The polar vortex is a whirling and persistent large area of low pressure, found typically over both North and South poles. The northern polar vortex was pushing southward over western Wisconsin and eastern Minnesota on Monday, Jan. 6, 2014, and was bringing frigid temperatures to half of the continental United States. It is expected to move northward back over Canada toward the end of the week.

This image was captured by NOAA’s GOES-East satellite on Jan. 6, 2014, at 11:01 a.m. EST (1601 UTC). A frontal system that brought rain to the coast is draped from north to south along the U.S. East Coast. Behind the front lies the clearer skies bitter cold air associated with the polar vortex.

The GOES image also revealed snow on the ground in Minnesota, Wisconsin, Illinois, Indiana, Ohio, Michigan, Iowa and Missouri, stretching into the Great Plains. Clouds over Texas are associated with a low pressure system centered over western Oklahoma that is part of the cold front connected to the movement of the polar vortex.

The Arctic polar vortex peaks in the Northern Hemisphere's wintertime and has already moved southward several times this winter. In the past, it has also moved southward over Europe. On Jan. 21, 1985, the National Oceanic and Atmospheric Administration Daily Weather Map series showed a strong polar vortex centered over Maine.