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**Tracking The Polar Cap Boundary Under Strong Solar Wind Driving**[1] RANDALL BRADSHAW, ROBERT BRUNTZ, RAMON LOPEZ, UT Arlington — The magnetic field near the Earth is shaped similar to that of a bar magnet, with some field lines flowing from one magnetic pole to the other, called "closed" field lines. Farther away from the Earth, however, the Earth's magnetic field can interact with the Sun's magnetic field, which is carried along by the solar wind. When the two fields point in opposite directions, field lines that connect near the Earth's poles can merge with solar wind field lines, to form "open" field lines. The boundary between the open and closed field lines is the polar cap boundary. It is well known that field line merging causes the polar cap boundary to grow, but it is less clear if this growth is limited to some "saturation" value. Our research examines periods of strong, steady solar wind driving, identified from the Omni solar wind database as periods with a large southward solar wind magnetic field and steady conditions. Then, we examine particle data from the DMSP F13 satellite, to find the location of the polar cap boundary produced during those solar wind conditions. Our analysis shows a clear connection between the polar cap boundary location and the solar wind input, including apparent saturation of the polar cap area with strong driving.

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