

Space Radiation of Solar Storm: A Meeting Report in Taiwan

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ABSTRACT

Solar storm was an effect when Sun was active. Solar flares flame released a large amount of energy and caused a large-scale explosion. A large amount of coronal matter was ejected into space by plasma composed of electrons and protons. Their shock waves or magnetic clouds and the earth Magnetic storms generated by the interaction of magnetic fields caused disturbances and squeezing of the earth's magnetosphere. A solar flare was a phenomenon of solar storm. It had huge eruptions of electromagnetic radiation. The sudden electromagnetic energy traveled with the speed of light. Large solar flare might affect the effects of reliability of electronic components in satellites and could cause economic losses by soft error and could affect human health through the space radiation, especially causing cancer.

Keywords: Cancer, Earth's magnetosphere, Electronic Components, Soft Error, Solar flares, Solar storm, Space Radiation.

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I. INTRODUCTION

Solar storm was defined as when the sun was active, the powerful Solar flares flame instantly released a large amount of energy and caused a large-scale explosion, accompanied by a large amount of coronal matter, which was ejected into space by plasma composed of electrons and protons; solar wind shock waves or magnetic clouds and the earth Magnetic storms generated by the interaction of magnetic fields caused disturbances and squeezing of the earth's magnetosphere. According to Faraday's law of electromagnetic induction has been changed in magnetic fields, which generated electromotive force and caused electronic devices to generate induced currents [1]-[4].

II. DISCUSSION

A solar flare (Fig. 1) was a very important phenomenon of solar storm, which had huge eruptions of electromagnetic radiation. The sudden electromagnetic energy traveled with the speed of light. Therefore, any effect upon the sunlit side of Earth's exposed outer atmosphere occurred and could be observed. If the ejection of solar flare was along the direction of the Earth, particles associated with this disturbance penetrated into the upper atmosphere incl. ionosphere and caused bright auroras (Fig. 2) and ionospheric anomaly e.g., the precursors of large earthquake [5]. This might also disrupt long range radio communication. When ejecting to reach Earth, usually, it has taken few days for the solar plasma. Large solar flare might affect the effects of reliability of electronic components in satellites and could cause economic losses through the space radiation by soft error [6]-[8]. The space radiation also could affect human health, especially causing

cancer (Particle Physics and Beam Delivery Core Laboratory, Taiwan).

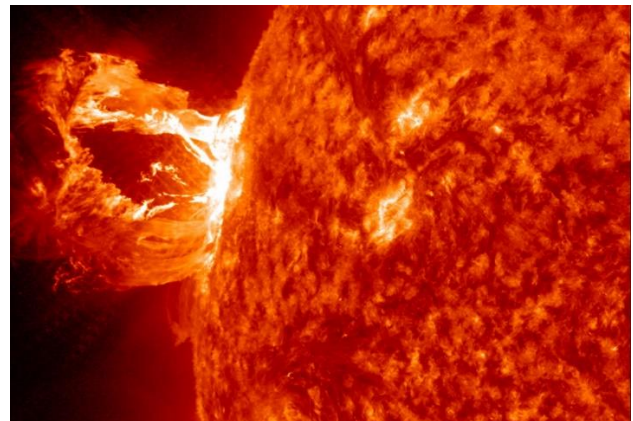


Fig. 1. A solar flare on June 9, 2017 (UTC) (National Aeronautics and Space Administration, NASA).



Fig. 2. An aurora on Jan. 9, 2014 (UTC) in Norway (NASA).

III. CONCLUSION

Solar storm was defined as when the sun was active, the powerful Solar flares flame instantly released a large amount of energy and caused a large-scale explosion, accompanied by a large amount of coronal matter, which was ejected into space by plasma composed of electrons and protons; solar wind shock waves or magnetic clouds and the earth Magnetic storms generated by the interaction of magnetic fields caused disturbances and squeezing of the earth's magnetosphere. A solar flare was a phenomenon of solar storm, which had huge eruptions of electromagnetic radiation. The sudden electromagnetic energy traveled with the speed of light. Therefore, any effect upon the sunlit side of Earth's exposed outer atmosphere occurred and could be observed. Large solar flare might affect the effects of reliability of electronic components in satellites and could cause economic losses by soft error and human health, especially causing cancer, through the space radiation.

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CONFLICTS OF INTEREST

The author declares that there is no conflict of interest.

AUTHOR CONTRIBUTIONS

designed the research; performed the research; analyzed the data; and wrote the paper.

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