Student *Southern Life* Activity Worksheet

| Exploring the Southern Continent – The Antarctic Treaty | |
|---|---|
| 1. What date was the Antarctic Treaty signed? | |
| 2. What is a cornerstone of the Antarctic Treaty? | |
| 3. Which treaty Article safeguards Antarctica from mining of resources, such as oil or iron? | |
| 4. How many countries signed (HINT: signatories) the original treaty? | |
| 5. How many countries currently abide by the treaty? | |
| 6. When was the most recent International Polar Year? | |

**Exploring the Southern Continent – US Research Stations**

Use this link (https://www.usap.gov/) to locate and list the 3 Antarctic Research Stations operated by the United States. Browse through the USAP Webcams to view images from these three stations to complete the table below:
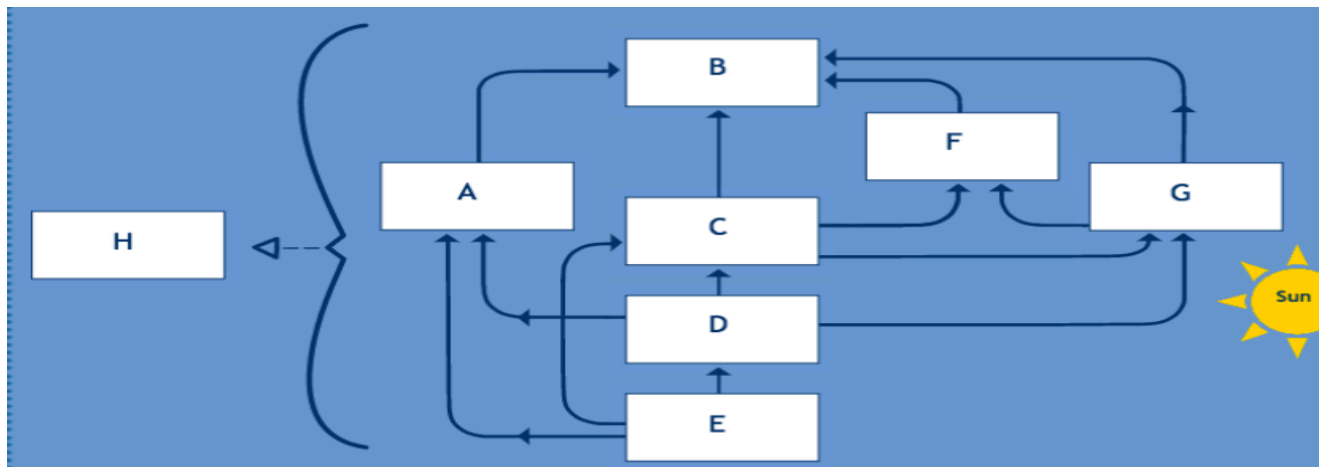
| US Research Station | Current weather data | | | How's the view? (Describe the camera view) |
|---|---|---|---|---|
| | Date | High-Low Temp (°C) | Wind Chill | |
| 7. | | | | |
| 8. | | | | |
| 9. | | | | |

| | |
|---|---|
| 10. When (year) did the United States establish a research station in Antarctica? | |
| 11. Why is most of the research in Antarctica conducted between September and March? | |

**Exploring the Southern Continent – Antarctica's Food Web**

Use this link to locate the Antarctic Food Web Game. Play this game to learn about Antarctica's uniquely aquatic food web: https://unctv.pbslearningmedia.org/resource/lsps07.sci.life.eco.oceanfoodweb/antarctic-food-web-game/#.WYs82oqQwxE

12. Write the correct arrangement in the chart below:

## Exploring the Southern Continent – Using Technology to Explore Below the Surface

Use Dr. Josh Kohut's presentation, "**Observing Our Ocean Planet**" to learn how Gliders collect data beneath the surface. Complete the table and questions below using the Glider Data collected on January 27, 2015.

| TIME (GMT) | Temperature at Depth | | | | Chlorophyll Concentration at Depth | | | |
|---|---|---|---|---|---|---|---|---|
| | Warmest ($^o$C) | Depth (m) | Coolest ($^o$C) | Depth (m) | Highest (ul/g) | Depth (m) | Lowest (ul/g) | Depth (m) |
| 00:00 | | | | | | | | |
| 04:00 | | | | | | | | |
| 09:00 | | | | | | | | |
| 20:00 | | | | | | | | |
| 23:00 | | | | | | | | |

13. Circle the coolest temperature recorded in this data set.

14. Where is the highest concentration of chlorophyll found? (in relation to the depth)

15. Why is the highest concentration of chlorophyll found here?

16. What island is located north of the data collection area?

17. Identify the latitude/longitude coordinates where the Adelie and Gentoo penguins foraging tracks overlap.

18. What type of relationship is supported between Adelie and Gentoo penguins based on this data set?

19. Identify the lowest temperature and highest chlorophyll concentration when the Adelie and Gentoo penguin foraging tracks overlapped.

| Temp ($^o$C) | Chorophyll (ul/g) |
|---|---|
| | |

20. Tides and Weather events can generate variations in surface currents in this research area. How might variations in surface current affect foraging behavior in the penguins found in this region?

## Exploring the Southern Continent – Using Technology to Explore Below the Surface: Whale Ecology

Locate the "humpback whale backs" video link at this website: http://polar-ice.org/focus-areas/polar-data-stories/finding-food/ and observe the technique used to tag whales in Antarctica. After viewing the video, locate the numerical links ( ← Prev  1  2  3  4  5  6  End  Next → ) to read the through the Polar Data Story for questions 21 - 25:

21. Why do scientists tag and track whales?

22. Analyze the **Whale Track Data** to determine the time the whale was at the maximum depth during its diving behavior.

| TIME (GMT) | DEPTH (m) |
|---|---|
| | |

23. Observe the krill data in section 4. Where would you expect to see the whales? Use your mouse to click inside the graph where you think a whale would be. Record that time and depth here:

| TIME (GMT) | DEPTH (m) |
|---|---|
| | |

24. What does LTER stand for?

25. Describe an advantage of using drones to observe whale behavior.