

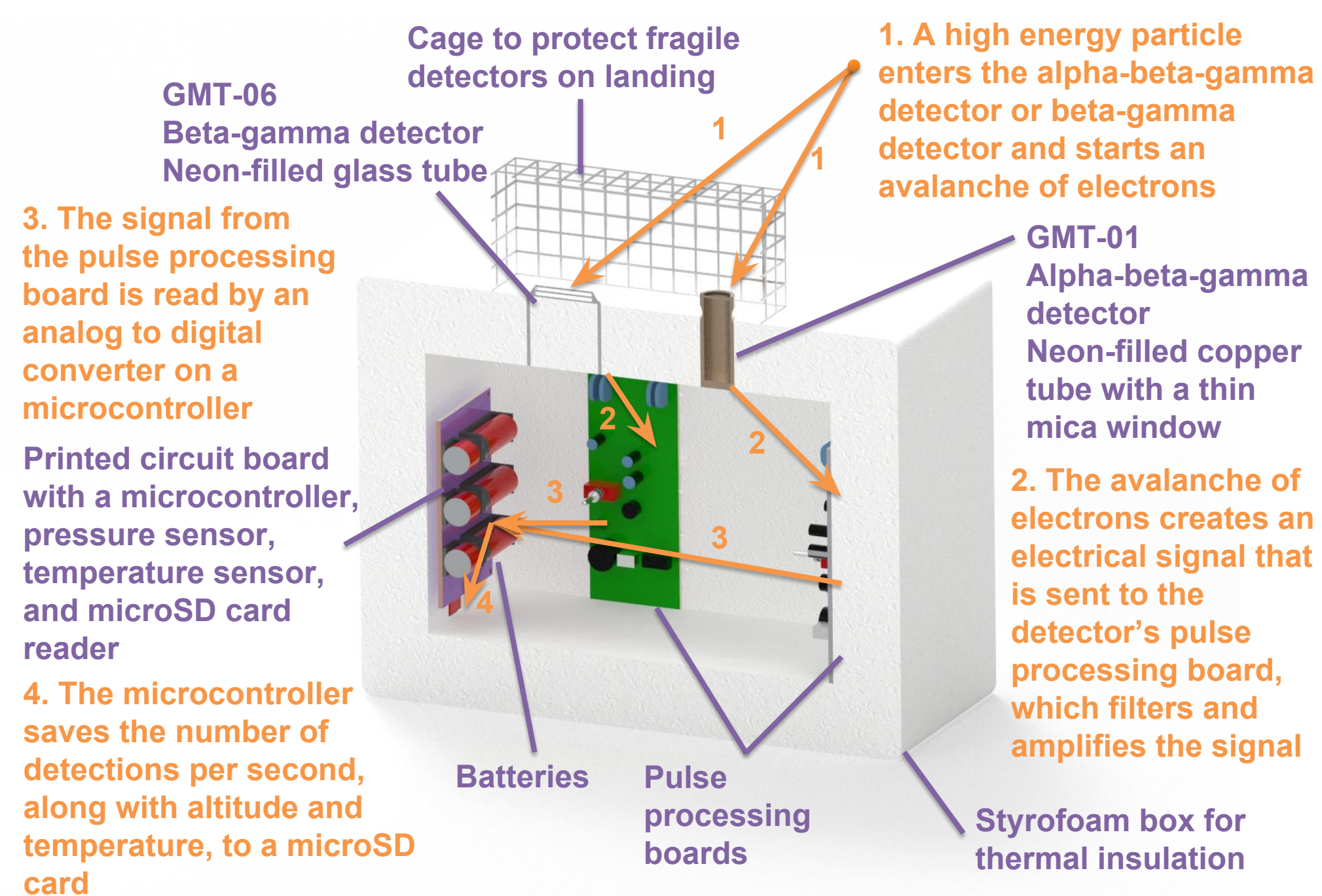
Radiation Detection in Various High Altitude Environments

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Overview

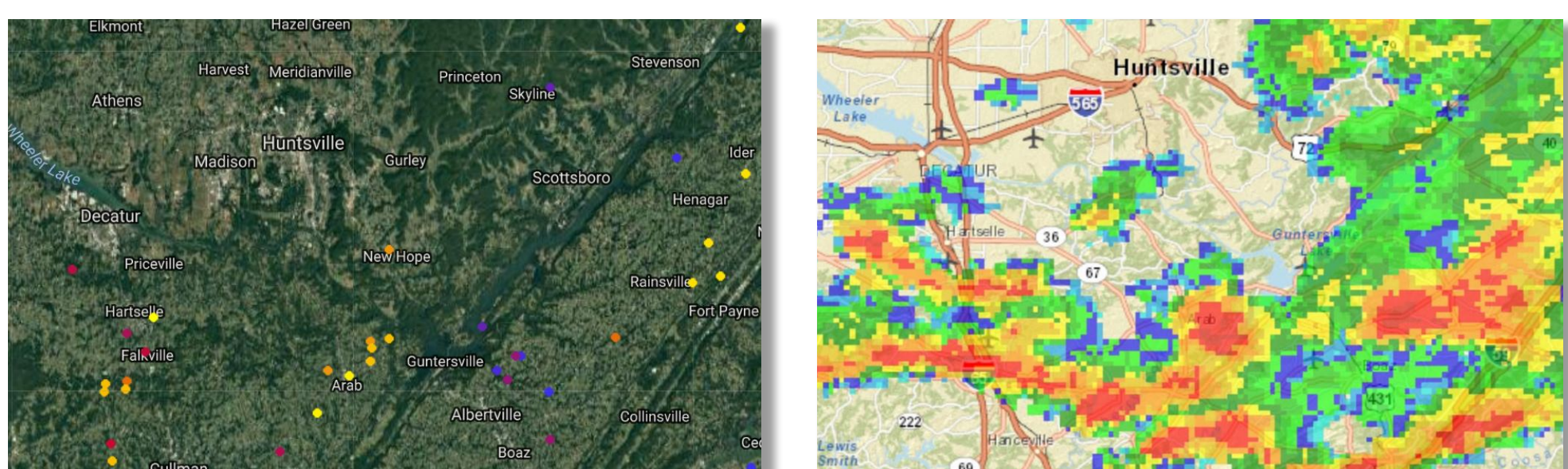
Physoon, a high altitude ballooning payload, was designed and built by students to investigate cosmic and terrestrial sources of high-energy radiation. Of particular interest are events called terrestrial gamma-ray flashes (TGFs) and gamma-ray glow, both of which occur in thunderstorms. Physoon has flown above one thunderstorm, through another thunderstorm, in the totality of The Great American Solar Eclipse, and during sunny daytime conditions as a control. These flights can help advance the understanding of the different physical processes that lead to increased radiation from thunderstorms.

