R010-16
Zoom meeting C ：11/4　AM2　(10:45-12:30)
11:45-12:05

過去 1.8 世紀の歴史的アナログ記録に基づく激甚磁気嵐の規模推定の事例研究

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Case studies for the intensity estimates of the historical geomagnetic superstorms with analog records for the last 1.8 centuries

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Solar eruptions frequently release fast and massive interplanetary coronal mass ejections with southward interplanetary magnetic field. They often cause geomagnetic superstorms (minimum Dst < -500 nT) and form significant threats on the modern civilization due to its increasing dependency on the technological infrastructure. Despite their significant impacts, such superstorms are rare and only one storm (the 1989 storm; Dst = -589 nT) fits in this category during the space age since the late 1950s. So far, the largest recorded superstorm has been considered the Carrington superstorm in 1859 (Dst estimate ~ -900 nT). However, it has not been immediately clear how unique the Carrington superstorm was within the multi-century time scale. Here, we have analyzed the analog magnetograms and reports of low-latitude aurorae in the past to identify and measure superstorms in history. Our investigations have shown at least 7 superstorms and their source active regions, within the coverage of the systematic geomagnetic measurements for the last 1.8 centuries. We show several case studies for the reconstructions of intensity and time series of such superstorms in history. These results increase the data for superstorms and improve the existing models for their simulations for such geomagnetic superstorms.