

Deep Freezing Lab

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■Purpose of Exhibition

The purpose of this exhibition is to give you information on the following topics. The first is what a polar region is like and what characteristics it has, and the second is about why researchers go all the way to polar zones to observe and do research. The Deep Freezing Lab is a huge exhibition offering you the opportunity to experience minus 30 degrees Celsius and see whole-sky images of the Aurora at a dome screen. You can also touch ice correlated to polar regions, or observe experiments with ice crystals.



■Additional Knowledge



[Wind and Temperature]

Wind does not blow strongly in the Deep Freezing Lab. However, in the North Pole and South pole, strong wind is blowing continuously for many days at a wind velocity of around 10 meters per second. You may think that the minus temperature and the strong wind seem to be pretty cold, which is actually very important. As you know, wind is the flow of air. Therefore, when the cold wind hits you, the cold air takes your body temperature away.

[Sensible Temperature]

You feel colder when wind is strong even at same temperatures. "Sensible temperature" is determined not by the actual temperature but how cold you feel. The sensible temperature is also related to the humidity and the rays of the sun. When it comes to temperature and wind, every time the wind velocity increases by one meter, the sensible temperature decreases by one degree Celsius. For example, we start feeling the wind strong from a wind velocity of 5 meters. That means we begin feeling cold 5 degrees Celsius lower than the actual temperature.

[Winter Mountain Climbing and Sensible Temperature]

There are not many people who climb mountains in winter. Although the temperature is not so low, some people get stuck because of the strong wind and end up

missing on the mountain. As explained above, when the temperature is minus 5 degrees Celsius, if there is no wind, the sensible temperature is also minus 5 degrees Celsius. On a winter mountain, the wind velocity might get up to 20 meters. In this case, the sensible temperature also decreases to minus 25 degrees Celsius. You need to wear a thick snowsuit to protect you from the cold temperature. In the South Pole where the wind velocity would get to 60 meters, it can be said that the sensible temperature decreases 60 degree Celsius. When it becomes that kind of extreme temperature, you cannot leave the building. Whatever the case, an Antarctic expedition party takes care of strong wind and is well-equipped to handle it.

[Wind Chill]

"Wind Chill" is the phenomenon where sensory temperature is decreased due to wind. In the Deep Freezing Lab, there is no device to experience wind chill. However, if you ever have a chance, try fanning yourself with a paper fan (Uchiwa) in the Lab. You might be surprised how cold you feel.

Article by Tetsuro Ojio, curator