

Overview of Saturn lightning observations

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Abstract

The lightning activity in Saturn's atmosphere has been monitored by Cassini for more than 6 years. The continuous observations of the radio signatures called SEDs (Saturn Electrostatic Discharges) combined favourably with imaging observations of related cloud features as well as direct observations of flash-illuminated cloud tops. The Cassini RPWS (Radio and Plasma Wave Science) instrument and ISS (Imaging Science Subsystem) in orbit around Saturn also got ground-based support: The intense SED radio waves were also detected by the giant UTR-2 radio telescope, and committed amateurs observed SED-related white spots with their backyard optical telescopes. Furthermore, the Cassini VIMS (Visual and Infrared Mapping Spectrometer) and CIRS (Composite Infrared Spectrometer) instruments have provided some information on chemical constituents possibly created by the lightning discharges and transported upward to Saturn's upper atmosphere by vertical convection. In this presentation we summarize the main results on Saturn lightning provided by this multi-instrumental approach and show how it correlates to the SED activity as measured by RPWS as a function of time throughout the Cassini mission.