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THE COVER

For more than two decades, the Voyager 1 and Voyager 2 probes have been headed toward the edge of the heliopause, the enormous bubble created by the Sun's extended atmosphere. That edge, called the heliopause, is defined by the pushback from the interstellar medium against the solar wind, the charged particles that stream from the Sun. Until Voyager 1 reached the heliopause 2012, scientists knew little about this critical boundary, not even how far away it is; it turns out to be around 18.2 billion kilometers from Earth. Researchers expected the region before the heliopause, called the heliosheath, to be smooth and calm, but Voyager 1's measurements show that it is anything but. In this artist's interpretation of the data magnetic field lines (red and blue) connect back to the Sun, but the transition region is filled with magnetic bubbles. The heliopause is not a continuous shield between the solar atmosphere and the interstellar medium after all, but a porous membrane with fingers and indentations. (Image courtesy of NASA/Goddard Space Flight Center/CI Lab.)