



## **Assimilating Cloud Initiation based on Time Series Analysis into flash flood prediction model**

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We used Temporal Fourier Analysis on time series (2010-2013) of Meteosat Second Generation (MSG) European geostationary weather satellite to generate cloud free climatological values of channel 1 (0.6 $\mu$ m) reflectance and channel 9 (10.8 $\mu$ m) brightness temperatures (BT) on pixel basis. Discrepancy between measured reflectance and/or BT and their climatological values are used to detect “cloud contaminated” pixels. This algorithm is very sensitive to sub-pixel clouds that are visible only in the High Resolution Visible channel, but not in the spectral channels. This method is valuable for early detection of convection. We used this cloud initiation method within high-resolution numerical weather forecasts to improve its accuracy in terms of early warning on the location and timing of potential flash floods.