Importance of magnetic field observations at GEO

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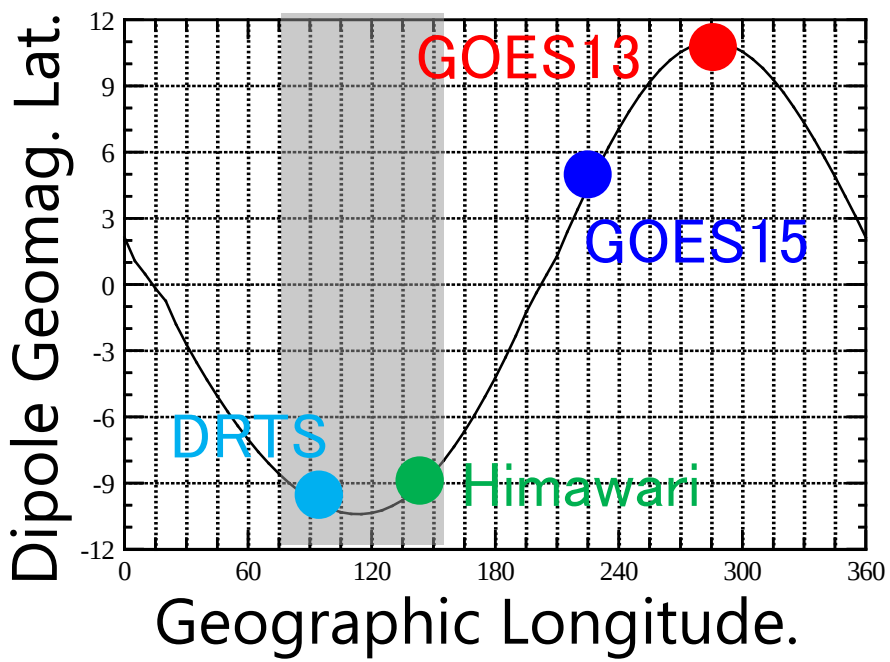
