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Gamma-ray glow observations at 20 km altitude

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In the spring of 2017 the «GOES-R Validation Flight Campaign» was undertaken with an ER-2 aircraft over the continental United States. The scientific target of the campaign was validation of observations by the Advanced Baseline Imager (ABI) and Geostationary Lightning Mapper (GLM) instruments onboard the recently launched GOES-R satellite: Fly's Eye GLM Simulator (FEGS) and, simultaneously, observation of energetic radiation from thunderstorms and lightning: Airborne Lightning Observatory for FEGS and TGFs - ALOFT.

The scientific payload consisted of a suite of instruments designed to detect optical signals, electric fields and gamma rays from lightning. Starting from Georgia, USA, a total of 16 flights were performed, for a total of about 70 flight hours at a cruise altitude of 20 km. 45 flight hours were over thunderstorm regions. In this paper we present an analysis of a gamma-ray glow event that was observed for 4 minutes over Colorado on May 8, 2017.