

## **CLOUD TYPES AND FORMATION OF CLOUDS**

### **STUDENT EXPECTATIONS**

Upon completion of this unit, students will be expected to know or have an understanding of:

- How clouds form
- Cloud types and the weather associated with them
- Use of technology to record clouds
- Basic gas laws

### **STATE STANDARDS**

The following **Colorado** Model Content Standards for Science will be met or exceeded:

(Unless otherwise noted, the standards for grades 5 through 8 are used.)

Standards: 1,2,2.1, 2.2, 2.3, 4.2, 4.3, 5 and 6

The following **Texas** Essential Knowledge and Skills for Science will be met or exceeded:

(Unless otherwise noted, the TEKS for Middle School Science are used.)

TEKS 6.1A,B, 6.2A,B,C,D,E, 6.3A,C, 6.4A, 6.6A,C, 6.8B, 6.9A,B, 6.12B, 6.14C, 7.1A,B,

7.2A,B,C,D,E, 7.3A,C, 7.4A,B, 7.6A,B, 7.14A,B, 8.1A,B, 8.2A,B,C,D,E, 8.3A,C, 8.4A,B,

8.5A,B,C, 8.7A,8.10A,B,C

### **NOTES TO TEACHER**

Too many teachers get bogged down trying to identify the exact type of cloud by using a cloud chart, and not realizing that no two clouds are alike and most of the time they may be looking at more than just one type of cloud. RELAX!! Identifying clouds is not only challenging, it is a judgment call and no one is perfect! That is why building a cloud picture scrapbook is so useful.

The "cloud in a bottle" activity comes from the Project Atmosphere training, but the idea of gas laws was added. The atmosphere of course must obey the gas laws too!

Many meteorologists say that clouds are the greatest free show on Earth, and for good reason. They are among nature's most beautiful creations, but can be among nature's deadliest enemies to the farmer, rancher and society in general depending on what the cloud is bringing us.

\*Note: Cloud charts can be obtained from your local National Weather Service Office. Just call, write, or e-mail them and they will be glad to help. It is part of their job.

## **ACTIVITY DESCRIPTION**

Since this is an ongoing activity, you might want to assign certain students at different times of the day, and on different days to photograph the clouds that day (if you have clouds that day). After you have a large collection of clouds and other weather related phenomena, then you will need the students to classify and compile the scrapbook. Make certain they have their eyes open for contrails, fog, sun dogs, sun pillars, rainbows etc.

Basically there are three levels of clouds:

- Low level – stratus, stratocumulus, cumulus, and cumulonimbus
- Middle level – altostratus, altocumulus, nimbostratus
- High level – cirrus, cirrostratus, cirrocumulus

If you do not have access to a digital camera, purchase a couple of disposable cameras and have prints developed. (Some Wal-Mart stores have been known to donate the cameras and developing if they know what the project is for.)

## **MATERIALS**

- Digital camera (or other camera as mentioned above)
- Scrapbook (3 ring binder)
- Cloud chart or guide book
- Dividers for the scrapbook/3-ring binder
- Paper and pen

## **METHODS/PROCEDURES**

(This can be made a nearly year long project that you display on "parent night")

- Students will be assigned to take cloud and weather related photographs during the year, making certain to make notes when, where, and what time the photographs were taken.
- Decide which pictures will be used to create a scrapbook or "cloud library."
- Classify the pictures as low, middle, or high clouds or other weather phenomena.
- Mount each picture to a sheet of paper and make certain the date, time, and location photo was taken are noted on the paper. (You may provide a separate lined page for this purpose.)
- Separate the categories of clouds/phenomena by dividers in the scrapbook.
- Have the scrapbook on display to share with visitors/parents.
- On the back of each picture or on a sheet between each picture make notes of

weather conditions when the picture was taken and any weather changes that took place after the picture was taken.

**\*Note: Make certain students do not point the camera at the sun or near the sun as this could damage their eyes or the camera.**

### **RESULTS/CONCLUSIONS**

Remember, when you are classifying the cloud pictures, none of them are going to look **exactly** like the clouds in your book or on the cloud chart, and that some may actually overlap and be both low and middle at the same time. Once again, it sometimes is a judgment call, so use your best judgment.

Of course on a class project like this, results will vary, however students should be able to answer the questions on the student activity form. This can be a fun and enriching experience for them as well as for the teacher. You might even have a drawing or contest to see who gets the cloud album at the end of the year.