# Model My Watershed

A Model or a Simulation?
Which is Which?

NAME:_____

Scientists use models and simulations to help them understand and predict how things work in the real world. A **model** is a simplified version of something, like a tiny version of a city, a drawing of the solar system, or a computer program that represents a river. A **simulation** is when we use a model to test different scenarios, like what happens to a river if it rains a lot or if pollution gets into the water.
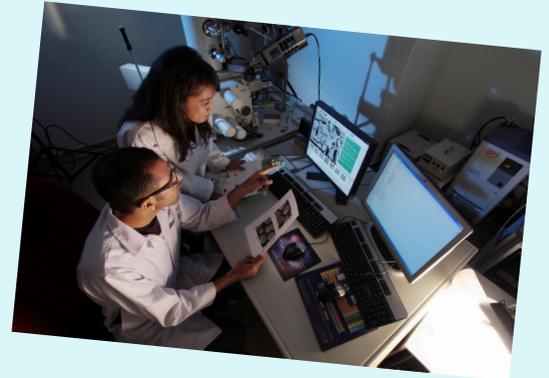
Examples of Models:

1. A globe (a model of Earth)
2. A toy car (a model of a real car)
3. A 3D diagram of the solar system
4. A skeleton model in a science classroom

Examples of Simulations:

1. A flight simulator that pilots use to practice flying
2. A weather simulation predicting the path of a hurricane
3. A virtual reality surgery practice for doctors
4. A driving simulation to test self-driving cars

Many different kinds of scientists use simulations to study and solve problems, such as:

- **Meteorologists** use simulations to predict storms, hurricanes, and climate changes.
- **Environmental scientists** use simulations to see how pollution spreads in air, water, or soil.
- **Engineers** test new bridges, airplanes, and buildings in a virtual world before building them in real life.

Scientists use simulations because they help answer big questions safely, quickly, and without harming the real world. Instead of experimenting on an actual river or waiting 100 years to see how a forest changes, they can run a simulation to test ideas and find the solutions they need faster!

Model My Watershed

In this activity, you will use the *Model My Watershed Runoff Simulation* to explore how water moves through the environment. You'll start by scanning the QR code or going to the following website on the right hand side. Once you are on the website, you may notice some colorful features on your screen! But before we get started, lets look at the key below to understand the simulator.
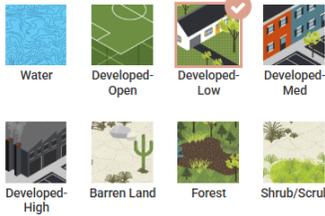
Runoff Simulation

Scan the QR code!
https://runoff.modelmywatershed.org/

Land Cover

Water	Developed-Open	Developed-Low ✓	Developed-Med
Developed-High	Barren Land	Forest	Shrub/Scrub

The type of surface that covers the land, such as forests, grasslands, farmland, or cities. Different land covers affect how much water soaks into the ground or runs off.

Key Terms

- **Precipitation:** The amount of water that falls from the sky.
- **Evapotranspiration:** The amount of water returning to the air through evaporation.
- **Runoff:** The water that flows overground instead of soaking in the ground.
- **Infiltration:** The water that does soak into the ground.
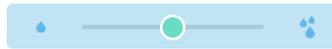
Soil Group

Hydrologic Soil Group

A - High Infiltration ✓	B - Moderate Infiltration	C - Slow Infiltration	D - Very Slow Infiltration
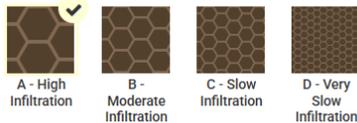
The type of soil in an area, which affects how easily water can absorb into the ground. Some types of soil let a lot of water in, while others cause more runoff.

Storm Event

Precipitation for 24-hour storm event

The amount of rainfall in a storm, measured in centimeters, (cm). Larger storms create more runoff and can lead to flooding.

Water Column

A way to measure how water moves through the environment, showing how much soaks in, runs off, or evaporates.

Model My Watershed

Now that you understand all the features, you will run the simulation to see what happens to rainwater – how much of it soaks into the ground, how much runs off the surface, and how much evaporates into the air in different types of environments.

Directions: You will record your data in boxes 1 and 2. Use the key to help you understand what each part means. After that, you will get to experiment by changing the land cover and record your data in box 3.

1 Choose the following:
1. **Land Cover:** Select Forest
2. **Soil Group:** B–Moderate Infiltration
3. **Storm Event:** 1.0 cm rainfall

> **Record the following: (cm)**
> Precipitation:
> Evapotranspiration:
> Runoff:
> Infiltration:
>
> *Circle Y or N*
> **YES or NO**

2 Choose the following:
1. **Land Cover:** Developed-MED
2. **Soil Group:** C- Slow Infiltration
3. **Storm Event:** 5.0 cm rainfall

> **Record the following: (cm)**
> Precipitation:
> Evapotranspiration:
> Runoff:
> Infiltration:
>
> **YES or NO**

3 Choose the following:
1. **Land Cover:** Developed- Open
2. **Soil Group:** A- High Infiltration
3. **Storm Event:** _____

Your Choice!

> **Record the following: (cm)**
> Precipitation:
> Evapotranspiration:
> Runoff:
> Infiltration:
>
> **YES or NO**

4 Choose the following:
1. **Land Cover:** _____
2. **Soil Group:** _____
3. **Storm Event:** _____

> **Record the following: (cm)**
> Precipitation:
> Evapotranspiration:
> Runoff:
> Infiltration:
>
> **YES or NO**