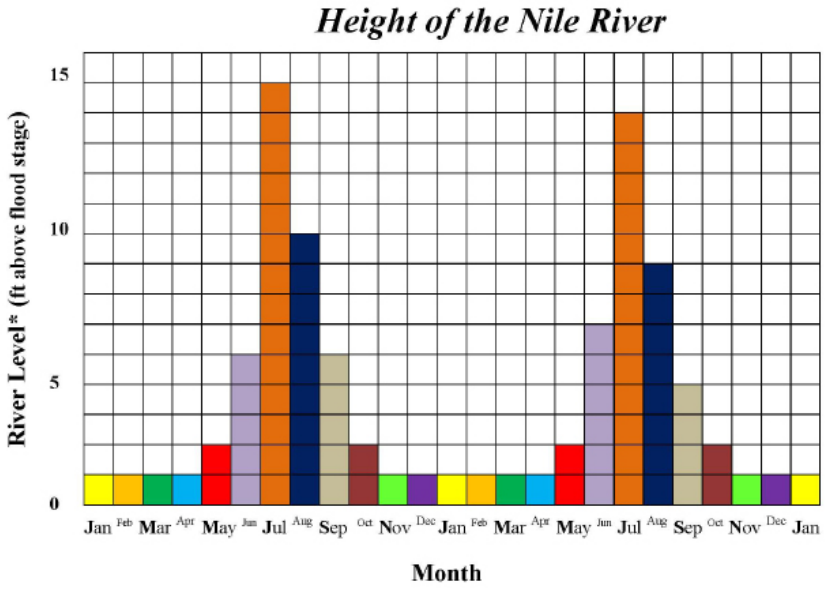
But it never rains in Egypt! Where does all this water come from?

Monsoons

The answer to the question above is three thousand miles away South of Egypt where the Nile River starts. Far away from Egypt, it rains a tremendous amount. Not only does it rain a lot, but it rains at the same time, every year. These annual rains are called ***monsoons***. Every year it would rain an incredible amount and all this extra water would rush up the Nile River. The water would flow northwards towards the Egyptians, until it finally reached Egypt, where it would overflow the sides of the river and flood the land around the Nile.

Why Would the Egyptians Welcome a Flood?

A clue to the answer is shown in the bar graph below. This graph shows the water height of the Nile River over two years. Look at the graph and see if you can detect any pattern in the water levels.



