

Abstract Submitted
for the TSF10 Meeting of
The American Physical Society

**TWINS Stereo Images of the Three-Dimensional Ring Current
During Geomagnetic Storms in the Rising Phase of Solar Cycle 24**

JERRY GOLDSTEIN, DAVID MCCOMAS, Southwest Research Institute, THE TWINS SCIENCE TEAM — Two Wide-angle Imaging Neutral-atom Spectrometers (TWINS) is the first stereoscopic magnetospheric imaging mission. In operation since June 2008, the TWINS observatory performs simultaneous Energetic Neutral Atom (ENA) imaging from two widely-separated Molniya orbits on two separate spacecraft. TWINS global, stereo imaging of magnetospheric ENAs provides a dynamic monitor of fundamental processes of energetic particle physics in geospace. The TWINS prime mission (2008–2010) saw extremely quiet conditions associated with the unprecedented, extended minimum of solar cycle 23. The recent emergence into the rising phase of solar cycle 24 has witnessed geospace as it responds to an evolving balance in Sun and solar wind drivers not seen before in the space age. Through stereo imaging, TWINS measures the anisotropy in ENA emissions that can be used to infer the 3D parent ion distribution. For several rising-phase storms, the TWINS-observed spatial dependence of ENA intensity is characterized in terms of the viewing geometry relative to the magnetic field in the ENA source region. This characterization is used to determine the relationship between the ENA emission anisotropy and the global pitch angle distribution of the parent ions (both trapped and precipitating).

Jerry Goldstein
Southwest Research Institute

Date submitted: 22 Sep 2010

Electronic form version 1.4