Freshwater Ice

Ninety percent of the world's ice is in Antarctica, seventy percent of which is fresh water. The ice is composed of compacted snow that has accumulated for an estimated 100,000 years.

Antarctica

The highest, driest, coldest, continent on earth, Antarctica is the fifth largest continent (approximately 5.4 million square miles) which is equal to the U.S and Mexico combined.

PREPARING FOR INQUIRY:

All students are in possession of existing knowledge. The level of this knowledge inevitably affects the manner in which they acquire new knowledge. Before you begin exploring the Antarctic continent, start with a story. In many cases stories have concepts that are embedded within them that trigger a child’s prior knowledge on the subject.

Rationale: Assessing what knowledge students already possess about the Antarctic may determine how you use the polar blog. For example, you may want students to follow only certain categories such as posts from Palmer Station or perhaps just on penguins. Perhaps you want to follow the journey of a certain scientist. This simple activity may help you and your students have a more successful experience integrating the blog into your existing curriculum.

Age Level: any
Time: 5 - 10 minutes

Goals:
Recalling previously learned materials
Assessing a child’s understanding of factual knowledge
Determining how best to utilize the Palmer LTER field season blogs

Procedure:
1. Begin by reading a short passage, script, quote or story related to the topic of study, keeping in mind that different stories elicit different responses. We include one below but you may have a favorite of your own. Depending on the age group you may need the prompt to be only a few minutes long.
THE ANTARCTIC CONTINENT

2. After reading, encourage students to free-write, recall or discuss with you what they already know about Antarctica. Or what questions they have like, “What is the climate?” “Where is it located?” “What unique wildlife lives there?” “What explorers were the first to discover it?” “How do scientists study the environment?”

3. You should only allow three minutes for students to complete the free-write. (If you choose an open discussion format then a more informal approach can be used). This abbreviated timeframe targets a child’s ability to immediately record what they know about Antarctica as stream of consciousness.

4. Explain to the students, that if he/she encounters a moment where they cannot recall correct terminology, spelling or a phrase have them leave a blank _____ on their paper but continue writing/recalling information.

5. Collect the papers and quickly tally up the topics making a mental note of which topics seem most common. Place a list of the topics on the board to generate a discuss with students. Educators should evaluate the sheets based on what topics need clarification or where the highest level of interest may be.

6. Identify how these topics will be explored further by introducing the Palmer field season blogs to the students found [http://pal.lternet.edu/outreach/blogs/](http://pal.lternet.edu/outreach/blogs/).

7. You may use the blog posts as a means to introduce your students to the field work, specific topics via tags or participate with your students during the current field season by posting questions to the scientists.

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Excerpt Sample 1:

A cold wind is twisting in the air. All the leaves are off the trees as Lucia and I meet to travel together to the airport. For a year and a half we’ve been planning our trip to Palmer Station, Antarctica. Now, at last, it has begun.

Twenty-four flying hours later, we step out of a small plane into yet another wind. We’ve come south approximately 6,500 miles where the wind whips around a place called Punta Arenas. It is the southernmost settlement in the world and the capital of this region of Chile. It is December which is summer here, but because of its location to the ocean the winds are strong and the temperature hovers around 50˚F.

We buy last-minute oranges in the supermarket, send final postcards and pick up souvenirs. We meet up with other members of our team. We are all thinking about what lies south over the horizon. The wind continues across the ocean surface racing, uninterrupted around the bottom of the world. Antarctica awaits.

We head to the center of town where a statue of the explorer Ferdinand Magellan stands in a square surrounded by the shade of trees. Customary before travel across the sea, Lucia and I reach up and touch the foot at the base of an Indian statue. The belief is that travelers going to Antarctica will come back safely if they touch the glowing bronze foot.

This trip will last a month and a half. There are no trees where we are going. Not even a bush. Our world will be the Western Antarctic Peninsula and the Southern ocean. Our transportation is the Laurence M. Gould - a 230-foot ice-classed research vessel upon which we will spend the bulk of our time exploring and we will soon call our scientific base. I can see it waiting in the harbor.

STOP...BEGIN WRITING
Antarctica is the continental land mass surrounding the South Pole, encircled by the Southern Ocean. It is isolated from other continents like South America, New Zealand, Australia, and South Africa. It is the world’s highest continent with more than half of its land mass resting 6,560 feet above sea level. Only a few of its highest rock peaks show above the glaciers and ice caps which covers almost 95% of its land.

Lying south of the Antarctic Circle, at a of latitude at 66˚33 South, Antarctica experiences six months of darkness and six months of daylight. The mean temperature along the Western Antarctic Peninsula, one of the fastest warming regions on earth, sometimes reach 55˚F. Whether it is spring (November - December) where icebergs and pack ice are still surrounding the peninsula, summer (January - February) the peak field season where daytime temperatures can reach upward of 50°F or winter (April), the Antarctic environment is plagued by strong winds. Winds that are generated by the interactions between altitude, cloud cover and the presence of the ocean. The differences between the interior and coastal temperatures on the continent are a result of these factors and also support the continents rich biological ecosystem.

The wind and its interactions with the Southern Ocean are critical in supporting a diverse number of organisms. The Antarctic Convergence is a place where cold antarctic surface water flows north and meets warmer subantarctic surface water coming from the Atlantic, Indian and the Pacific Oceans. The convergence zone of warmer salty water mixes with the colder antarctic water and sinks under the surface along the continent creating dense nutrient rich water that mixes with upwelling. The relationship between this water and the Antarctic marine food web is what draws scientists like those from Palmer Station Long Term Ecological Research (palter.net.edu) program to study this dynamic environment year after year across a variety of research subjects.

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Palmer Station Long Term Ecological Research program