Using an A-10 Aircraft for Airborne measurements of TGFs

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Plans are underway to convert an A-10 combat attack aircraft into a research aircraft for thunderstorm research. This aircraft would be configured and instrumented for flights into large, convective thunderstorms. It would have the capabilities of higher altitude performance and protection for thunderstorm conditions that exceed those of aircraft now in use for this research. One area of investigation for this aircraft would be terrestrial gamma-ray flashes (TGFs), building on the pioneering observations made by the Airborne Detector for Energetic Lightning Emissions (ADELE) project several years ago. A new and important component of the planned investigations are the continuous, detailed correlations of TGFs with the electric fields near the aircraft, as well as detailed measurements of nearby lightning discharges. Together, the x-and gamma-radiation environments, the electric field measurements, and the lightning observations (all measured on microsecond timescales) should provide new insights into this TGF production mechanism. The A-10 aircraft is currently being modified for thunderstorm research. It is anticipated that the initial test flights for this role will begin next year.