The Power of Ice

1. In 1915 Earnest Shackleton's ship, the Endurance, was trapped in the ice of the Weddell Sea.

2. To understand why, you need to understand ice.

3. There are two major types of ice in the Antarctic. The first is glacial ice.

4. Over thousands of years, snow that falls onto land is compressed into ice. In the Antarctic, glacial ice flows down to the ocean where it becomes an ice shelf. The edge of that ice shelf often breaks off in a process called calving. The part that breaks off is called an iceberg.

5. Glacial ice is very different from the ice that Ernest Shackleton was concerned with called pack ice.

6. Pack ice is a frozen layer of seawater on the surface of the ocean.

7. Under calm conditions, the pack ice simply thickens into an unbroken ice floe.

8. The Endurance, however, encountered very windy conditions, common in the Weddell Sea.

9. Under windy conditions, ice floes break up into large chunks.

10. The chunks collide and, over time, freeze together forming large ÒconsolidatedÓ floes.

11. These large floes are too heavy to be affected by local winds and currents. They can only be moved by the powerful distant winds and currents that circulate around the Antarctic hundreds of miles away.

12. These forces can make the ice floes converge and buckle up, creating pressure ridges.

13. Alternatively, when forces pull in opposite directions, it breaks the ice apart, creating a channel or lead of open water.

14. Shackleton took advantage of these leads.

15. By following them, the Endurance approached Antarctica through the Weddell Sea.

16. But in early 1915, storms hundreds of miles away suddenly compressed the ice, trapping the Endurance.
17. Once the ship was trapped in the ice, it was carried along with the ice in a clockwise direction around the Weddell Sea.

18. Continued compression of the ice ultimately crushed and destroyed the ship.

19. When ships travel in the Antarctic today, they follow leads just as the Endurance did. Satellite information and helicopters assist ice pilots in scouting out leads.

20. Even so, ships still become entrapped in pack ice.

21. Since the Endurance expedition, scientific exploration in the Weddell Sea has been limited due to the fierce weather conditions and the year-round sea ice.

22. Shackleton understood the basics of ice formation.

23. But he didn't have the benefits of modern technology which can tell us the location, thickness and extent of sea ice.

24. And Shackleton didn't have the expectation of being rescued.

25. He knew he could only count on himself and on his men, to survive the immense power of ice.