

A Search for the Origin of the Slow Solar Wind using Full Sun Spectroscopic Observations from Hinode

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Fast and slow winds flow from the Sun, fill the entire solar system with hot gas, and affect the Earth's near space environment. The fast wind originates from the Sun's polar regions, but the source regions of the slow wind have long been debated. Using new measurements from the Hinode satellite, we have identified the most likely sources by constructing a map of the whole Sun that shows areas where plasma with the same chemical composition as the slow wind is flowing out from the solar atmosphere on open magnetic field lines. This comprehensive observation and analysis allows us to account for most of the mass flux observed at Earth. For these observations, taken near solar maximum, we find that the most significant sources of the slow solar wind are outflows from the edges of sunspots.