

長期再解析データを用いた高エネルギー粒子降り込みに対する南半球中層大気応答の研究  
Dynamical response of the SH middle atmosphere to energetic particle precipitations  
in the latest reanalysis data

\*富川 喜弘<sup>1,2</sup>

\*Yoshihiro Tomikawa<sup>1,2</sup>

1.国立極地研究所、2.総合研究大学院大学

1.National Institute of Polar Research, 2.SOKENDAI

The latest solar cycle minimum sometime around 2009 showed unusually low solar activity and suggested the possibility of a grand solar minimum in the near future. This event caused much attention to be focused on studies regarding solar influence on the Earth's climate. The recent review by Gray et al. (2010) classified solar forcing on the Earth's climate to be of four types: galactic cosmic rays, total solar irradiance (TSI), solar ultraviolet radiation (UV), and energetic particle precipitations (EPP). Although EPP has not attracted much attention compared with TSI and UV in the past, several recent studies indicate that EPP could have a significant impact on the Earth's climate, comparable with that of TSI and UV. However, reliability of some of these studies was recently questioned (Tomikawa, 2015). In this study, the past 36 years were divided into high, medium, and low energetic particle forcing (EPF), and solar maximum, medium, and minimum conditions using Ap index and F10.7 radio flux, respectively. Then composite figures of middle atmosphere in the winter southern hemisphere were created from the latest reanalysis data and compared between medium and low EPF during the solar minimum. They showed that there was a statistically significant difference between medium and low EPF.

キーワード：高エネルギー粒子の降り込み、再解析、中層大気

Keywords: Energetic particle precipitation, Reanalysis, Middle atmosphere