Egyptian symbol for water

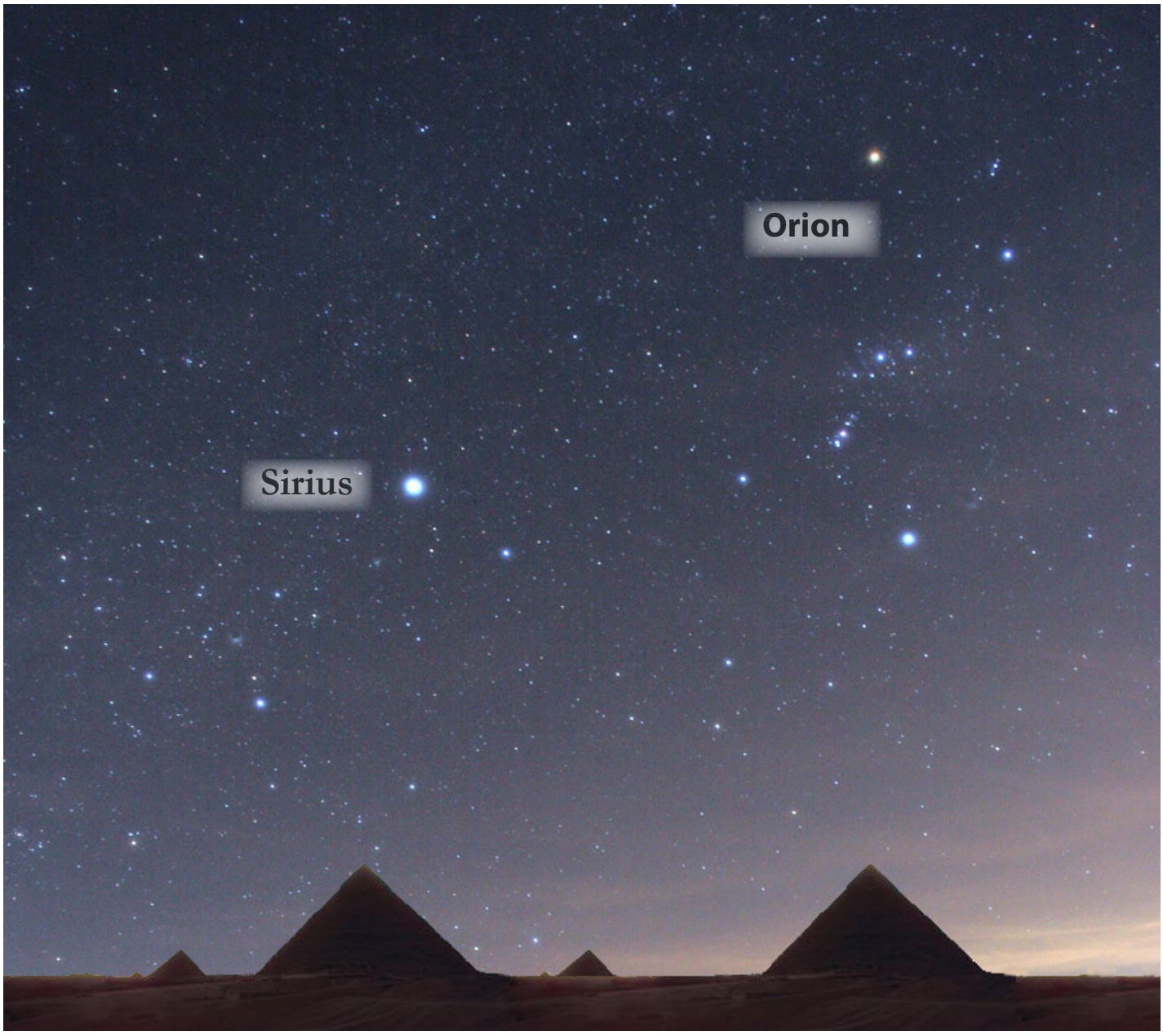
Egyptian symbol for flood

** These numbers are not actual measurements. They are only representative of what the river levels might have been.*

Sirius

You have probably noticed that each year, the highest level of the river occurs during the summer month of July. In fact, the Egyptians knew exactly when the Nile River would flood. How? During the summer, when the Egyptians saw a particular star appear in the morning just before the sun rose, they knew it was time for the Nile River to flood. For thousands of years the Egyptians would watch this special star, and would be happy when they saw it. Today, we call this star ***Sirius*** [*sir-ee-uhs*].

Sirius was the most important star to the Egyptians. Its appearance marked the start of their New Year. They called it the Star of Isis, or the Nile Star.



Sirius is the brightest star in the night sky

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Page 5	Delta, Water drop	Open clipart
Page 5	Egyptian with pail	Open clipart
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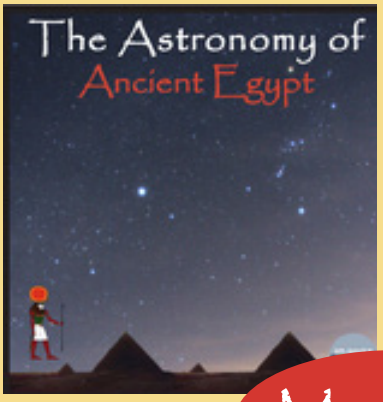
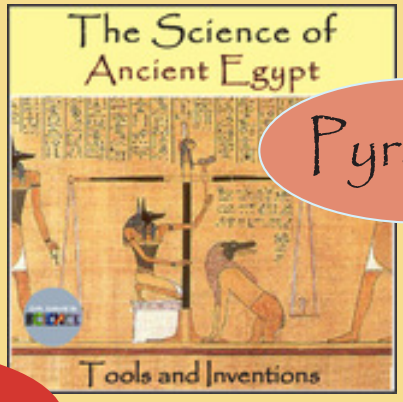
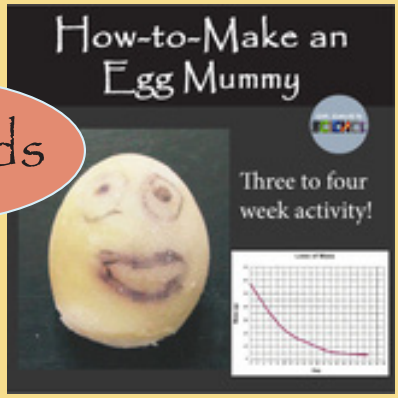
The Nile River