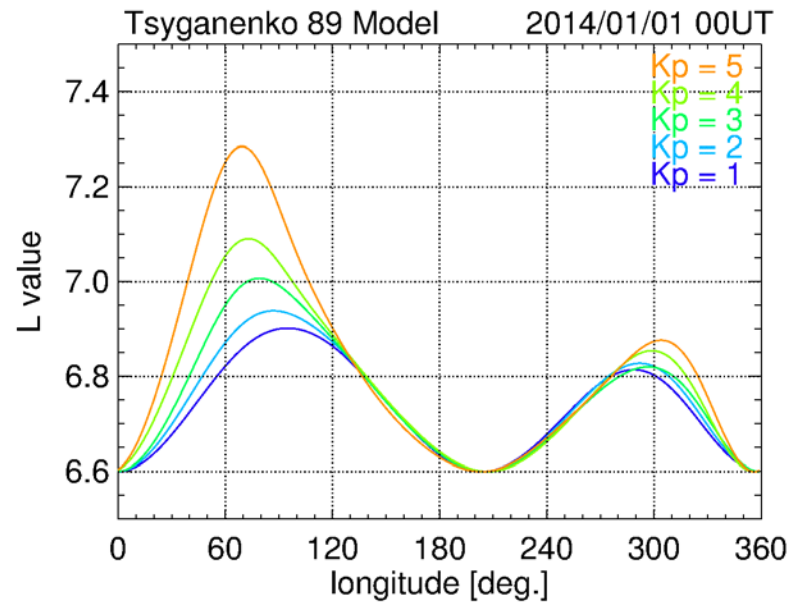
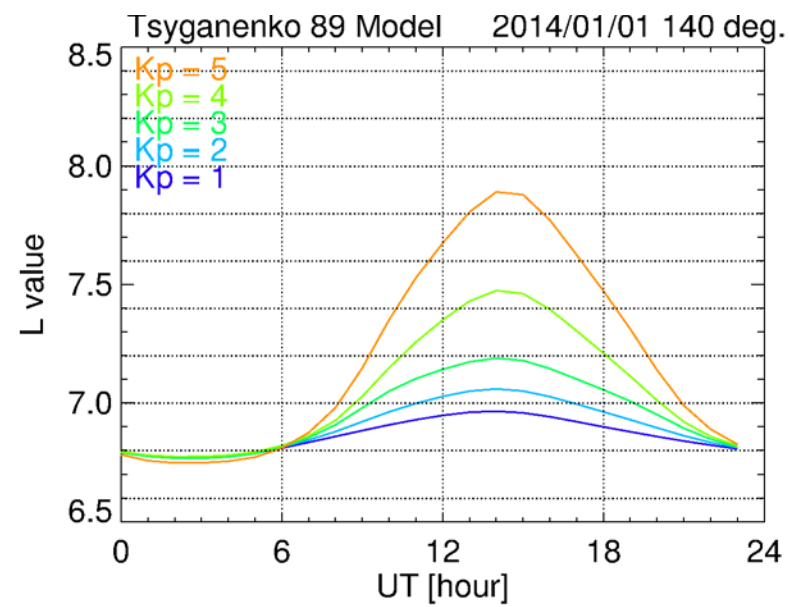
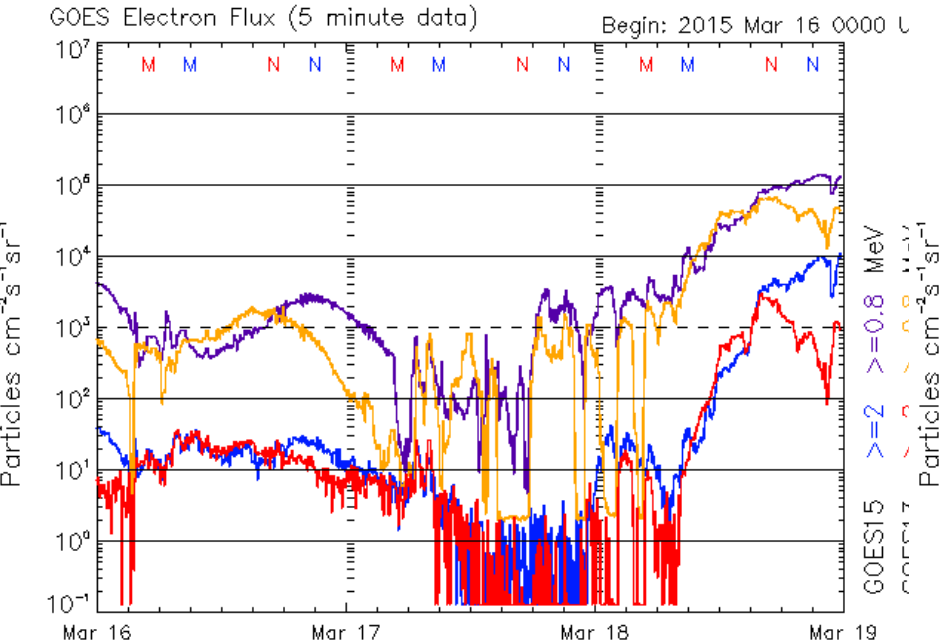
Geosynchronous Orbit

