

Watersheds: Connecting Weather to the Environment

PowerPoint Notes

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This presentation was developed to accompany the *Watersheds: Connecting Weather to the Environment* course developed by the National Environmental Education Foundation (NEEF) and the Cooperative Program for Operational Meteorology, Education, and Training (COMET). It may be used for community outreach activities, and is customizable to your location.

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This slide outlines the contents of the presentation. Clicking on a link will take you directly to that section of the presentation.

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When it rains or snows, where does the water go? Into a “watershed.” Some of the water that falls is stored in the land, some of it evaporates away, and the rest follows the slope of the land to a common river, lake, or other body of water.

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Everyone lives in a watershed – Your own backyard is part of a watershed. Down the street, there may be a small creek or drainage ditch, which will eventually lead to a larger stream, river, pond, or lake. This means that what happens in your backyard, and your neighbor’s backyard, affects your whole environmental neighborhood!

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“Watershed” is a relative term – a watershed can drain an area as small as a few city blocks, or as large as an entire geographical region, such as the Ohio River Basin. Smaller watersheds come together to form larger watersheds, much like puzzle pieces fit together to create a larger picture.

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Another way of looking at watersheds is that they are a nested system – larger watersheds encompass many smaller watersheds. For example, the “Lena Gulch” watershed in Colorado’s Rocky Mountain Foothills drains only 14 square miles of land, but the water from Lena Gulch eventually combines with water from numerous other small watersheds in the central U.S. to form the very large Missouri River Basin.

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(Click the map to open a web browser to the USGS Locate your Watershed website, where you can drill down to specific watersheds in your broadcast area.) Ross Barnett Reservoir is in the South Atlantic Gulf region. (Note that an Internet connection is required.)

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None

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(Click this picture to link out to a local web page containing an animated version of the hydrologic cycle.)

All of our freshwater starts out as rain or snow, which moves through the “hydrologic cycle.” When rain or snow falls, some of it soaks into the ground, replenishing groundwater supplies in natural, underground storage areas called “aquifers.” Some of the water also runs over the land into streams, rivers, and lakes. Both groundwater and surface waters eventually drain to the ocean. When water evaporates and condenses, the cycle begins again with rain or snowfall.

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A closer look at surface waters (streams, rivers, and lakes) and groundwater reveals an interconnected system. Streams, rivers, and lakes help to replenish groundwater supplies in aquifers, while groundwater flows up into surface water bodies. During dry times, surface waters can be derived almost completely from groundwater supplies.

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(Click the map to open a web browser to the EPA Local Drinking Water Information website, where you can look up water source information for your broadcast area. To do so, click your state on the US Map, then click the ENVIROFACTS DATA link for your state. (Note that an Internet connection is required.))

As an example, 98% of Atlanta’s water comes from surface water, the Chattahoochee River, which is the smallest in the US serving a major metropolitan area.

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(Use the resources listed to find drinking water supply. Identify whether your area relies primarily on surface or groundwater)

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Have your audience guess the correct answer (#2). *(Go to next slide for more information.)*

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Many people still believe that industry creates most of the water pollution in our streams, rivers, and oceans. Actually, “non-point source” or runoff pollution is the most common cause of pollution – that’s water running off yards, streets, paved lots, and farm fields, which picks up pollutants along the way.

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(Click the picture to open a web browser to the EPA Window to My Environment website, where you can find out about impairments to water bodies in your broadcast area. In the new window, enter your city and state, then click Create My Window. When the map window opens, click the Your Environment tab and follow the Are There Polluted Waters link. (Note that an Internet connection is required.))

Some of the most common water pollutants are yard care chemicals, such as fertilizers, herbicides, and insecticides; oil, grease, and other toxics from urban areas; soil; road salts used during the winter season; bacteria and nutrients found in animal waste; and air pollutants that are deposited in water bodies. As an example, key effects on water quality in Atlanta are pathogens, sediments, and habitat alteration.

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None

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A particularly dangerous form of flood is the “Flash Flood,” which forms within just a few hours after the start of rainfall. Flash Flooding can be caused by heavy rain and slowly-moving thunderstorms, and moving water can be extremely forceful – toppling trees and moving boulders.

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Failures of man-made structures can also trigger flash flooding.

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The landscape in urban areas can exacerbate flooding problems. Because urban areas contain many paved surfaces, which do not allow rainwater to soak into the ground, water instead runs off into the nearest stream or low-lying area. When these areas become overwhelmed with water, flooding occurs.

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Tropical storms can also cause flooding – especially when heavy downpours persist.

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Water quality impacts can include increased salinity (saltiness), turbidity (cloudiness), temperatures, levels of dissolved Oxygen, and other effects.

The above impacts can result in plant stress and increased vulnerability to insects and disease, loss of natural vegetation, croplands, and forests, habitat loss for wildlife, and reduced biodiversity. In turn, these impacts can increase the frequency and severity of wildland fires, increase soil erosion, and diminished air quality due to smoke, dust, and other particulates. All can translate to a broad range of health, economic, and social effects, even in communities far-removed from the areas experiencing drought conditions.

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(Use the resource listed to find your drought status.)

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Regardless of where you live, there are simple actions you can take every day to help protect your watershed and water quality in local streams, rivers, lakes, and groundwater supplies.

- Don't dump! Make sure that only rainwater and snowmelt goes into storm drains and ditches, which lead directly to local surface waters. Never put trash or household chemicals in or near a storm drain or ditch.
- Be yard smart. Choose plants that are well-adapted to your climate and water wisely. Turn those sprinklers off when there is rain in the forecast, and hold-off on outdoor fertilizer and pesticide applications until dry weather is in the forecast.
- Control the Flow. Save water by installing low-flow toilets and showerheads. These fixtures use significantly less water without sacrificing comfort!
- Pick it up. Every time you and Rover hit the road, make sure to take a plastic bag with you to pick-up waste and throw it away in a trash can. Don't forget to pick-up in your yard, too.
- Fix those leaks. Check your home for leaky faucets and fixtures, which can result in a major waste of water!
- Get involved – join a local watershed group in a cleanup or restoration activity.