



Sprites over Africa during the AMMA with Multiple Electromagnetic Detections of Their Parent Lightning Flashes

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Sprites have been detected in video camera observations in Niamey over mesoscale convective systems in Niger during the 2006 AMMA campaign. The parent lightning flashes have been detected by multiple ELF receiving stations worldwide. The recorded charge moments of the parent lightning flashes are often in excellent agreement between different receiving sites, and are furthermore consistent with conventional dielectric breakdown in the mesosphere as the origin of the sprites. Analysis of the polarization of the horizontal magnetic field at the distant receivers provides evidence that the departure from linear magnetic polarization at ELF is caused primarily by the day-night asymmetry of the Earth-ionosphere cavity.