

## データ同化による放射線帯変動メカニズムの動的推定 Dynamical estimation of external/internal acceleration processes of the outer radiation belt using data assimilation

三好 由純<sup>1\*</sup>; 外山 晴途<sup>1</sup>; 上野 玄太<sup>2</sup>; 越石 英樹<sup>3</sup>; 松本 晴久<sup>3</sup>; 塩川 和夫<sup>1</sup>  
MIYOSHI, Yoshizumi<sup>1\*</sup>; TOYAMA, Haruto<sup>1</sup>; UENO, Genta<sup>2</sup>; KOSHIISHI, Hideki<sup>3</sup>; MATSUMOTO, Haruhisa<sup>3</sup>; SH-IOKAWA, Kazuo<sup>1</sup>

<sup>1</sup> 名古屋大学太陽地球環境研究所, <sup>2</sup> 統計数理研究所, <sup>3</sup> 宇宙航空研究開発機構  
<sup>1</sup>STEL, Nagoya University, <sup>2</sup>The Institute of Statistical Mathematics, <sup>3</sup>JAXA

Dynamical evolution of the outer belts should be a delicate balance among several processes. It has been believed that there exist two different acceleration mechanisms: the radial diffusion as the external source process, and the non-adiabatic wave particle interactions as the internal source process. In order to discriminate when and where these processes are dominant for the large flux enhancement of the outer belt electrons, we have developed a data assimilation code on the outer belt electrons. In our data assimilation, the particle filter and the particle smoother are used which are effective for non-linear/non-Gaussian distribution problems. We include the radial diffusion coefficient and the internal source model in the state vector and estimate the dynamical variations of these parameters. The Tsubasa satellite electron data are used as the observation vector. The results indicate that only the radial diffusion process is always too small to explain the observed flux enhancement and the internal source process should be necessary. The assimilation result suggests that the internal source process tend to take place around the storm recovery phase, which is consistent with the observations.

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