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TGF electron beam modeling and constraints on TGF production

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Terrestrial gamma-ray flashes (TGFs) are brief bursts of gamma-rays observed by satellites and associated with lightning. Recent observations of electrons likely associated with TGFs provide new information about the source of these events. Due to the confinement of electrons by the geomagnetic field, a good understanding of TGF electron beam behaviour allows for new constraints on the properties of the TGF source. We present the results of comprehensive modelling of electron beams associated with TGFs, compare our modelling results to recent observations, and use the results of these comparisons to constrain the global TGF frequency and the initial TGF photon beaming.