



## **Retrieval of ion distributions in RC from TWINS ENAI and joint TC-2/IMAGE HENA measurements by CT technique**

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Numerical simulations of 3-D retrieval of RC ion distribution by means of CT inversion technique have been made using ENA images from two satellites located widely separated advantage positions, showing good performance under isotropy assumption. This inversion technique has been applied to retrieve ENA sources of energetic ions in RC and aurora region from ENA measurements board on TWINS constellation during the main phase of a moderate geomagnetic storm occurring on October 11, 2008. The ENA data are number fluxes averaged for 12 sweeps and accumulated over all energies, with higher fluxes at lower energy levels. The retrieved ENA sources have two components of low-latitude RC and low-altitude subauroral one. The main part of the former component is located at post-midnight toward dawn sector with L from 3 to 7 or far, while the subauroral component is centered at pre-midnight in the southern hemisphere. The feature of the low-latitude RC is comparable with the total ion pressure of RC simulated by CRCM. The low-altitude component is consistent reasonably with in situ observations by DMSP/SSJ4. In addition, we also applied the inversion method to retrieve the ion sources of ENA measured coordinately by IMAGE-HENA and TC-2 NUADU during 2004 November superstorm. A unique suitable configuration of locations for the IMAGE and TC2 is found at around 17:00 UT on November 9, the time just before the development of the second main phase of the storm. The IMAGE was located at 7.99 Re and 11:30 MLT in the southern hemisphere while TC-2 at 6.98 Re and 21:48 MLT in the northern hemisphere. The retrieved hydrogen ion sources are peaked at pre-midnight extending from midnight to dusk sector with L ranging from 4 to 7 or more. The resulted proton fluxes are consistent fairly with in situ measurement by LANL at synchronous orbit.

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