

Billy the Air Bubble and his Friends in the Air

Billy was excited. He knew that soon, spring would come. He had been hanging out close to the ground during the winter. During the winter, the sun did not get very high in the sky, and was not around for very long during the day. The Earth could not heat up very much, so the air stayed cold. He stayed close to the ground because there was no warm air to help lift him up. But he knew that was about to change.

As Billy watched the travels of the sun, he saw the sun was getting higher in the sky every day, and the time the sun was around each day was getting longer. One of his friends, Sara, a cloud, told him that the sun really was not moving. Because the Earth spins like a top (*animation here*), it makes the sun appear to move. Sara also told Billy along with spinning like a top, the Earth moves in a circle around the sun (*animation here*). This helps make seasons like spring, summer, winter, and fall. “That’s neat Sara!” Billy said. Is there anything else that helps make seasons?”

Sara replied, “Actually, there is another thing the Earth does. As the Earth spins, it does not spin straight up and down. Its spin is tilted to one side (*animation here*). This makes the sun get higher and lower in the sky, and appear to change where it comes up in morning and goes down at night. When the sun is higher in the sky, it can warm the Earth better (*depiction of high sun and warm temps*). If the sun is lower in the sky, it gets cool (*depiction of low sun and cool temps*). That’s why it gets warmer in the spring and summer, and gets cooler in fall and winter.

Billy could feel the warmth from the ground. Soon he would be able to float higher in the air and visit some of his other friends.

Finally, the time had come. Spring was here and the sun was high enough in the sky to warm the Earth and the air above it. Billy was getting warm, and felt the need to start his travels. From other years, he knew that when he got warmer, he would begin to float away from the ground, with the help of warm air that moved up with him.

“Good thing I’m not afraid of high places!” he said. “I can finally visit with Sara and the other clouds.” He did not have to travel very high to see Sara. Sara was a cloud that looked like a cotton ball in the sky. Her family name was Cumulus, but Sara was what her friends called her.

“So nice to see you again Billy!” Sara said.

“Hi Sara. What’s up?”

“Well, I am,” Sara replied. “Can you see I’m getting taller?”

Billy noticed that this happened when it got warmer. Billy knew that Sara was made up of tiny water droplets. As air rose up from the ground, it would cool, and sometimes this made water droplets form together to make a cloud. The more the air rose,

the taller the cloud would be . Sometimes, when the cloud got very tall, the tiny water droplets got bigger. If they got too big, they would fall from the cloud as rain.

“Are you going to rain today Sara?” Billy asked.

“No, not today,” Sara said. “But I do want you to meet some other cloud friends of mine.”

As they floated along, they came along a wide, flat cloud that looked like a blanket. Sara said, “Billy, I’d like you to meet Sam Stratus.

The Stratus family were all wide, flat, blanket type clouds. Sometimes they were so wide and thick that the sun could not shine through them. Other times they were so thin, the sun would shine through. When this happened there could also be one or two bright rings around the sun.

“Hi Sam,” Billy said. “Are you going to rain today?”

“Sorry Billy,” Sam said. “I won’t be making rain today. You would have to see my brother Nimbo Stratus. He’s the one that makes rain.”

“That’s a funny name,” Billy said.

Sam said, “Any cloud that makes rain has Nimbo or Nimbus as part of their name.”

Sara said, “Sam is right. If I make rain, my name is actually Cumulo Nimbus.”

After visiting with Sam for awhile, Sara and Billy floated on through the sky.

Billy spotted some thin, feathery looking clouds much higher than they were.

“Hey Sara, what are those clouds high up in the sky, that look like feathers?”

Billy asked.

“Those clouds are from the Cirrus family,” Sara said. “They are so high in the sky, and the air is so cold there, they are made up of tiny pieces of ice.”

“Wow!” Billy said. “I bet they are cold!”

“Yes, they are,” said Sara. “Not only that, but because the wind is so strong up here it stretches them out, and makes them look like feathers.”

As time went on, Billy and Sara decided to say good bye and go their own way.

Billy enjoyed learning about the clouds and other things in the sky, and wanted to see as much of it as he could. As the days went on, he saw that the sun was getting higher in the sky. This meant that summer was coming. In June, the first day of summer finally came. It was very warm by then, and the sun was not only high in the sky, it was in the sky for many hours each day. The sun made the Earth very warm, and it made the air above the Earth warm. Air close to the ground rose, and made Billy go even higher.

When Billy saw Sara again, she was with several of her family. A couple of them were growing tall very fast. Billy asked Sara what was happening.

“The air rising inside them are making them grow very tall. They are becoming Cumulo Nimbus clouds.

Billy watched as the clouds grew and grew. Soon rain, lighting, and thunder came out of the clouds. "Show offs!" Sara shouted.

Once the clouds got really tall, their tops flattened out and looked like they were being shoved off to one side. Sara told Billy that the tops were up so high the water had frozen, and that strong winds were pushing the tops to one side.

Billy was a little scared of the storms those clouds had become. But, before long, they started to fall apart.

"They usually don't stay tall for very long," Sara said. "They may look and sound scary, but usually they don't do much harm. But they do help bring rain for plants and animals on the ground."

"That's a good thing," Billy said.

As Billy continued to float around during the summer, he saw that the sun was beginning to get lower in the sky each day, and was in the sky less each day. After a while the Earth wasn't getting as much energy, and started to cool off. Fall was coming.

Billy knew that since the ground was getting cooler, the air above it was getting cooler too. He would soon start sinking closer to the ground, because the cooler air would not rise.

Billy wanted to say good bye to Sara before he had to go. When he found her, it was the first day of fall. Billy knew that on that day, the sun would be in the sky for one half of the day, and the night time would be around for the other half. During the fall and winter, the sun would be very low in the sky, and wouldn't be around as much.

"Are you heading back closer to the ground?" Sara asked.

"Yes, I have too" said Billy. "I hope you have a nice winter."

"Oh, I will." Sara said. "My friends from the Stratus family will be around a lot more during the winter to keep me company."

"Bye Billy!"

"Bye Sara!"

Each week got a little cooler. Billy kept getting closer and closer to the ground. Finally, he was back to where he started his trip in the spring. It had been a nice trip.

"Hello Billy!" Gary Ground said.

"Hi Gary!" said Billy. "What are you doing?"

"I'm just waiting to be covered up with snow."

Billy said, "Did you know that rain and snow are both made up of water?"

"Yes, I did" Gary said. "When the sun does not get very high in the sky, even the water I have freezes and makes me cold"

Snow slowly started falling. Winter was very close. As Gary and Billy watched the days pass, the sun got lower and lower each day. Finally, on the first day of winter, the sun was very low in the sky, and was not in the sky for very long. The next day, the sun was a little higher in the sky, and was in the sky for a little longer.

Billy thought about all of the seasons. Each one was nice. It was good to have a change. Billy knew that each year, there would be 4 seasons. It was because of the sun. A sun high in the sky made the ground warm. This made the air above the ground warm too. When the sun was low in the sky, the earth did not get as warm, and could not warm up the air as much.

As each day of winter went by, he could see the sun was getting higher in the sky again. Billy was excited. He knew that soon, spring would come. Then he could start his next trip.