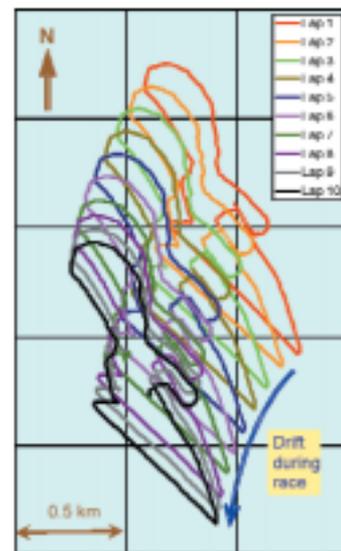
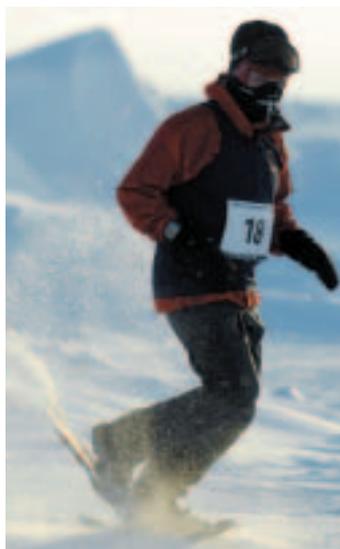


How do you run a marathon when every footfall is shifting under you? Miles Cudmore explains the intricacies of running the distance on polar ice.



Back in April 43 runners completed the fourth North Pole Marathon under the watchful eyes of the race organisers. There were no cracks in the ice to reveal open water 'leads' on the flagged circuit but next morning we could see narrow cracks hundreds of metres long dissecting parts of the course. These grew during the day, visibly breaking up the marathon course in an amazing demonstration of the dynamic Arctic environment.

GPS data that I recorded while running in the event revealed the bigger picture. The 4.2 km marathon loop moved 0.96 km during the 5.5 hours it took to complete the race. The GPS track also revealed dramatic changes in the rate and direction of drift. On the first lap, the drift was 6.7 km/day; by the 10th and final lap this had slowed to 2.1 km/day and swung about 30 degrees. It was an incredible illustration of the magnitude of forces at work. Arctic buoy and satellite data shows these figures are typical. Rates of up to 10 km/day are common, with repeated changes of direction.

Wind and ocean currents drive the overall drift from Siberia towards Greenland, but at a smaller scale the ice pack is continually rearranging itself. Large areas covering many square kilometres are splitting, turning and colliding in a perpetual dance. Leads of open water develop in many areas, and long pressure ridges criss-cross the landscape.

The hazards created by polar drift are manageable for Arctic runners. The race is based at Camp Barneo, built by the Russians each Spring with a 1000m ice runway on an area of ice pack selected to be stable. The camp drifts between 89N and 90N and the marathon course, measured by GPS, is always a circular route that is never longer

than 5km. A linear marathon course to the Pole would not only be dangerous to race, but it would have no distance accuracy because of the Arctic drift and because of the need for competitors to circumnavigate open leads en route. Such breaks in the ice could be several metres in width and several kilometres long.

In contrast, a circular route enables much safer monitoring of the runners and a more accurate marathon distance measurement. Furthermore, by laying the course shortly before the race starts, race organisers manage to avoid any cracks and any new thin ice.

Of much greater impact for competitors is the uneven surface generated by the continual movement. Majestic blocks of blue ice rear out of the ocean across many parts of the course, and are covered by windblown snow. The resulting surface can be completely unpredictable. Each step can either hold firm, or drop through soft snow up to knee depth. Lumps of ice hidden below the snow are often uneven, upsetting balance. Snowshoes are highly advisable for the early laps until the route is clearer. As our race progressed and we tired, stumbles and falls were common. Afterwards we felt exhausted, not just from the running but from the combination of extreme cold, additional clothing / equipment and continual stride adjustments taking their toll.

For early explorers, polar drift was far more lethal. One of the first clues to its scale came with the 1879 USS Jeanette expedition, which started from Siberia and soon became trapped in the ice. Its track was recorded over 21 months before it sank, and then in 1884 its wreckage was washed up in Greenland.

The famous Norwegian explorer Fridtjof Nansen subsequently designed the hull of his ship Fram so that it would be squeezed upwards from the ice pack and avoid being crushed. He entered the ice in 1893 with a view to crossing the Arctic Ocean, but found the drift took a continually changing path heading only vaguely towards his goal. After 18 months, Nansen and one of his companions Frederik Johansen set out on foot for the North Pole, but after a good start they were thwarted by poor ice and a southerly ice drift. After reaching 86°13" they turned South for Franz Josef Land in a daring plan, only to find the drift changed direction and carried them North again. They eventually reached land, and after wintering travelled on. In mid 1896 they were amazingly fortunate to find one of the only other boats in the area. For other explorers, the outcome has been less happy, and many have perished on the ice in the bitter cold.

The strength and athletic ability of polar explorers to overcome the harsh environment is legendary. Peary, whose claim to be the first to the North Pole in 1909 is widely questioned, demonstrated incredible stamina over many seasons. Amundsen, who achieved the first fully verified trip to the pole in 1926 by airship, reportedly ran 800 miles over 16 days through the snows of Alaska to prove his fitness to his doctor when aged 50. Both Ranulph Fiennes and Mike Stroud pushed themselves to the limits of human endurance in their polar expeditions, and are accomplished marathoners in their own right. Temperatures of -25C and the harsh environment make the North Pole Marathon one of the most challenging on the planet, and offers competitors a very small glimpse of the physical and mental strength

required for successful long distance polar exploration.

So what next for the Arctic? In September 2007, the sea ice extent reached a new low since satellite tracking began, with one third less coverage than the 1979 to 2000 average, and thinner ice as well. The extent of these changes is very significant and well before the end of the century, the North Pole could be ice free in summer (ref NSIDC). What this means for the planet is not yet understood. Less ice to reflect sunlight means the upper parts of the 4000 m deep Arctic Ocean will become warmer and animals like polar bears are facing a major threat to survival. Adventurous runners may also be endangered. Thinner ice and less of it will make it harder to experience this incredible environment. It is a truly unique place, with its ever changing light and wind, continually moving ice and deep, unforgiving cold. Those of us who have had the opportunity to experience it feel very privileged.



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