A historical timeline of solar science discoveries—leading to the newest spacecraft in NASA's heliophysics fleet.

**The Corona as the Sun's Atmosphere**
English astronomer Francis Baily observes a total solar eclipse and suggests that the hazy 'corona' outlining the Sun is its atmosphere.

**Comet Tails in the Wind**
Johannes Kepler observes comet tails and hypothesizes that they are blown away by pressure from sunlight — a solar breeze.

**The Coronal Heating Problem**
Swedish astronomer Bengt Edlen detects highly ionized iron in the corona, indicating a temperature of 1.8 million degrees Fahrenheit. This is much hotter than the Sun's surface.

**A New Heating Mechanism**
Swedish physicist Hannes Alfvén proposes the existence of a new kind of wave forming in electrically conducting fluids. These waves may be responsible for heating the corona to such high temperatures.

**A Solar Wind Made of Particles**
Building on Kepler's hypothesis from 400 years earlier, Cuno Hoffmeister (and later Ludwig Biermann) proposes that the Sun emits a steady stream of charged particles that push the ions in comet tails always away from the Sun.

**The First Theory of the Solar Wind**
Eugene Parker connects the hot corona with the solar wind via a rigorous mathematical theory. According to the theory, heat pressure from the million-degree corona forces it to expand outward, forming a solar wind that drags the Sun's magnetic field lines deep into space.

**Slow Solar Wind and Helmet Streamers**
Using observations from the joint ESA/NASA Solar and Heliospheric Observatory, Neil R. Sheeley Jr. and colleagues identify puffs of slow solar wind emanating from helmet streamers — bright areas of the corona that form above magnetically active regions on the photosphere. Exactly how these puffs are formed is still not known.

**Nanoflares May Heat the Corona**
Eugene Parker proposes that frequent, small eruptions on the Sun — known as nanoflares — may heat the corona to its extreme temperatures. The nanoflare theory contrasts with the wave theory, in which heating is caused by the dissipation of Alfvén waves.

**Fast Wind from Coronal Holes**
Images from Skylab, the U.S.'s first manned space station, identify that the fast solar wind is emitted from coronal holes — comparatively cool regions of the corona where the Sun's magnetic field lines open out into space.

**The Slow and Fast Solar Wind**
NASA's Mariner 2 spacecraft observes the solar wind, detecting two distinct 'streams': a slow stream travelling at approximately 215 miles per second, and a fast stream at 430 miles per second.

**Solar Wind Detected**
The Soviet satellite Luna 1, the first spacecraft to leave geocentric orbit, measures the solar wind directly for the first time, confirming key parts of Parker's theory.

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