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Analysis of red sprites observed over Hurricane Matthew

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We examine more than 40 red sprites observed over Hurricane Matthew during its initial intensification on the two consecutive nights of October 1 and 2, 2016. The sprite-producing strokes are all located in the outer rain-band zone of the hurricane. The average impulse charge moment change (iCMC) associated with these sprites, as estimated with the broadband lightning sferics recorded at 2600 km range near Duke University, is +498 Ckm. Based on the lightning strength and the confined thunderstorm region hosting the sprite-producing lightning strokes, we investigate the possibility of sprite production over two tropical cyclones (Haiyan and Tiange) impacting South China, providing reference for the future ground-based observation of sprites produced by the tropical cyclones coming from South China sea.