



## **The Meteosat Third Generation satellite mission and its future contribution to the monitoring of convective storms**

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In preparing for the upcoming Meteosat Third Generation (MTG) satellite series, first of which is planned for operations as of 2022, European NMHSs are adding a potentially powerful tool to their nowcasting capability: through a combination of innovative instruments, MTG will for the first time over Europe provide satellite-based atmospheric soundings of temperature and humidity every 30 minutes, derived wind information, continuous observation of lightning activity (cloud-to-cloud and cloud-to-ground) and spectral imagery at least every 10 minutes. All these data streams are expected to provide new insights into convective processes, especially instability conditions and convective initiation.

The hyperspectral InfraRed Sounder (IRS) onboard MTG measures in the long-wave infrared (LWIR: 700-1210  $\text{cm}^{-1}$ ) and mid-wave infrared (MWIR: 1600-2175  $\text{cm}^{-1}$ ) bands with a spatial sampling distance of around 4 km, at Full Earth Disc and every 30 minutes over Europe. Generation of radiance datasets and sounding products (temperature and humidity profiles) builds on heritage provided by the current polar-orbiting IASI instrument. The Flexible Combined Imager (FCI) onboard MTG will provide continuity with respect to the existing Meteosat Second Generation satellites, data and products of which have been serving European NMHSs reliably since the early 2000s. FCI provides more channels, higher spatial and temporal resolution than current SEVIRI instruments, which will improve the monitoring of convective storms.

Of particular importance for monitoring the convection will be the Lightning Instrument. It is expected to provide additional insight into the development of convective storms, especially in areas outside ground-based lightning detection capacity, such as over the ocean.

The paper describes the current status of MTG development and prospective use of its data in monitoring and nowcasting convective storms.