BI 101

Secrets Beneath the Ice

<http://www.pbs.org/wgbh/nova/earth/secrets-beneath-ice.html>

Answer the following questions as you view this PBS special, which originally aired December 28th, 2011:

1. Antarctica accounts for \_\_\_\_\_\_\_\_\_\_\_\_of earth’s ice.
2. If all of Antarctica melted, sea levels would rise \_\_\_\_\_\_\_\_\_\_\_\_\_\_feet. If 10% melted, it would result in a rise of \_\_\_\_\_\_\_\_\_\_.
3. Two signs of global warming evident in the arctic are:
4. Antarctica has \_\_\_\_\_\_\_\_\_\_\_ more ice than Greenland.
5. What caused the freezing of Antarctica millions of years ago?
6. What caused the pristine preservation of plant fossils found in Antarctica?
7. How much of Earth’s fresh water is bound up in Antarctica’s ice?
8. What do the bubbles in core samples represent?
9. Ice record goes back \_\_\_\_\_\_\_\_\_ years.
10. How far do scientists want to drill below the ice shelf?
11. At timestamp 22:10, pause the video to hypothesize on what can be learned about the future of global warming by examining Antarctica’s history of warm and cold weather patterns.
12. One foot of core sample represents \_\_\_\_\_\_\_\_\_\_\_ years of history.
13. How many calories must scientists consume daily to survive the cold harsh climate of Antarctica?
14. How far back in time do scientists have to go to examine core samples that represent a time when Antarctica was warm?
15. What can diatom specimens tell us about Antarctica’s history?
16. What did core samples from 14 million years ago tell us about the speed of climate change?
17. What does the volcanic ash in East Antarctica tell us about glaciers found there?
18. Why do we want to look at the Pliocene era climates?
19. What effects could small increases in water temperatures have on the ice shelves found in Antarctica?
20. How can core sample data help us predict what is to come using computer models?

**After viewing the film, answer the following questions:**

1. To the average person, Antarctica seems to be nothing more than a desolate landscape, incapable of sustaining life. What were some surprising things you learned about the biology of the continent, both in terms of its present and its past?
2. Researchers collect several types of data while on Antarctica: Ice and ground core samples, fossil record analysis, frozen plant samples to name a few. Summarize in your own words how researchers use all of this data to give us a glimpse into the frozen continent’s past.
3. Explain (again, in your own words) how learning about the history of Antarctica can give us a glimpse into current global warming trends.
4. In what ways do the conditions in and around Antarctica influence global conditions such as ocean levels, weather patterns.
5. Throughout the history of the earth, global temperatures and carbon dioxide levels continually fluctuate and are heavily influenced by the shape and diversity of living systems across the planet. These fluctuations in turn have a significant impact on global weather patterns and ocean water levels. Given that global temperature patterns have been so dynamic long before humans came along, do you think we should be concerned about the contributions of human activities have on the carbon cycle and how they influence the current warming patterns the earth is experiencing?