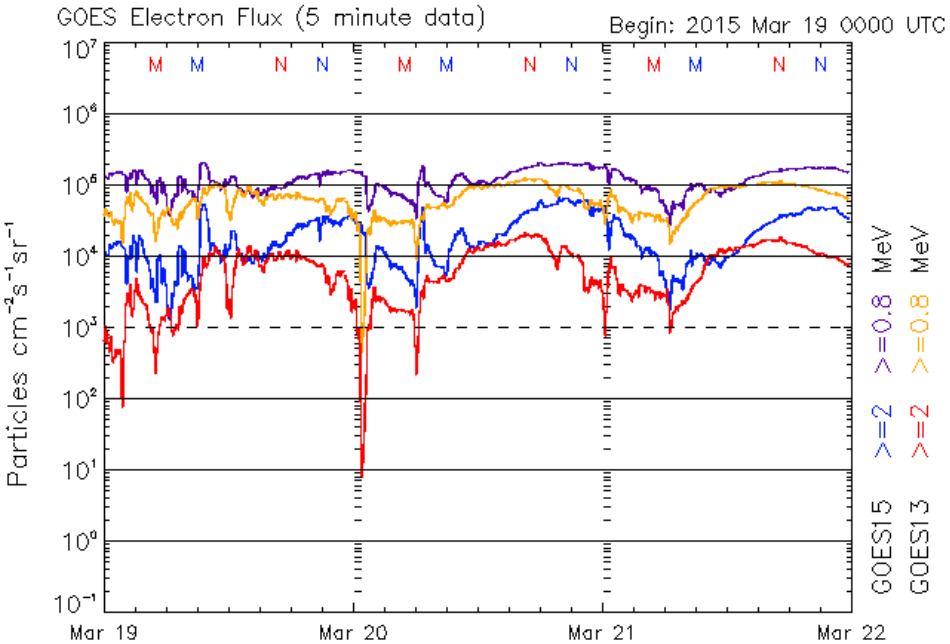


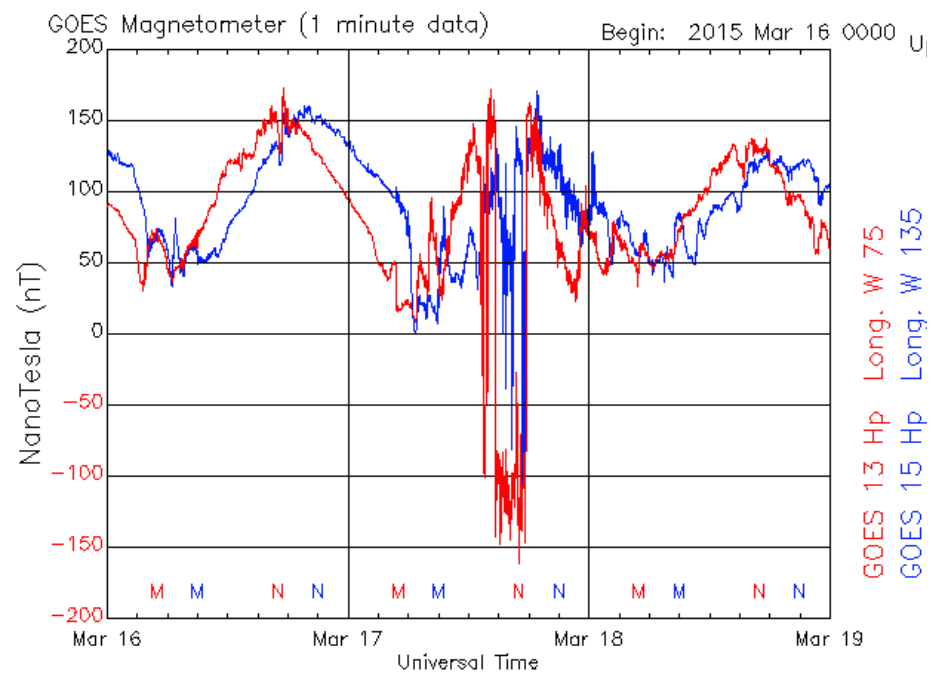


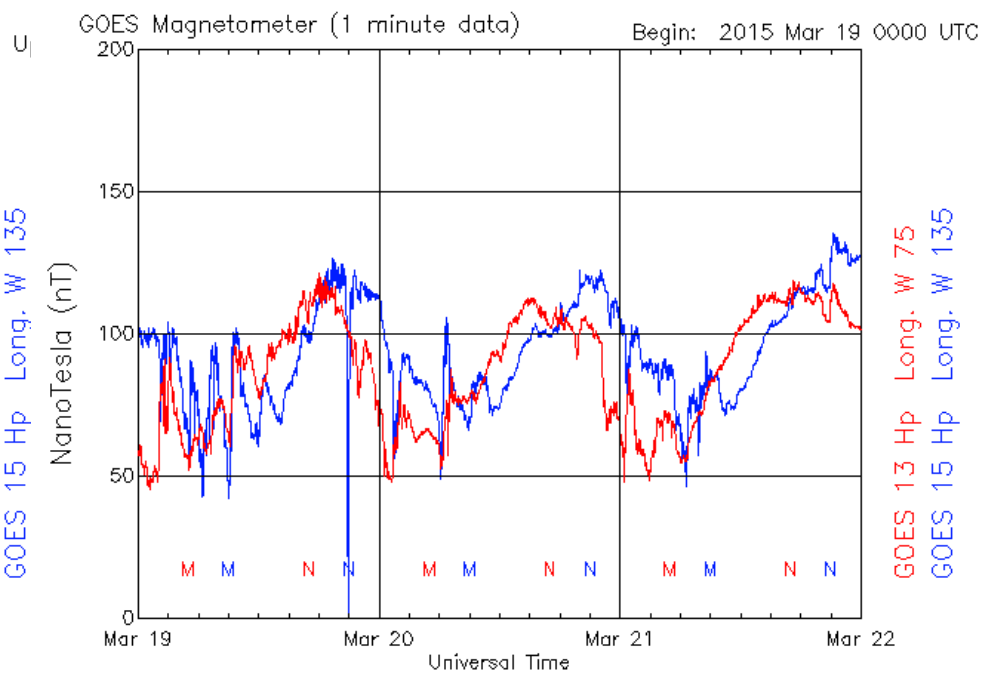


- Geomagnetic latitude (L-Value) is different depending on ‘Geographic Longitude’.
- L-value is changing depending on day, season, geomagnetic activity.
- Particle flux is different depending on ‘Geographic Longitude’.









