

Abstract Submitted  
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**First Ion Temperature Images from TWINS Data** AMY KEESEE, EARL SCIME, West Virginia University — Ion heating has been correlated with several magnetospheric phenomena, including magnetic reconnection, instabilities, and convection of plasma through different regions of the magnetosphere. Thus, it is important to be able to measure ion temperatures throughout the magnetosphere to better understand the physics of these phenomena. Effective ion temperatures based on the charge-exchange cross section-corrected energetic neutral atom (ENA) flux versus energy spectrum can be calculated from TWINS data. Effective ion temperatures calculated from the Medium Energy Neutral Atom (MENA) imager on the IMAGE spacecraft using this technique were shown to have excellent (within  $\sim 30\%$ ) agreement with *in-situ* measurements from MPA instruments on LANL geosynchronous spacecraft and GEOTAIL. In order to achieve adequate statistics for reliable ion temperature calculations, we can use either data with significant ENA flux rates, such as during geomagnetic storms, or superpositions of multiple data sets. We present ion temperature images from the few small storms that have occurred so far in the TWINS mission as well as preliminary results of a superposition study of the quiet-time magnetosphere.

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