

What Would Happen to the Ionosphere and Atmosphere if an 1859-Carrington Storm Occurred Today?

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The September 1-2, 1859 magnetic storm following the Carrington solar flare (Carrington, MNRAS, 1859) was the largest storm in recorded history (Tsurutani et al., JGR, 2003). The calculated Dst magnitude was ~ -1760 nT, more than three times larger than anything most of us have experienced in our lifetimes. Well-documented fires were triggered in both the United States and Europe due to storm-induced electric fields (Loomis, AJS, 1861). In 1859, telegraph communications was the high technology of the day. If a similar storm occurred now, it is reasonably certain that major electrical power grids would go down. Thus, many governmental agencies are presently studying this to determine how to mitigate the damage. However, a little studied area is what would happen to the ionosphere and atmosphere during such a storm? Would there be problems for humankind? This will be the topic of the present talk.

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