



Determination of polar cap size and shape using energetic particles.

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The size and shape of the terrestrial polar cap provides valuable information about the state of the magnetosphere. The polar cap area is also important for the total loss of plasma from the polar ionosphere into the solar wind via ion outflow along open field lines. In this study we have used energetic particles from the Cluster and NOAA satellites to infer the boundary between open and closed magnetic field lines. By sorting the observations according to geomagnetic disturbance level, interplanetary magnetic field and solar wind dynamic pressure, we also get an idea about the processes governing the size and shape of the polar cap. Preliminary results show that the polar cap area during strongly driven intervals with southward IMF can be more than 10 times larger than for quiet conditions.