

# The Role of Sprites in the Global Atmospheric Electric Circuit

Anna Odzimek, (ao64@ion.le.ac.uk)  
*University of Leicester, U.K.*

Michael Rycroft,  
*CAESAR Consultancy, Cambridge, U.K.*

Neil Arnold,  
*University of Leicester, U.K.*

Transient Luminous Events, studied extensively during the last decade, are interesting new phenomena in the science of atmospheric electricity. Some of these, termed red sprites, have been shown to be a source of current flowing in the mesosphere. It has been suggested that they could play a significant role as an additional atmospheric current source, and that they should be included in considerations of the global atmospheric electric circuit. The global circuit may be modelled as a simple electric circuit with thunderstorm current generators, resistances and capacitances, the values of which depend on atmospheric parameters. Such a circuit can be simulated using engineering software. Here we update existing models of the global atmospheric electric circuit to include a mesospheric current generator. We then use one of these programs to find out in what ways sprites may affect the global circuit.