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Extreme Space Weather Events: Some Predictions for the Magnetosphere and Ionosphere

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Extreme space weather events have their origins on the Sun. Coronal Mass Ejections (CMEs) associated with solar flares and High Speed Streams emanating from coronal holes both influence the interplanetary medium, the Earth 's magnetosphere, ionosphere and atmosphere. The largest magnetic storm in recorded history was associated with the Carrington September 1-2, 1859 solar flare. The interplanetary event causing the storm was most likely a CME. The corresponding magnetic storm had a peak Dst estimated at −1760 nT, an intensity higher than anything any living person has experienced. The storm caused fires in the U.S. and in Europe. Can a storm of this intensity occur again? What would happen to the Earth 's magnetosphere and ionosphere during such a storm? These and other questions will be explored in the talk.