Name:

Background Reading Student Sheet

Exploring Paleoclimate Data

Before the Demonstration
Look at the styrofoam balls in the plexiglass container and then answer the following questions.

1. *In what way are the styrofoam balls the same or different?*

2. *What do the styrofoam balls represent?*

3. *What do you think that the plexiglass container represents?*

4. *What do you think that the fan represents?*

During the Demonstration
Watch the styrofoam balls closely and answer the following questions.

5. *Which styrofoam balls seem to be rising the highest?*

6. *Which styrofoam balls tend to stay lower?*

7. Come up with a hypothesis that will explain the observed motion of the styrofoam balls.

UPDATED: AUG 2021

Background Reading Student Sheet

Exploring Paleoclimate Data

Heavy Water

8. *How is heavy water ($H_2{}^{18}O$) different from light water ($H_2{}^{16}O$)?*

9. The different masses of $H_2{}^{16}O$ and $H_2{}^{18}O$ behave differently in the water cycle.

a. *Which one do you think preferentially evaporates?*

b. *Which one do you think tends to remain in the ocean?*

10. *Why would a sample of water vapor taken from above the ocean contain a higher ratio of $H_2{}^{16}O$ compared to $H_2{}^{18}O$?* (Hint: think about the styrofoam balls in the demonstration).

Condensation and Precipitation

11. *During a period of warmer temperatures, would you expect precipitation that falls over the poles to contain more or less heavy water ($H_2{}^{18}O$) compared to light water ($H_2{}^{16}O$) than during an ice age?* Explain.

12. Refer to the $\delta^{18}O$ vs. temperature graph. *What is the relationship that exists between $\delta^{18}O$ and temperature?*

UPDATED: AUG 2021