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Superstorms at the end of the Last Interglacial (MIS 5e)? Modeling paleo waves and the transport of giant boulders.

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We present the results of high-resolution field surveys and wave models along the cliffs of the northern part of the Island of Eleuthera, Bahamas. Previous studies have proposed that cliff top mega-boulders were emplaced at the end of the Last Interglacial (MIS 5e, ∼128-116 ka) by giant swells caused by super-storms that find no counterpart in the Holocene (including historical times). Our results suggest that these boulders could have instead been transported from the cliff face to the top of the cliff by a storm analogous to the 1991 'Perfect Storm', if sea level during MIS 5e sea was more than 4 meters higher than today. We remark that the data-model approach used here is essential to interpreting the geologic evidence of extreme storms during past warm periods, which in turn, is an important tool for predicting the intensity of extreme storm events in future climates. Our results indicate that even without an increase in storm intensity, cliffs and hard coastal barriers might be subject to significant increases wave-generated stresses under conditions of sea levels modestly higher than present.