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Lightning Observation from Geo-Stationary Orbit

Tomoo Ushio^{1*}, Mitsuteru Sato², Makoto Suzuki³, Takeshi Morimoto¹, Zen-Ichiro Kawasaki¹

¹Osaka University, ²Hokkaido University, ³JAXA

Lightning observation from Geo-Stationary orbit is proposed. The scientific goal of the mission is to provide unprecedented information on the thunderstorm in terms of electricity through continuous observation of lightning from geostationary orbit. The link between lightning activity and thunderstorm evolution allows us to use lightning information as a measure of convective intensity, a highly important characteristic of thunderstorm that cannot be measurable by current observing system. Since the proposed measurements have both the temporal and spatial resolution to continuously document the location, intensity, and duration of storm convection, this mission will greatly improve our understanding of the fast time scale elements of atmospheric convection. This information will improve diagnostic retrievals and predictive forecast models and will help in issuing severe weather warnings.

Based on the understanding, GOES-R Geostationary Lightning Mapper (GLM) was proposed in the US following the TRMM/LIS and is scheduled to be launched in the late of 2010's. On the other hand, GLIMS mission which is a project on the Japan Exposure Module in the ISS is scheduled to be launch in 2012 and will observe both lightning and TLEs by optical and electromagnetic wave sensors from low earth orbit. In this presentation, scientific and practical discussion on the lightning observation from geostationary orbit and the current status of the Japanese project will be given. And then a vision of the future in Japan in terms of lightning observation from geostationary orbit will be shared.

Keywords: Lightning, Satellite, Geo-Stationary Orbit