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Magnetic Field Observations at GEO in the GOES-R Spacecraft Era

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The GOES-R spacecraft series are the next generation NOAA weather satellites. With two of the four satellites in the series already launched, GOES-R will be operational well into the 2030s. The GOES-R suite of space weather instruments are similar to previous GOES satellites but the measurement ranges have improved with the MAG (magnetometers) sampling rate increasing to 10 Hz and the particle suite, called SEISS, able to observe most of the energy ranges of energetic ions and electrons important to radiation belt and ring current dynamics. The frequency range of the MAG practically covers the full range of the Ultra Low Frequency (ULF) and ElectroMagnetic Ion Cyclotron (EMIC) waves observable at geosynchronous orbit. These plasma waves are also very important in radiation belt physics and ring current dynamics. This presentation describes how the GOES-R series magnetic field observational capabilities can be used as a tool to gain advances in both space weather forecasting and research. We also describe new and future GOES-R space weather magnetic field data products and present examples of multi-point studies that can be undertaken with the GOES-R series MAG data.