Since Voyager 1 passed the Heliopause in 2012, it has provided the observations of the charged particles in the local interstellar medium. However, Voyager 1 only provides the information along with its trajectory. In order to understand the global view of the interstellar plasma flow surrounding the Heliopause, we need another tool. When the interstellar plasmas approach the Heliopause, the ions are deflected around the Heliopause due to the draping of the interstellar magnetic field. The draping of the interstellar magnetic field is strongly connected with the shape of the Heliopause. A fraction of the diverted ions exchanges their charges with the undisturbed primary interstellar neutral atoms, and then the ions become neutral atoms called the secondary interstellar neutral atoms. The newly created neutral atoms carry information on the diverted flow of the interstellar ions, and a fraction of them can travel to the Sun. Therefore, the secondary component of the interstellar neutrals is an excellent diagnostic tool to provide important information to constrain the shape of the Heliopause. The secondary interstellar neutrals are observed by Interstellar Boundary Explorer (IBEX) at Earth's orbit. Since 2009, two energetic neutral atom cameras on IBEX have measured neutral atoms and it has provided sky maps of neutral atoms. In this presentation, we will discuss the directional distribution of the secondary interstellar neutrals at Earth's orbit. In the sky maps, the primary interstellar neutral gas is seen between 200°and 260°in ecliptic longitude and the secondary components are seen in the longitude range of 160°-200°. We also present a simplified model of the outer heliosheath to help interpret the observations of interstellar neutrals by the IBEX-Lo instruments. We extract information on the large-scale shape of the Heliopause by comparing the neutral flux measured at IBEX along four different look directions with simple models of deflected plasma flow around hypothetical obstacles of different aspect ratios to the flow. Our comparisons between the model results and the observations indicate that the Heliopause is very blunt in the vicinity of the Heliospheric nose, especially compared to a Rankine half-body or cometary shape.

[구 SS-03] The role of heliospheric current sheet on solar energetic particles with enhanced Fe/O

Jinhye Park[1], R. Bucik[2,3], Yong-Jae Moon[1,4],and S. W. Kahler[5]
[1]Department of Astronomy and Space Science, Kyung Hee University, Yongin 446-701, Korea
[2]Max Planck Institute for Solar System Research, Justus-von-Liebig-Weg 3, D-37077, Göttingen, Germany
[3]Institute for Astrophysics, University of Göttingen, Friedrich-Hund-Platz 1, D-37077, Göttingen, Germany
[4]School of Space Research, Kyung Hee University, Yongin 446-701, Korea
[5]Air Force Research Laboratory, Space Vehicles Directorate, 3550 Aberdeen Avenue, Kirtland AFB, NM 87117, USA

We investigate initial Fe/O enhancements for 44 large gradual solar energetic particles events from 2010 to 2014 and examine the associations of the Fe/O enhancements with the structures of the heliospheric current sheet (HCS). For this study, we use STEREO SIT Fe and O data in 0.32-0.45 MeV channel as well as ACE ULEIS Fe and O data in 0.32-0.64 MeV channel. We determine 1) the magnetic polarities of the SEP source regions using the potential field source surface (PFSS) model of the coronal field and 2) the spacecraft magnetic footpoints with Parker spiral approximation of interplanetary magnetic field using the in-situ measurements of STEREO and ACE. We find that 29 out of 44 events have initial Fe/O enhanced more than 5 times of the typical gradual event values. In the 6 events, the enhancements are simultaneously observed by two spacecraft. There is a tendency that the high Fe/O enhancements are observed near SEP source regions. It is also noted that the Fe/O enhancements are associated with the polarity of the magnetic footpoints. The high Fe/O enhancements are usually observed where their footpoints lie in the same polarity regions of SEP sources rather than the opposite polarity regions. Although Fe/O enhancements could be due to a transport effect and/or a flare contribution, our result implies that the structure of HCS is likely to affect particle propagations in the interplanetary space.

[구 SS-04] A Solar Stationary Type IV Radio Burst and Its Radiation Mechanism

Hongyu Liu[1,2,3], Yao Chen[3], Kyungsuk Cho[1,2], Shiwei Feng[3], Veluchamy Vasanth[3], Artem Koval[3], Guohui Du[3], Zhao Wu[3], Chuanyang Li[3]
[1]Korea Astronomy and Space Science Institute, Daejeon, Republic of Korea
[2]University of Science and Technology, Daejeon, Republic of Korea
[3]Shandong Provincial Key Laboratory of Optical Astronomy and Solar-Terrestrial Environment, and Institute of Space Sciences Shandong University, Weihai, China