Instrumentation



Results

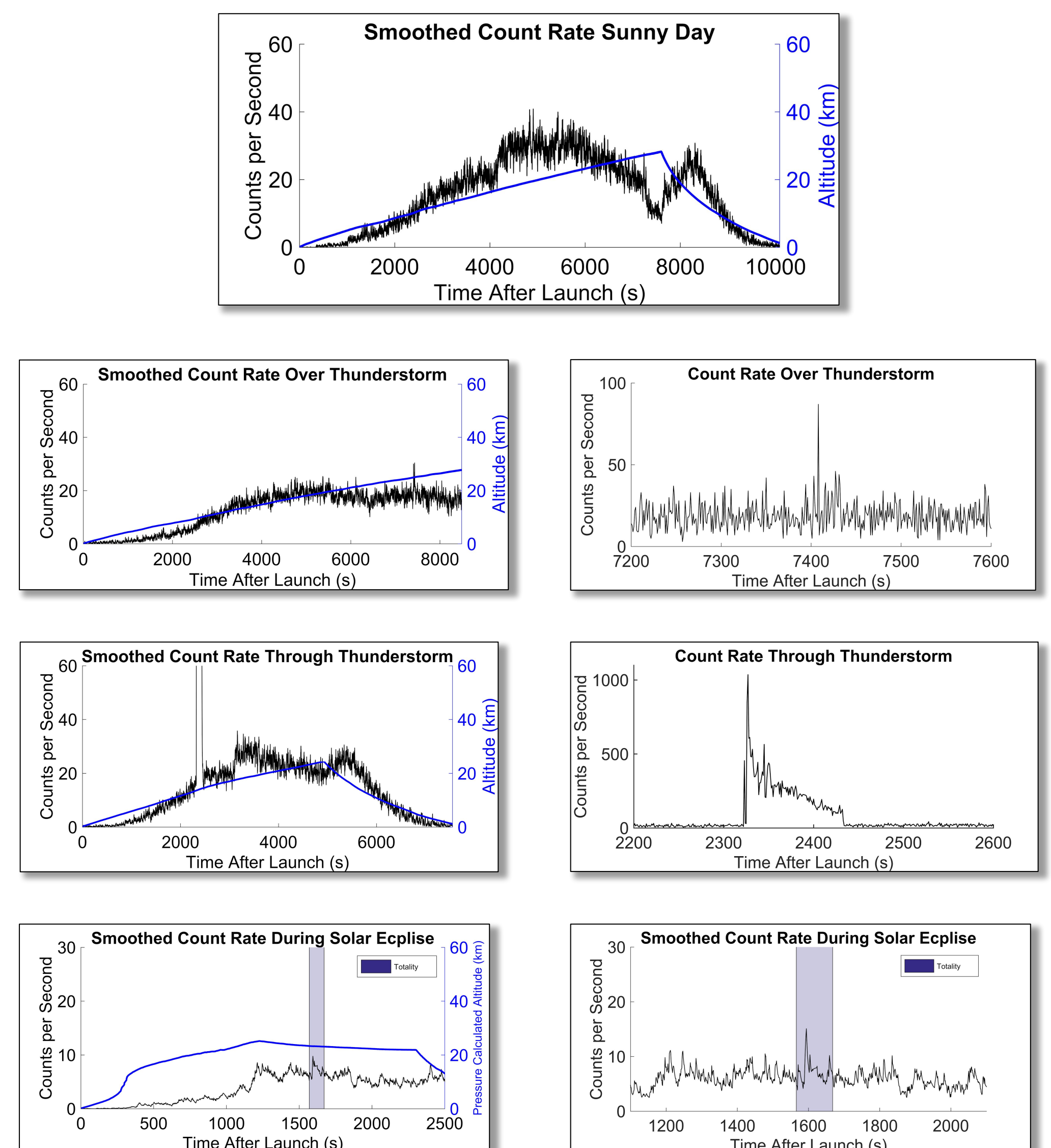
Radiation events were cross checked with satellite data from SWIFT and FERMI to confirm the events were not of extraterrestrial origin. Event times were correlated with nearby lightning strikes and radar maps. When comparing to control data, this suggests the events are due to thunderstorm activity.



Acknowledgements

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Radiation Data



Conclusions

Due to the promising results from several Physoon flights, a new project named "HELEN" has been formed to more closely study TGFs. HELEN will consist of three payloads with onboard scintillation material and accurate timing to gather spectra and triangulate radiation events in thunderstorms.

