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Interaction between small-scale magnetic flux rope in the solar wind and Earth's magnetosphere, and the effect on the geospace environment[1] YOURA SHIN, SUNGJUN NOH, NENGYI HUANG, GEORGE BIZOS, HAMEEDULLAH FAROOKI, MANAL DESAI, New Jersey Institute of Technology, KYUNG-EUN CHOI, Chungbuk National University, HAIMIN WANG, HYOMIN KIM, New Jersey Institute of Technology, CENTER FOR SOLAR AND TERRESTRIAL RESEARCH TEAM[2], CHUNGBUK NATIONAL UNIVERSITY COLLABORATION — Small-scale magnetic flux ropes (SMFRs) are structures of helical magnetic field lines commonly observed in the solar wind. Since it is widely known that rotating magnetic field structure is favorable for build-up, release and transport of free energy, the interaction between SMFRs and the Earth's magnetosphere may lead to transient energy transfer near the boundary (e.g., flux transfer event or FTE) via magnetic reconnection in the dayside which consequently causes energetic particle injection from the plasma sheet. However, the observational assessment of their effect on the geospace environment has not yet been extensively studied. We present a statistical survey of geospace response to SMFRs in the context of solar and geomagnetic activity during solar cycle 23 and 24. The SMFRs are identified using the data from the spacecraft in the solar wind between Sun and Earth (e.g., ACE and Wind). Magnetic field and plasma characteristics during passages of the SMFRs are also discussed using data from the several magnetospheric missions near/in the magnetosphere (e.g., MMS, Cluster, GOES and Van Allen Probes).

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