

The Tale of the Elusive and Ephemeral Sprites

Thursday, October 26, 2023 11:00 AM (20 minutes)

This presentation is part of my Geography and Science Education series: "Meteorology and Myth". Red Sprites, Elves, and Pixies are types of Transient Luminous Events (TLEs). SPRITE stands for Stratospheric/Mesospheric Perturbations Resulting from Intense Thunderstorm Electrification. These ephemeral bursts of electricity in the upper atmosphere were previously thought of as being inconsequential for an understanding of daily weather. Recent research on upper air electricity suggests that TLEs have some impact on surface weather, atmospheric composition, and our ozone layer. TLEs may influence high-altitude aircraft, balloons, and low orbit spacecraft. They have contributed to variations in atmospheric chemistry, which may influence climate change. There is still significant educational and research potential about TLEs. The purpose of this educational project is to stimulate interest in sprites and other TLEs in the context of weather education. Evocative stories combined with striking imagery may entice student interest in the upper atmosphere. This project includes a literature review of the recent understandings of TLEs, and concise generalizations derived from current research. Outcomes are lesson plans for instructors; this includes handouts, weblinks and video playlists. Reference materials for practical classroom use are included.

Keywords: upper air meteorology, sprites, lightning

Primary author: Dr EDGELL, Dennis (University of North Carolina at Pembroke)

Presenter: Dr EDGELL, Dennis (University of North Carolina at Pembroke)

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