

## **IMAGE/LENA Observations of Neutral Atoms from the Solar Wind**

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We report observations of neutral atoms from the solar wind in the Earth's vicinity with the Low Energy Neutral Atom (LENA) imager on the IMAGE spacecraft. This instrument, unlike most other neutral atom imagers, was specifically designed to be capable of looking at and in the direction of the Sun. Observed enhancements in the hydrogen count rate in about the solar direction are correlated with neither solar ultraviolet emission nor suprathermal particles and must therefore be due to neutral particles from the solar wind. Based on the presence of sputtered oxygen observed in the tof spectra, the energy of these neutral particles exceeds about 1 keV, consistent with solar wind-like energies. In addition, the sputtered oxygen abundance tracks the solar wind speed, even when IMAGE resides deep inside the magnetosphere. We consider various sources of these neutral particles including solar wind charge exchange with dust grains and interstellar neutrals, undisturbed solar wind and magnetosheath charge exchange with the Earth's geocorona and solar wind charge exchange with the Earth's geocorona in the cusp region.