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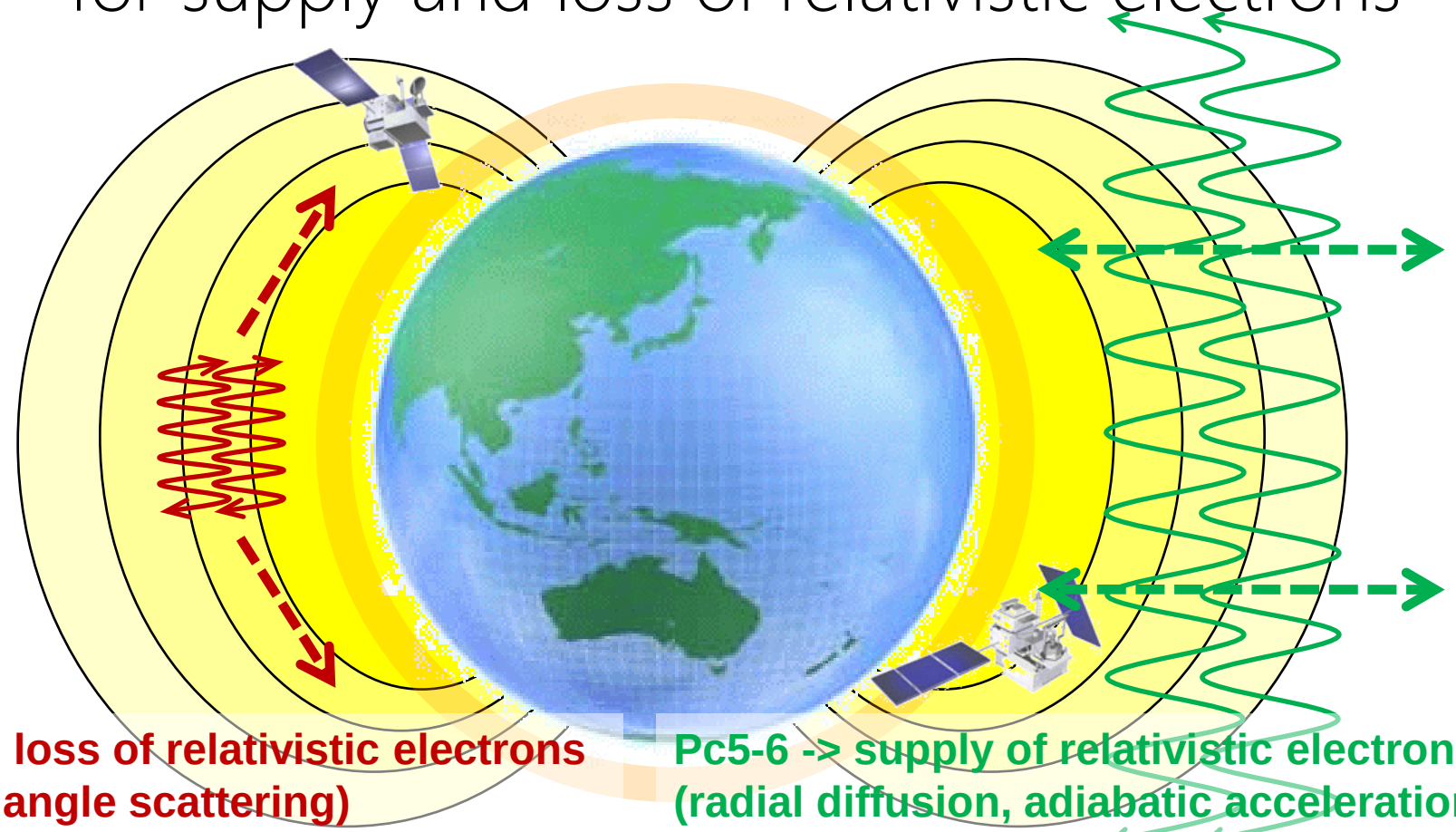
ULF-ELF waves plays an important role for supply and loss of relativistic electrons



Pc1 -> loss of relativistic electrons (pitch angle scattering)

Pc5-6 -> supply of relativistic electrons (radial diffusion, adiabatic acceleration, drift resonance acceleration)

If activity of EMIC waves around GEO can be monitored by GOES, it would be useful for research work and modeling. Magnetic field variations around 0.1-100 Hz can be monitored by induction magnetometer.

Comments

- Geomagnetic field is a basic parameter for space environment.
- A part of the particle variations are caused by magnetic field variations.
- Combining magnetic field and particle data enables us to determine physical parameters (e.g. pitch angle, 1st invariant(μ))
- Continuous observations are good sources for empirical magnetospheric modelling and for validation of numerical simulation.
- If induction magnetometer can install GOES satellite, EMIC waves can be monitored (0.1-100 Hz).