

## ***MTG Lightning Imager: how to detect lightning from space and why on-board processing power matters***

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Europe's next fleet of meteorological satellites, MeteoSat Third Generation (MTG), is set to debut from 2020. The new series will comprise six satellites: four MTG-I imaging and two MTG-S sounding satellites.

In addition to ensuring full continuity with the current Meteosat satellite family, MTG-I satellites will fly the Lightning Imager (LI), first European instrument to allow for full disk observations of lightning from a geo-stationary orbit. LI data will, amongst other things, be used to provide near real-time monitoring & short range forecast of severe weather.

The fundamental working principle behind the LI lightning detection consists in triggering events on pixels where and when a transient peak of energy is measured over the constant background image seen by the detector. Several sources of noise, such as jitter movements or acquisition noise, will trigger false alarms. A succession of algorithmic steps is therefore needed to filter out false alarms and keep the true lightning events. The decision of hosting these filters either on-board or on-ground is driven by the available on-board processing power and influences the sensitivity of the LI to lightning of weak intensity.