

Iberian space science summer school report

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 D1)

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I am glad to join Iberian space science summer school 2022 (i4s) in June 2022 (6-10). The main objective of the school is to provide professional development for young researchers in the domain of Space Weather, with an emphasis on the fundamental science of the Sun-Earth system, modeling, and forecasting. The school was held on-site in Spain.

During the i4s, I receive several lectures regarding solar activity, interplanetary medium, magnetosphere, geomagnetic field and low-cost instrumentation development. The participants of the school were divided into several groups and each group was assigned to make a preliminary analysis of a geomagnetic storm event. On June 8, some students can make presentations to introduce their research, and I made a presentation of my research on a conjugate event study of a substorm aurora using an all-sky camera and the Arase satellite.

In my presentation, I introduce a substorm event where the footprint of the Arase satellite was located equatorward (earthward in the equatorial magnetosphere) of a brightening arc at L~5. In this event, the mid- and low-latitude magnetometers measured a series of Pi2 pulsations. The Arase satellite at L~5 observed fluctuations in the energy flux spectra in the inner magnetosphere at a substorm onset aurora associated with the variation of auroral luminosity. We found an approximate correspondence between auroral intensification and high-latitude Pi2 pulsations for the first ~10 minutes after the substorm onset. We also found a possible correspondence between auroral intensifications and satellite-measured thermal pressure variations.

Our group was assigned to analyze the geomagnetic storm event on June 2015. We examined the solar images from Solar Dynamics Observatory (SDO) and Solar and Heliospheric Observatory (SOHO) and identified the solar activities, and ACE data to find the CME transient features. We made raw calculations of Dst index and total electron contents (TEC) to see the impacts of solar activities to the Earth. We also discuss the influence of geomagnetic storm to the auroral region and human activities. Through this workshop, I receive a more comprehensive understanding of solar-terrestrial interaction and its impacts to our society.

After the lecture and workshop, we made a short visit to the University of Alcalá de Henares and a tour to European Space Astronomy Centre (ESAC). It was a wonderful trip for me to visit Spain and had discussions with young researchers and PhD students. Finally, I would like to give my sincere appreciation to CICR, ISEE for supporting me to join this school, it is an unforgettable experience.



Pic1 ESAC tour

<Supervisor's name>

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