**Water is in the Air (Rain and Clouds)**

2nd Grade

 Materials:

* Glass or plastic jars (possibly beakers)
* Plate or pie pan
* Water (hot and cold)
* Ice cubes
* Cloud Demo

**Rain**

1. Fill a little less than half of the jar with warm/hot water.
2. Have a student place the pan on top, and another student to add cold water and ice cubes.
3. It will take a few minutes for the water to start evaporating. This is a good time to discuss with the kids how the raindrops are forming.
4. The hot water at the bottom is evaporating and turning into a gas or water vapor. That water vapor rises in the air and hits the cold pan. The cold from the pan turns the water vapor back into raindrops.
5. The hot water represents water on the ground, and the cold tin represents clouds.
6. After a few minutes have passed, lift the tin up and look at the bottom. There should be a few collected raindrops! You have made rain!

**Clouds**

1. Cloud Demonstration

<https://www.youtube.com/watch?v=LYz63XUWytU>

<https://www.youtube.com/watch?v=ojbBUN-AabY>

* 1. Three things that are needed to make a cloud. Moisture or water vapor, dust/pollen, and change in temperature/pressure. The moisture in the air condenses (or turns into a liquid) when the pressure and temperature changes from high to low. The liquid collects onto the dust and pollen in the air, and that is why it looks cloudy.
	2. Fill the 2 Liter bottles with just enough rubbing alcohol to coat the entire inside of the bottle. The rubbing alcohol will evaporate in the bottle as its pressure quickly changes from high to low. The rubbing alcohol represents water in the air.
	3. Use the bike pump to pump air into the bottle. If possible, a student can pump the bike pump while a volunteer holds it in the bottle. Pump the bike pump several times to create high pressure in the bottle.
	4. The volunteer will quickly remove the pump, and a cloud will immediately form in the bottle. This quickly changes the pressure from high to low. Low pressure days are cloudy/foggy days.
1. Cloud Poem
	1. Hand a copy of the poem “Meet the Clouds” to each student. If the students are able to, have the students take turns reading the poem. If not, a volunteer or teacher can read the poem to the class.
	2. Discuss with the students about today’s weather. Based on the poem, ask the students what type of clouds they think are outside today.
2. Creating their own clouds.
	1. Give each student a piece of blue construction paper, coloring supplies, feathers, cotton balls and a handful of “fluff” (Eco-Snow)
	2. Turn the construction paper long-ways and have the students draw the horizon of the Earth on the bottom of the paper
	3. Next, the students will use the materials to represent each cloud type. Have the students label each layer with its name as they go. Have the students draw and label the types of weather that comes with each cloud type.

\*Volunteers may need to write down the names of the different types of clouds on the board, and draw them as well to help the students get a better idea of what they are supposed to look like. Types of clouds are described below:

**Cirrus Clouds**

Cirrus clouds are wispy, feathery clouds at the top of the atmosphere - it may be windy if these clouds are around. So have the students paste the feathers (not too close together) at the top of their page

**Cumulus Clouds**

Cumulus clouds are big fluffy – and are usually around when it’s bright and sunny out. Have the students paste cotton-ball-sized pieces of Eco-Snow below the cirrus clouds.

**Cumulonimbus Clouds**

Cumulonimbus clouds are also fluffy but should be colored black since they are storm clouds. Students may draw lighting bolts coming out of them.

**Stratus Clouds**

Stratus clouds are like wide gray-blankets hanging low across the sky – they usually mean bad weather or that a storm is on the way. Have the students stretch the Eco-Snow (but don’t pull it completely apart) and make a layer near the Earth and color the clouds gray.

**Meet the Clouds**  by Christine Locke

**Cirrus Clouds**

These icy clouds are way up high.

They're just like feathers in the sky

or silky strands of cotton curls.

The sun shines through these painted whirls.

**Cumulus and Cumulonimbus Clouds**

Some clouds look like an ocean whale,

a flock of sheep, a dragon's tail.

Although these clouds are lots of fun,

sometimes tornadoes hide in one!

**Stratus Clouds**

The clouds that hang low to the ground

often foretell that snow is bound

to fall, or rain, or icy sleet.

They look like soft gray woolly sheets.

It's fun to look at clouds all day

and guess their names each time you play.

Whale or dragon, sheep or feather,

All clouds help predict the weather!