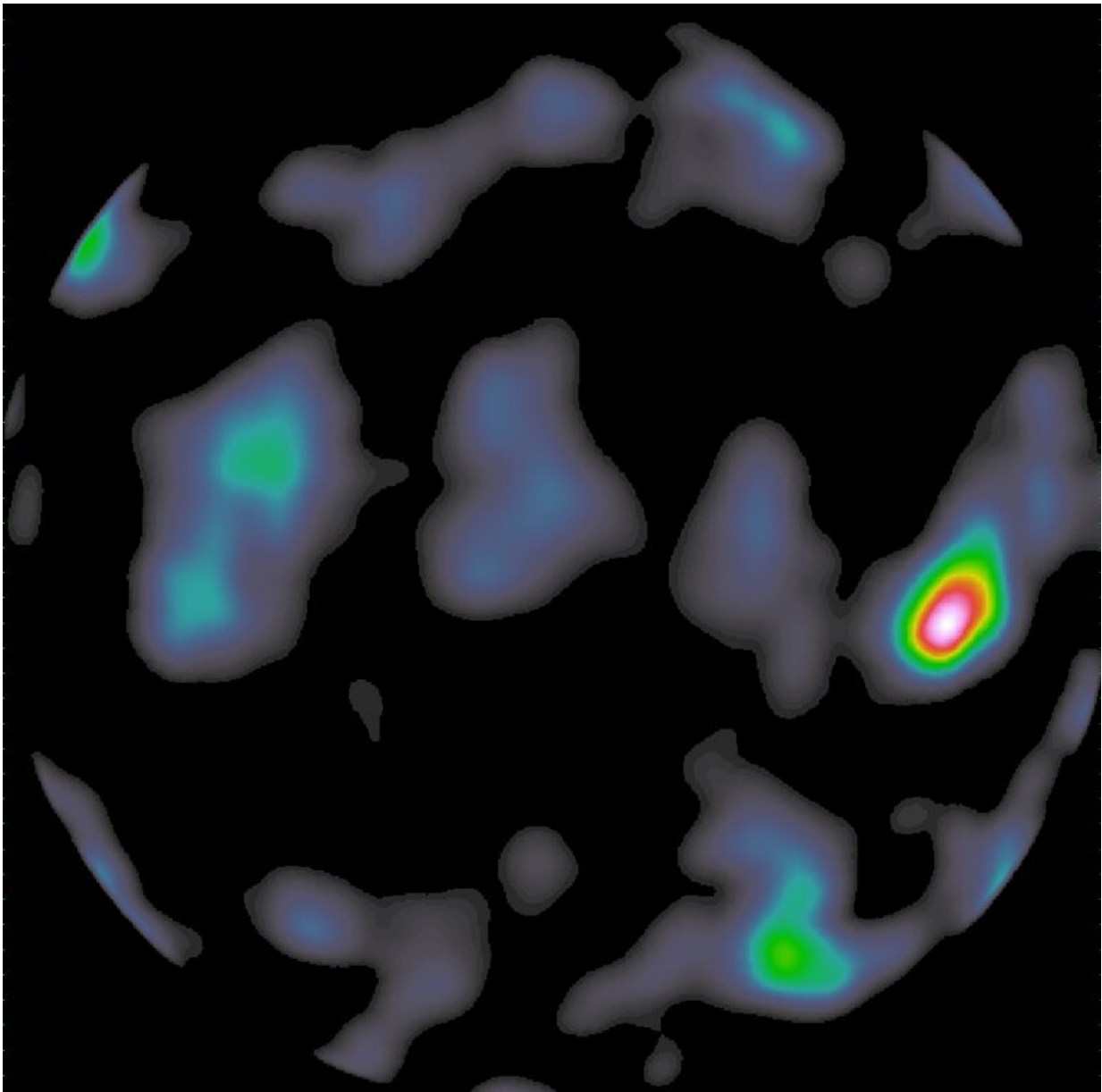


First-ever constructed image of a terrestrial gamma-ray flash

May 15 2019



Terrestrial gamma-ray flash. Credit: University of Valencia

Terrestrial gamma-ray flashes occur above some thunderstorms and propagate out into space. These high-energy discharges of photons were only discovered less than 25 years ago when a NASA spacecraft designed to observe cosmic gamma-ray bursts from outer space detected flashes that seemed to come from Earth itself.

The [scientific community](#) was intrigued, leading to the creation of an observatory to learn more that is now aboard the International Space Station. Called the Atmosphere-Space Interactions Monitor, or ASIM, the suite of instruments includes a gamma-ray detector mounted outside the European Columbus module that captures the whole visible part of Earth and can detect from where the [gamma rays](#) are coming.

Since the start of operations one year ago, the storm-hunter's MXGS instrument has detected over 200 terrestrial gamma-ray flashes and, for nearly 30 of them, has pinpointed their location of origin. The image above shows the first-ever constructed image of a terrestrial gamma-ray flash based on data recorded on 18 June 2018.

The area of interest is on the right, which corresponds to a thunderstorm occurring over Borneo at the time. The more red-white the colour, the brighter the gamma-ray flux.

Thanks to these images scientists can now compare data with observations from other satellites and [weather stations](#) on the ground to piece together the sequence of events that cause the mysterious gamma-ray flashes.

The International Space Station offers ASIM the perfect platform to

observe our planet in this way, as it flies relatively close to Earth at 400 km altitude and often travels over areas with thunderstorms.

Provided by European Space Agency

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