Monarchs Among the Clouds

You can use monarchs to teach about many things! Stone Mountain Memorial Association (SMMA) uses the monarch butterfly to help students apply their knowledge in other contexts and to different disciplines. The activities relate a grade-level specific GPS to monarch life, habitat or migration. Use this lesson as a post-trip activity following your 4th Grade Mountain Meteorology field trip.

GPS correlation: S4E4. Students will analyze weather charts/maps and collect weather data to predict weather events and infer patterns and seasonal changes.

Preparation:
Read the background information. Print the worksheet, or make an overhead or display on your Interactive white board. Make copies for each student or for pairs of students.

Background Information:
Monarch butterflies migrate to Mexico to spend the winter. They cannot fly at temperatures below 50° F, in strong winds or heavy rain or with wet wings. In this lesson we will use altitudes to predict the types of clouds through which monarchs may fly during migration and at other times of the year.

Female monarchs lay their eggs only on milkweed leaves because it is the only food source for their caterpillars. During the late spring and summer, monarch butterflies stay close to the ground to find food from flowers and milkweed for the eggs. As the daylight hours shorten and temperatures get cooler, all of the monarch butterflies that are east of the Rocky Mountains begin to migrate to Mexico. Glider pilots have reported monarchs flying as high as 11,000 feet during migration. (Visit J*ourney North* for additional information http://www.learner.org/jnorth/tm/monarch/HeightFallFlight.html). In Mexico, monarchs spend the winter clustered in oyamel fir trees in the Transvolcanic Mountains 10,000 feet above sea level.

Activity:
Tell students the background information. Read them the essential question so they understand the focus of the lesson. Review the height at which each cloud type is found. Review the characteristics of each type of cloud and what kind of weather it forecasts. Help students work through drawing the clouds. Then they should answer questions.

Cirrus: 16,000 – 43,000 feet
Cumulus: 0 – 43,000 feet
Cumulonimbus: 0 – 43,000 feet (most likely always rain, wind, thunderstorms)
Stratus: 0 – 7,000 feet (can be nimbostratus with some rain which would affect the monarchs)

Essential Question:

What type of clouds would a monarch butterfly fly through?

Monarchs may fly as high as 11,000 feet high in fall when migrating. In Mexico, they spend the winter clustered in oyamel fir trees in the Transvolcanic Mountains 10,000 feet above sea level. At other times, they are close to the ground searching for flowers.

43,000 feet

39,000 feet

36,000 feet

33,000 feet

30,000 feet

27,000 feet

23,000 feet

20,000 feet

16,000 feet

13,000 feet

10,000 feet

7,000 feet

3,000 feet

0 surface
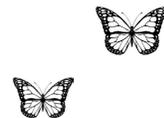
Cirrus: 16,000 – 43,000 feet
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Stratus: 0 – 7,000 feet

1. Draw and label the clouds next to the correct altitude.

2. If a monarch flies to 3,000 feet, in what type of clouds would it be?

3. If a monarch flies to 10,000 feet, in what type of clouds would it be?

4. Could monarchs ever be in a cumulus cloud? If so, at what point in their life?

5. In what type of cloud would it be unlikely to find a monarch butterfly? Why?

1. Draw and label the clouds next to the correct altitude.

Cirrus: 16,000 – 43,000 feet

Cumulus: 0 – 43,000 feet

Cumulonimbus: 0 – 43,000 feet

Stratus: 0 – 7,000 feet

2. If a monarch flies to 3,000 feet, in what type of clouds would it be?
It could be in stratus, cumulonimbus or cumulus.

3. If a monarch flies to 10,000 feet, in what type of clouds would it be?
It could be in cumulonimbus or cumulus.

4. Could monarchs ever be in a cumulus cloud?
Yes
At what point their life?
During migration

5. In what type of cloud would it be unlikely to find a monarch butterfly? Cirrus, because it's too high!