The South Pole generally refers to the geographic location of the southernmost point on the surface of the Earth that intersects its axis of rotation. The location shifts each year due to movement of the polar ice sheet. A sign and a decorative marker—a new one each year—identify the spot.

Credit: Yuya Makino, IceCube/NSF
Under clear skies, you can see for miles at the South Pole. The Dark Sector, named for the absence of electromagnetic radiation that could interfere with the telescopes, houses the South Pole Telescope, the Bicep and Keck arrays, the MAPO (Martin A. Pomerantz Observatory) facility, and the IceCube Laboratory.
When workers at the Pole need to cover a lot of ground, as they do when taking snow depth measurements out in the field, for example, they travel by vehicle—a snow vehicle, that is.

There are various types of vehicles for transport over snow at the South Pole, including smaller snowmobiles and larger tracked vehicles that hold several people.
Two IceCube personnel, called “winterovers,” are stationed year-round at the South Pole.

Here the winterovers take a quick break for a self-portrait in front of the IceCube Lab as twilight begins to settle over the South Pole.
The sun sets once per year at the South Pole, at the end of March. But even after the sun falls below the horizon, light lingers in the atmosphere.

This twilight period can last for weeks, with the sky taking on amazing colors depending on which direction you’re facing.

Credit: Kathrin Mallot, IceCube/NSF
One of the best parts of being at the South Pole all winter is being able to see the aurora australis, also known as the Southern Lights. Auroras occur when charged particles from the sun interact with gases in Earth’s atmosphere: oxygen emits green and red light while nitrogen creates the blue and purple glow. Auroras are usually only visible at high latitudes, like the north or south polar regions.

Credit: Yuya Makino, IceCube/NSF
### July 2021

Auroras and Stars over the ICL

**Credit:** Yuya Makino, IceCube/NSF

The best of the South Pole winter in one stunning shot: auroras, the Milky Way, and the IceCube Laboratory.

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While the sun doesn’t officially appear on the horizon until September, winterovers start seeing hints of it in August.

On the right is the Amundsen-Scott South Pole Station, which houses up to 150 people in the summer and about 45 in the winter as well as a gymnasium, music room, galley, greenhouse, and more.

Sunrise Over the Station

Credit: Kathrin Mallot, IceCube/NSF
The roof of the IceCube Laboratory is home to a prototype air Cherenkov telescope, “IceAct.” This small and cost-effective telescope is a candidate instrument for a future extension of IceCube.

IceAct uses a specialized camera to detect Cherenkov light: radiation that is emitted when high-energy particles in the atmosphere travel faster than the speed of light in air.

Credit: Kathrin Mallot, IceCube/NSF
The Mpemba Effect

Credit: Benjamin Eberhardt, IceCube/NSF

Sounds crazy, but it’s true: Hot water freezes faster than cold water!

This counterintuitive effect was named after Tanzanian schoolboy Erasto Bartholomeo Mpemba (born 1950) who discovered it in 1963. IceCube’s winterovers demonstrated the effect by tossing hot water into the air under a sunny sky at the South Pole.
This gravity-defying snow formation is an example of "sastrugi": wavelike ridges of hard snow formed by the wind. They look somewhat like small sand dunes but aren’t as easily shaped, and they are deceptively sturdy. Winterovers report occasionally tripping over them as they walk around at the South Pole.

Credit: Kathrin Mallot, IceCube/NSF
Summer at the South Pole is the time to get work done! Dozens of people fly in and out of the Pole between November and February to perform maintenance on IceCube and other experiments.

The most common form of transportation is the LC-130 airplane, which takes about three hours to fly from McMurdo Station on Antarctica’s coast to the South Pole.

Credit: John Hardin, IceCube/NSF