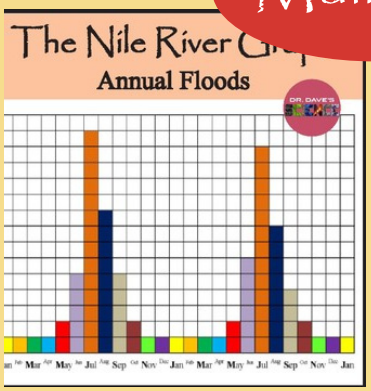


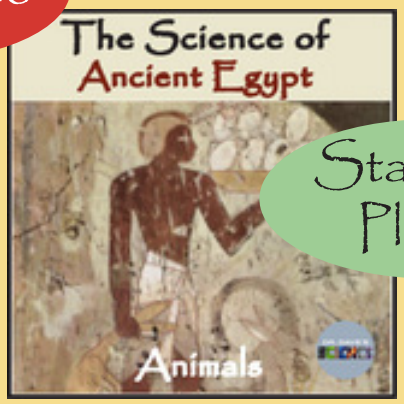
Mummies



Pyramids

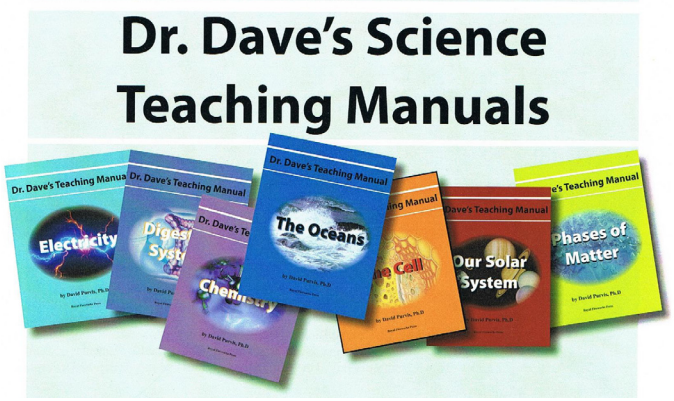






Stars and Planets

and more!



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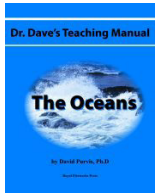
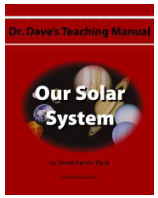


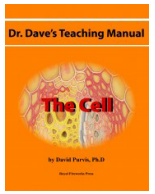
The Oceans

Wonderful for elementary students, who are naturally interested in this unit. Lots of salt science, fish, giant squids, NOAA images,



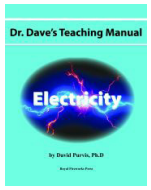
Solar System

Excite young learners with spectacular image-rich unit. Scale models of the solar system are a must for this unit; also included are creative art projects, demonstrations, flour craters and



The Cell

Just a spectacular unit on the cell. Many interesting demonstrations, activites and experiments. Students love the 'Eggcellent Experiment' as an excellent model for a cell and

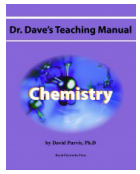


Electricity

Covers topics typically covered in a middle-school science curriculum for electricity! Circuits, insulators and conductors, currents, resistance. Instructions for simple STEM proj-

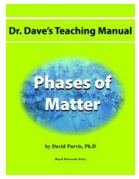
K-12 Science Resources

Former PhD Scientist with over 25 years teaching K-12 Science!



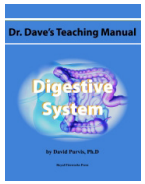
Chemistry

Colorful grocery store chemistry for elementary and middle school science teachers. The power of vinegar and baking soda. Blue pennies, rusty apples, and colorful acid-base activities.



Phases

The ***ultimate*** resource for teaching about Solids, Liquids, and Gases. Covers all the phase transitions and includes tons of inquiry activities for young students.



Digestive System

Fun demonstrations of the digestive system including mechanical and chemical digestion. Grocery-store enzyme and kiwi and gelatin experiments. Includes advanced experiments using the amylase and lactase

"While other books offer science experiments, [Dr. Dave's Teaching Manuals] are structured so that sequential lessons build upon one another to teach well beyond a superficial level.

Cathy Duffy Reviews

"Based on his years of experience as a classroom science teacher, Dr. Purvis has written some of the most comprehensive, creative, and useful manuals for teaching science"

Marc A. Meyer, M.Phil., Ph.D.