

ICESTAR: VERTICAL ELECTRODYNAMIC COUPLING

M F Fullekrug¹, A W Weatherwax²

¹University of Bath, Bath, United Kingdom, ²Siena College, Loudonville, United States

ICESTAR's Thematic Action Group 1 explores the global vertical coupling of the Earth's atmosphere with particular emphasis on electromagnetic and electrodynamic processes such as the global AC/DC circuit:

(1) The global thunderstorm activity in the troposphere produces lightning flashes with varying intensities.

(2) Particularly intense lightning flashes can produce sprites above thunderclouds, which reach up to the lower ionosphere. Sprites are an exotic kind of lightning, which deposit electromagnetic energy in the middle atmosphere. In addition, sprites produce silent thunder in the infrasound regime.

(3) Particularly intense sprites can produce resonance phenomena in the ionosphere, denoted ionospheric Alfvén resonances.